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Impact Evaluation of Development Programmes and Policies: Experiences from Viet Nam

Nguyen Viet Cuong¹

Abstract

Poverty reduction is one of major goals of development policy of most countries, especially developing ones. To reduce poverty, numerous development programmes have been implemented throughout the world. In recent decades, researchers as well as policy makers have been increasingly interested in impact evaluation of development programmes to improve the effectiveness of the programmes. Vietnam has been very successful in poverty reduction since the economic reform in 1986. The Government of Viet Nam, as well as international and domestic organisations, has implemented numerous targeted programmes to increase people's welfare. Although increasing attention is paid to impact evaluation of programmes, well-designed impact evaluation of development projects remains very limited. This paper discusses experiences and difficulties in impact evaluation of development programmes in Viet Nam. The findings are expected to be relevant for not only Vietnam but also other developing countries, especially those with a similar socio-economic context as Vietnam.

Keywords: impact evaluation, impact evaluation experiences, development programs, Vietnam.

JEL Classifications: H43, H40, D04

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Introduction

It is surely undeniable that human development and poverty alleviation is what economic development is all about. To reduce poverty, economic growth constitutes a prerequisite (Dollar and Kraay, 2000; Ravallion, 2004). However, the extent to which economic growth can reduce poverty depends on income distribution. If the poor benefit from economic growth, poverty will be reduced (Kakwani và Pernia, 2000; Ravallion, 2004). To help the poor get involved in the growth process, countries have implemented a large number of support programs such as micro-credit and vocational trainings. Other income redistribution programs such as cash transfers and food supply have also been conducted to increase living standard and reduce poverty of the poor. To improve the effectiveness of these development programmes and policies, it's important to evaluate the impact of these programs. Thus, in two recent decades, researchers as well as policy makers have shown great interest in impact evaluation of development programmes.

Vietnam has been very successful in economic growth and poverty reduction since its economic reform in 1986. Economic growth has been achieved to around 7% during the period 1990-2011. Poverty decreased from 58% in 1993 to 37% in 1998 and continued to drop to 14% in 2010 and 12% in 2012. To reduce poverty, the government of Vietnam, international and domestic organisations have implemented numerous targeted programmes to increase people's well-being and reduce poverty. These include human capital-building initiatives, such as healthcare and education, and physical capital-building ones, such as infrastructure and micro-credit.

A large amount has been spent on helping the poor. In the 2006–2010 period, the government planned to spend VND 44,855 trillion (approximately USD 2.8 billion at the time) on poverty alleviation.² Viet Nam is also a developing country that receives large amounts of overseas development assistance (ODA), with a disbursed amount of around USD38 billion up to 2012.

There have been numerous poverty reduction programmes in Viet Nam. However, there is little evidence to attribute the success in poverty reduction to interventions. During the period 1993–1998, although Viet Nam received low ODA funding and did not implement many poverty reduction programmes, the poverty rate still dropped from 58% to 37%.

Since early 2000, ODA funds have increased, as well as the number of interventions aimed at poor households and areas. Yet, Lanjouw *et al.* (2013) found that areas with very high poverty rates in 1999 were less successful in poverty reduction during 1999–2009 than areas with low poverty. The poverty rate of ethnic minorities

² According to Ministry of Labour, Invalids and Social Affairs (2006), the National Targeted Programmes for Poverty Reduction during the 2006–2010 period.

remains very high (Lanjouw *et al.* 2013; World Bank 2012; IRC 2012). Without robust impact evaluation studies, it is not clear whether poverty reduction schemes, as well as development programmes in general have been helping the poverty reduction process in Viet Nam.

Impact evaluations can increase the effectiveness of development programmes as well as development policies by providing helpful information for decisions as to whether the programme should be terminated or expanded. If an intervention has not achieved the expected impacts, it should be ended or at least modified. Conducting an evaluation is not a simple task. It requires a thorough design, including understanding the programme selection, defining valid treatment and control groups, conducting surveys, selecting the estimation method properly to solve selection bias problems and interpreting empirical findings from the impact estimation.

Increasing attention has been paid to impact evaluation of projects in Viet Nam. Not only foreign-funded projects but also state-funded ones have a component on monitoring and evaluation (M&E). However, well-designed impact evaluations are very limited. Most projects do not have baseline surveys. Naive estimates of project impacts, such as simple comparisons between treated and non-treated groups, and before and after, remain popular in impact evaluation reports.

In this paper, we will discuss practical issues, including difficulties in conducting impact evaluations in Viet Nam. We will also present an overview of impact estimation methods and the main findings of several impact evaluation studies. Finally, we will propose recommendations to improve impact evaluations of development programmes and policies in Vietnam. These findings are expected to be relevant for not only Vietnam but also other developing countries, especially those with a similar socio-economic context as Vietnam for example Laos, Indonesia, and Thailand.

This paper comprises five sections. In addition to the introduction, there are four sections in this paper. The second section introduces several widely used methods in quantitative impact evaluation. The third section presents evaluation experiences in Viet Nam. The fourth section presents some examples of them, and the paper concludes in the fifth section.

