

Research Proposal

Application for GRIPS-NEU Joint Research Project (VDF)

A. GENERAL INFORMATION

1. Title of the proposed research

Impact of public safety net on the structurally and stochastically poor, and the vulnerable in Vietnam: Empirical results from matching evaluation method

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B. RESEARCH PROPOSAL

Abstract

Vietnam has set up poverty reduction as a major goal of development policy. The Government has maintained an extensive public safety net system to support the poor in all dimensionalities of welfare. The fact that poverty is not static but dynamic phenomenon, and the poor is a heterogeneous group including the structurally and stochastically poor, and the vulnerable suggests that there should be different types of programs such as long-term asset investments and short-term transfer programs targeted at different poor groups. The objective of the research is to use the evaluation method of matching to answer the question as to what impact the public safety net has on the structurally and stochastically poor, and the vulnerable to poverty. Answers to this question will be very helpful for the designation and modification of the programs to reduce poverty efficiently taking into account poverty dynamics components including structural and stochastic poverty, and vulnerability.

1. Research Background

Despite Vietnam's achievement in poverty reduction in the year 1990s, there are still 29% of the population living under poverty line (World Bank, 2003). Moreover a large proportion of the population have their consumption expenditure per capita very close to poverty line (Figure 1). A small fluctuation in expenditure can change their poverty status. A lucky season can help this poor group temporarily get rid of poverty, whereas an adverse shock can push the non-poor near the poverty line into poverty. This can be an evidence of a large transient poverty and vulnerability in Vietnam. Using panel data from the Vietnam Living Standard Surveys in 1993 and 1998 (World Bank, 2000) found a large amount of movement into and out of poverty. Although poverty was reduced remarkably from 58 to 37% during this period, around 20% of the poor in 1998 was found non-poor in 1993. Determination of dynamic aspects of poverty

including chronic and transient poverty, and vulnerability to poverty is much useful for designing different types of poverty reduction strategies¹. Policies of asset redistribution and long-term investment in human capital such as education and healthcare should be targeted at the chronically poor. Meanwhile short-term policies such as social allowances and workfare should be provided for the transiently poor to help them get rid of poverty quickly and reduce vulnerability.

Quantitative studies of the chronic and transient poverty, and vulnerability to poverty, however, have not been carried in Vietnam. This limitation can be explained by the data constraint. In principle the chronically poor are households whose living standard is below a defined poverty line for a period of several years, while the transiently poor experience some non-poverty years during that period (Hulme and Shepherd, 2003). The measuring of the chronic and transient poverty is, therefore, very data demanding. Even with a widely used approach by (Jalan and Ravallion, 2000) in which poverty is decomposed into two components: the transient poverty due to the intertemporal variability in consumption, and the chronic poverty simply determined by the mean consumption overtime, longitudinal data with at least three repeated observations are required to estimate the chronic and transient poverty. Unfortunately these kinds of data are not available in Vietnam.

In the research a variant of poverty dynamics approach proposed by (Carter and May, 2001) will be employed to decompose poverty into structural and stochastic poverty. Households are defined as structurally poor if they are observed to be poor and their asset level places them below the asset poverty line. With limited asset holdings the structurally poor will find it difficult to generate income enough to escape poverty in the short-term. Households who are poor in terms of their realized living standard but whose asset level is above the asset poverty line are called stochastically poor. Based on this asset approach the research further defines the vulnerable group who are non-poor but have asset levels below the asset poverty line. The classification of the groups requires just single cross-section data.

In an attempt to reduce poverty the Government of Vietnam has maintained an extensive social security and safety net system. Many poverty alleviation programs have been implemented, affecting all facets of the people's living standards. The programs include both human capital building programs such as healthcare and education, and physical capital building ones such as infrastructure construction and credit for the poor. In addition to the poverty alleviation programs there are several social protection policies such as pension, social allowances and insurances, and other relief funds. A huge amount of finance is spent in the poverty alleviation annually. Since the issuance of the poverty alleviation policy in 1992, about 21000 billion VND (equivalent to 1.4 billion USD) from the State budget have been put in the national poverty alleviation programs. Large financial support for the poor is also provided by over 40 international organizations. There is, however, little research on the impact evaluation of the programs in Vietnam. Most of evaluation reports simply describe the implementation and the output of the programs. Questions on the causal impact of the programs on welfare of the poor and vulnerable remain unanswered so far.