Impact evaluation: basic concepts and methods

A large amount of literature, both theoretical and practical, exists on impact evaluation (for example, Moffitt 1991; Heckman *et al.* 1999; Wooldridge 2001; Imbens and Wooldridge 2010). This section presents a brief overview of quantitative impact evaluation methods for readers who are not familiar with the literature. This section also

describes the basic concepts for several methods that have been used in evaluating projects and policies in Viet Nam.

Concepts

There are several definitions of impact evaluations (White 2006, 2009). Their main objective is to assess whether a programme– or intervention – has achieved its objectives of improving outcomes. Most projects have a log frame that indicates the path from the project’s inputs to its outputs, outcomes and impacts; and ‘any evaluation that refers to impact indicators is thus, by definition, an impact evaluation’ (White 2006). Qualitative assessment techniques are widely used.

In this paper, we use a second concept of impact evaluation. The impact of a programme on beneficiaries is measured by the change in welfare outcomes for a beneficiary population that can be attributed only to an intervention. In the literature on impact evaluations, two popular parameters are the average treatment effect (ATE) and average treatment effect on the treated (ATT).

ATE is the expected impact on a person who is randomly selected and assigned to programme. It can be defined as the difference in the average outcome of the population between the stage of programme and the state of no programme. Most programmes focus on certain groups, and an important question is the programme impact on those who participated in the programme. ATT is defined as ATE conditional on those who participated in the programme. It is equal to the difference in the observed outcome of the participants and their counterfactual outcome if they had not participated in the programme. For impact evaluation of projects, project owners and stakeholders are mainly interested in ATT.

Estimation of ATE and ATT is not straightforward. The expected outcome of the participants, had they not participated in the programme, and the expected outcome of non-participants, had they participated in the programme, are not observed. Different methods provide estimates of these counterfactuals under different assumptions, based on how the programme is assigned to the population and how the outcome is determined.

Widely used methods

Randomisation

Randomisation has long been used in impact evaluations in medical studies and has also been widely applied in economics. There is an emerging literature of impact evaluations that use randomisation (for example, see Duflo *et al.* 2008). In randomised control trials, an intervention method is assigned randomly to eligible and willing participants. Non-

participants form the control group, and do not participate in similar programmes. The impact of the intervention is estimated by comparing the mean outcome between the participants and non-participants.

Although the randomisation method produces the most reliable results for an impact evaluation, it can have several drawbacks:

1. It is hard to randomise an intervention that focuses on a specific group because of issues of ethics and politics. Policymakers will be criticised if they cannot explain why some eligible people are not allowed to participate;
2. The implementation and evaluation of a socio-economic programme that is based on randomisation is often expensive;
3. Attrition (drop out) and substitution (non-participants participating in a similar programme) often take place in randomised designs, and these factors can bias the estimates of the impact of the intervention; and
4. A randomised intervention that is used for impact evaluation purposes is often a pilot scheme, and its impact can be very different from the impact of a programme when it is implemented in reality.

Methods assuming selection on observables

Most development interventions are not randomised in reality. When it is not assigned randomly, the potential outcomes of participants will be different from those of non-participants. Simple comparison of mean outcomes between participants and non-participants will not produce unbiased estimators of the intervention's impact.

However, if we are able to observe all variables that affect both the intervention selection and potential outcomes holds (called assumption on selection on observables), we can estimate the programme impact by controlling for these observed variables.³ Widely used methods based on this assumption are regression methods, matching methods and regression discontinuity.

The simplest way to measure the impact is to run regression of the outcome on the dummy variable of the participation and control variables. Another method is matching, which has the main advantage that it does not rely on a specific functional form for the outcome, thereby avoiding functional form assumptions. The basic idea of the matching method is to find a control group that has the least similar distribution of control variables to the treatment group. By doing so, we control for the difference in the control variables between participants and non-participants. The intervention's impact is estimated by the difference in mean outcomes between the treatment and matched control groups.⁴

³ In Rosenbaum and Rubin (1983), this assumption is called ignorability of treatment or conditional independence.

⁴ For matching methods, see for example Rubin (1979, 1980), Rosenbaum and Rubin (1983), Abadie and Imbens (2002).

A special case of selection on observables is when all eligible people participate and any ineligible ones do not. This happens when there are several control variables that predict participation perfectly (Van der Klaauw2002). For example, a person will participate in the programme if her or his control variable value is larger than a specified cut-off point. In this case, the discontinuity method can identify the impact at around the cut-off point for participation. It assumes that the assignment is random around the cut-off point. Non-participants just above this cut-off point can serve as an ideal control group for participants just below the cut-off point(for example, see Van der Klaauw, 2002; Hahn *et al.*, 2001).

Methods assuming selection on unobservables

As discussed, the main assumption that methods of selection on observables rely on is the conditional independence between the potential outcomes and assignment to the intervention. This assumption does not hold if there is an unobserved variable affecting both the potential outcome and participation. Two popular methods for dealing with the problem of selection on unobservables are instrumental variable regression and panel data models.