The objective of the research is to assess impact of public safety net on the poor, and its two component groups, namely the structurally and chronically poor. In addition, impact on the non-

¹ For example see Baulch, B. and John Hoddinott (2000)

poor but vulnerable to poverty will be also examined. Specifically the research will explore how the public safety net reached these groups and how the different poor groups responded to different types of poverty alleviation policies. Two specific policies are selected for the investigation. The first is the program “Tuition exemption and reduction for the poor pupils”. The program has been implemented since the year 1998 to provide assistance for the poor children and ethnic minority children living in the communities with special difficulties. As mentioned above, programs that provide human capital support should be targeted at the structurally poor. In this research the program is, therefore, termed “structural poverty-alleviating program”. Ideally a large proportion of the structurally poor should be covered and respond effectively to the program. The second is the social allowance that people receive from the State and communities when facing asset losses. This program is appropriate for the stochastically poor and vulnerable, thus so-called “stochastic poverty-alleviating program”. If it is well designed and implemented, the stochastically poor and vulnerable are expected to benefit much from it. Information on the assessment can help the designation and modification of the poverty reduction policies taking into account poverty dynamics components including structural and stochastic poverty, and poverty vulnerability.

2. Research Questions

In short there are several questions that the research aims to solve:

- How to define the structurally and stochastically poor, and the non-poor vulnerable to poverty given the characteristics of the poor in Vietnam?
- To what extent does the public safety net affect the welfare of the poor, the chronically and transiently poor, and the vulnerable? This question includes some specific sub-questions:
 - How does the program on tuition reduction reach the poor, the chronically and transiently poor, and the vulnerable?
 - What is the impact of this program on the welfare of the defined poor and vulnerable groups?
 - How does the policy on social allowance reach the poor and vulnerable groups?
 - What is the impact of this policy on the welfare of the poor and vulnerable groups?
- What are policy implications on designation and modification of the poverty alleviation programs?

3. Data Source

The research will rely on data from the Vietnam Household Living Standard Survey (VHLSS 2002) that was conducted in 2002. Information are collected through household and community level questionnaires. At the household level the core information include basic demography, expenditures, income, employment and labor force participation, education, health, housing, fixed assets and durable goods. Especially VHLSS 2002 collects information on the participation of households in the most important poverty programs including the program on education for the poor, and the social allowance policy. The commune questionnaires collect information on ethnicity, demography, local infrastructure, the agricultural production, and off-farm opportunities.

The 2002 VHLSS covers the 75000 households of which 30000 ones are asked for detailed information on consumption expenditure. The master sample is obtained from the Population Census conducted in the year 1999. The selection of the 2002 VHLSS sample follows a method of random cluster sampling with the aim that the results are representative at provincial levels.

Although the data set is still being cleaned and processed from the time being, it is expected available to users in this May (2004).

4. Analytical Methodology

4.1. The structurally and Stochastically poor, and the Vulnerable

Based on the asset approach, (Carter and May, 2001) propose the concept of the structural and stochastic poverty. To incorporate the aspect of poverty dynamics into this definition, let's start with a simple economic model of intertemporal choice in two period t and $t+1$. It is assumed that a households i at the time t has a vector of assets, A_{it} that includes physics, human and also social capitals. At the period t households i is assumed to choose consumption (c_{it}) and investment (I_{it}) to maximize their expected welfare. It is expressed in the following form:

$$J^*(A_{it}) \equiv \max_{\{c_{it}, I_{it}\}} u(c_{it}) + J^*(A_{i(t+1)})$$

(1)

subject to:

$$c_{it} = F(A_{it}, \theta_{it}) - I_{it}$$

$$A_{i(t+1)} = A_{it} + I_{it} - \Theta_{it}$$

$$A_{i(t+1)} \geq 0$$

where $J^*(A_{it})$ defines the maximum discounted stream of future livelihood that household i expects given a starting asset endowment A_{it} and optimal future behavior. When optimizing the welfare the household faces three constraints. The first is the budget constraint given by income $F(A_{it}, \theta_{it})$, a function of assets A_{it} and the stochastic income shock θ_{it} . The second constraint shows that the future asset endowment can be reduced due to stochastic asset shocks Θ_{it} . The last constraint assumes that the assets are non-negative, i.e. the household cannot borrow.

Under the usual assumption of diminishing marginal utility of consumption, the household would prefer smoothness rather than fluctuation in consumption over two periods. In order to smooth consumption the household must have perfect access to credit market. The borrowing possibility allows them to raise the current consumption at the early period when the household earns low income. The household also would like to borrow in event of income shocks θ_{it} , or asset shocks Θ_{it} . However such a credit market is not available for the poor, especially in developing countries. The way they can cope with adverse shocks is to track their assets. If a large amount of assets is sold, the remaining assets might not be sufficient to generate income sufficient to sustain not only investment but also consumption in next period. The household can fall into poverty, even poverty trap.

With the note that there is no obvious evidence of consumption smoothing by the poor, (Carter and May, 2001) decompose the realized (current) consumption, c_{it} into three following components:

$$c_{it} = c_{0i} + c(A_{it}) + \varepsilon_{it}$$

(2)

The first component c_{0i} is the steady consumption based on permanent income that the household would enjoy if they can smooth the consumption. Facing the binding borrowing constraint the household might track the current asset $c(A_{it})$, and the third term ε_{it} will become non-zero when the household cannot smooth out shocks. If the household can maintain stable consumption the two later terms in the right-hand side of (2) will be zero. Because the permanent income is generated based on the assets, the first two terms can be grouped into the expected consumption for household i , denoted by $\hat{c}(A_{it})$.

Now denote the money metric poverty line as c_{PL} , and a household is classified poor if their realized consumption is below the poverty line. (Carter and May, 1999) estimate the asset poverty line, A_{PL} that satisfies the following condition:

$$A_{PL} = \{A \mid \hat{c}(A_{PL}) = c_{PL}\} \quad (3)$$

The asset poverty line A_{PL} is the combination of assets that are expected to yield the level of welfare equal to the poverty line c_{PL} . A poor household is defined as structurally poor if their asset level is lower than the asset poverty line. The stochastically poor are those whose asset level is above the asset poverty line. Levels of assets that are higher than the asset poverty line are expected to generate consumption level above the poverty line c_{PL} in next period. Thus the stochastically poor can find it easier to escape poverty.

Poverty study might neglect the vulnerable group who are contemporarily non-poor but vulnerable to poverty. To be consistent with the asset approach, this present research defines households as the vulnerable if they are non-poor at the current time but their asset level is below the asset poverty line. With lower asset levels this group cannot sustain the consumption above the poverty line for a long time.

Once the asset poverty line is estimated, one can classify the population into four groups: the structurally and stochastically poor, and the non-poor but vulnerable to poverty, and the non-vulnerable non-poor.

4.2. Assessment of Program Targeting

To assess how well the program of tuition reduction for the poor and the policy of social allowance reach different types of the poor, two common measures are used in the research. The first is the percentage proportion of beneficiaries who are found structurally and stochastically poor and vulnerable. The second measure is the coverage rate of the programs which is equal to the fraction of the poor and vulnerable who covered by the programs over the total number of the poor and vulnerable. A program with high rates of beneficial poor (or low leakage rate) and coverage is considered to have good poverty targeting.

4.3. Measurement of Program Impact

Impact of program on the poor is measured by the change in welfare outcome that is attributed only to the program. For poverty reduction programs there are two main difficulties in measuring their impacts. The first is the existent of so-called contemporaneous events. There might be many factors that also influence the participants' outcome. The impact evaluation needs to net out effect of all contemporaneous factors from the effect of the program.

The second is the participation endogeneity (selection bias). The selection of participants in the programs is not random but based on some criteria. The poverty alleviation programs can be

designed to target the poor households or communes with special difficulties. Simple comparisons of outcomes between the participants and non-participants do not give correct result. The participants and non-participants can respond in very different ways to program interventions. Unless we can control for differences in characteristics between the treatment and non-treatment groups, the estimate of impacts will be incorrect.

The key solution to the problems in assessing poverty alleviation programs is to construct a comparison group that is similar to the treatment group in all aspects except one: the comparison group did not participate in the programs. The widely-used method of matching can find the comparison group by matching each participant with non-participant based on the similar characteristics. The mean effect of the program on the treatment group can then be calculated simply as the average difference in outcomes between the treatment and comparison group.

The matching by characteristics, however, is very difficult to implement. As the number of characteristics used in the match increases, the chances of finding a match are reduced. When the characteristics contain continuous variables it is impossible to find an identical match. The multidimensionality problem of matching is solved by the Rosenbaum and Rubin (1983). They show that if the outcomes are independent of the participation given by the characteristics, then they are also independent of participation given the probability of participation which is defined as a function of these characteristics. The predicted values of the participation probability are so-called propensity scores which can be obtained from the logit function:

$$P_i = F(\alpha + \beta X_i) \quad (4)$$

where P_i is the probability of participation of household i , X_i are characteristics of the household and community. The characteristics should include all variables that have effect on the participation and outcomes. In addition these variables are required unchanged during the program process.

Once the propensity scores, i.e. the predicted probability of participation (denoted by $\hat{P}(X)$) are estimated, matched-pairs are constructed on the basis of how close the scores are across the sample of participants and non-participants. The nearest neighbor to the i -th participant is defined as the non-participant that has the closest value of the propensity score. In other words the nearest match is found by minimizing the absolute value of $(\hat{P}(X_i) - \hat{P}(X_j))$ over all j in the set of non-participants.

After the performance of matching, the average treatment effect on the treatment groups is estimated by the following formula²:

$$\Delta Y = \sum_{j=1}^T \omega_j (Y_{j1} - \sum_{i=1}^C W_{ij} Y_{i0}) \quad (5)$$

where Y_{j1} is the post-intervention welfare indicator of the participant j , Y_{i0} is the outcome indicator of the i -th non-treated matched to the j -th treated, T is the total number of participants, C is the total number of non-participants, ω_j are the sampling weights of the participants. The

W_{ij} are the weights applied in calculating the average income of the matched non participants. There are several weights that one can use, ranging from nearest-neighbor weights to non-parametric weights based on kernel functions of the differences in scores.

The participants of program are expected to cover three mutually exclusive groups: the structurally poor, the stochastically poor and the vulnerable. Thus equation (5) can be applied to each group to measure the program effect on different types of the poor as well as the vulnerable. The standard errors of the estimates are also calculated, using an usual method of bootstraps.

References

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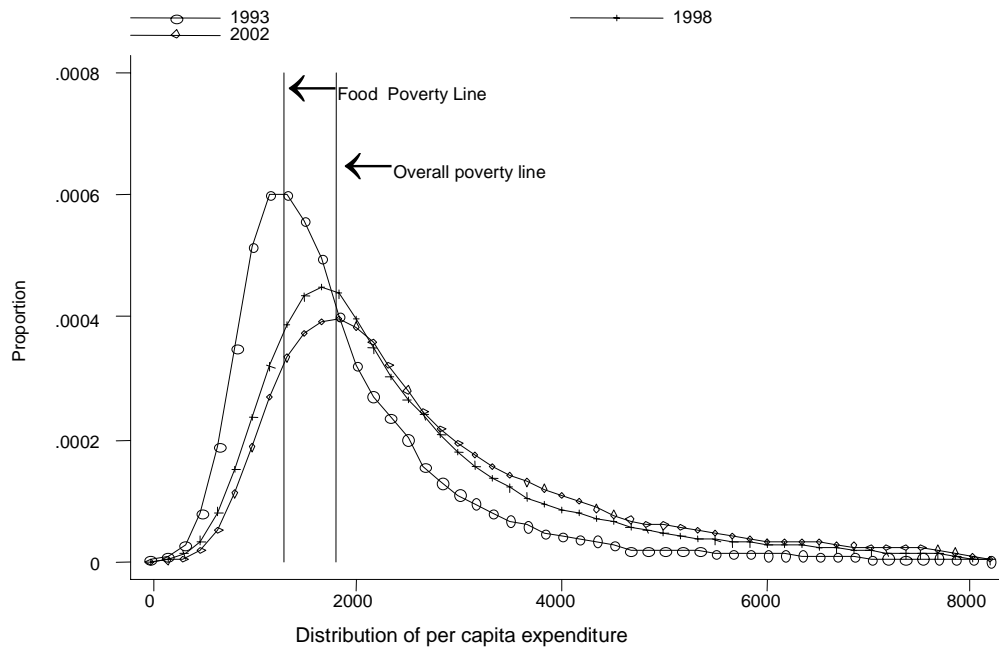
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² The formula donation is adopted from Ravallion (2002).

Appendix:

Figure 1: The Distribution of household expenditure



Source: World Bank (2003)

C. PROPOSED CONTENT OF THE OUTPUT PAPER

Abstract

1. Introduction

2. Public Safety Net in Vietnam

2.1. Overview of Public Safety Net

2.2. Description of Programs to be Assessed

3. Poverty Dynamics Concepts: An Asset Approach

4. Evaluation Methodology of Matching

5. Empirical Results

5.1. Data Source

5.2. Structural and Stochastic Poverty, and Vulnerability to Poverty

5.3. Assessment of Program Targeting

5.4. Estimation of Program Effects

6. Policy Implications and Conclusions

References

Appendix

D. WORKING PLAN OF THE RESEARCH

Project time line is planned to be 6 months, from approved time.

Week	Activities	Month 1				Month 2				Month 3				Month 4				Month 5				Month 6			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	Writing analytical methodology: poverty concepts and evaluation method	■	■	■	■	■																			
2	Consulting the VDF experts about the outputs						■	■																	
3	Getting used to VHLSS 2002						■																		
4	Estimating the asset poverty line							■	■	■															
5	Classifying the structurally and stochastically poor, and the vulnerable										■														
6	Consulting the VDF experts											■	■												
7	Assessing the targeting of programs											■													
8	Performing the matching												■	■	■	■									
9	Estimating program effects															■	■	■							
10	Consulting the VDF experts																			■	■				
11	Writing the draft paper																			■	■	■			
12	Consulting the VDF experts, and finalizing the paper																						■	■	■