Instrumental variable regression is a traditional econometric way to deal with endogeneity of a control variable. A valid instrumental variable is required to be correlated with the intervention assignment, but not the error terms in the potential outcomes. Instruments can be regarded as an exogenous cause of participation in the intervention but not of the outcome directly. However, finding a valid instrument in the impact evaluation is always challenging. Thus, when panel data on the participants and non-participants are available, we can use panel data estimators. Widely used panel data methods are fixed-effects regressions and difference-in-differences estimators.⁵

These panel data estimators can eliminate the selection bias provided that it is time-invariant between the periods of the panel data. For many interventions, this assumption is very strong, thus panel data estimators are not ideal for impact evaluations.

Steps in impact evaluation

A good impact evaluation study should be designed at the beginning of the project and should be a continuous process until it is completed. It should be a component in the M&E system and can be described in eight steps:

1. The first step in the impact evaluation is to determine its objectives. The objectives are to measure the causal effect of an intervention's outcomes or

⁵ Difference-in-differences estimators require data before and after the programme. However, these estimators can be applied without panel data provided that the intervention status of people is known in the data before the intervention begins.

- simply to monitor its outputs and outcomes. The impact evaluation objectives depend on the requirement of the project owners and the available funding for impact evaluation. In this step, the impact parameters can be determined (ATT, ATE and so on). For most development interventions, the main impact parameter is ATT;
2. The second step is to study the log frame of the project to understand the project objectives and select the indicators of long-term outcomes that will be used for the impact evaluation. Impact indicators can be included in the log frame or can be defined by evaluators;
 3. The third step is to understand the selection process. Evaluators would aim to answer a number of different questions. What are the criteria for selecting participants? Does the intervention cover all the eligible people? Are participants self-selected? Why do some people not participate? The intervention selection process and the impact evaluation objectives are interlinked. The impact evaluation objectives may depend on the intervention selection. Moreover, the selection process may be designed to take into account the important role of the impact evaluation (for example, it will contain randomised elements for the purpose of randomised impact evaluation);
 4. The fourth step is to select impact evaluation methods. This depends mainly on the availability of the budget for impact evaluation and the selection process. Impact evaluations based on randomisation produce the most reliable results. However, randomisation is often costly and not easy to conduct, especially for targeted interventions. When intervention selection is based on observables, regression, matching and discontinuity designs can be used. When the selection process is not observed, instrumental-variables regressions and panel data methods can be used;
 5. The fifth step is supervision of the selection process, so that it can be observed and explained by data;
 6. The sixth step is to conduct surveys (baseline surveys and/or post-project surveys) to collect data on the treatment group and control group. It is helpful if a baseline survey is available and baseline and post-project surveys can set up panel data. These surveys can provide information on attrition and substitution of control and treatment groups;
 7. In the seventh step, the impact of the project is estimated using the selected methods and collected data. The impact estimates can be validated using qualitative methods or other information and data sources; and
 8. Finally, the findings of the impact evaluation are disseminated and can be used as inputs in the design of other similar projects.

Impact evaluation in Viet Nam

The role of impact evaluation

In Viet Nam, impact evaluation is still a relatively new topic, which was first introduced in the early 2000s. Even in economics universities, applied econometrics has been taught since around 1999. In 2005, World Bank researchers delivered some initial training courses on quantitative impact evaluation. Basic concepts in impact evaluation, such as counterfactuals and selection bias, remain new to policymakers as well as local researchers.

Quantitative impact evaluation of programmes and policies has been rarely implemented in Viet Nam. Project officers are very familiar with project concepts such as M&E, log frames, outputs, outcomes and impacts of projects, but have limited ideas on the quantitative evaluation of project impacts. Even now, some evaluation studies still attribute the simple difference in outcomes between participants and non-participants in non-randomised interventions to the intervention's impacts.

Small projects that non-governmental organisations (NGOs) or other domestic organisations have implemented often have small budgets that do not allow for robust impact evaluations. Impact evaluations are often implemented after the completion of projects. For these projects, limited data makes it almost impossible to conduct quantitative impact evaluations. Impact evaluations require at least post-project data on both participants and non-participants, but collection of detailed and representative data on outcomes of participants and non-participants is very costly. Thus, qualitative methods are often used to look for evidence that interventions have improved the outcomes of participants.

Popular methods are: analysis of project documentation, previous reviews, monitoring reports and minutes of relevant meetings; stakeholder interviews with implementing agents, local government agents, local NGOs and civil society organisations; and instruments to assess impact on beneficiaries, including, as appropriate, focus group discussions, case studies and other participatory methods.

For projects that are financed with international loans and grants, donors often require an M&E component. However, quantitative impact evaluation is not well designed in M&E systems. It is not clear how the impacts of interventions will be measured and which methods and data sets will be used for impact evaluations.

Policymakers do not pay much attention to impact evaluations of development interventions. The largest national projects on poverty reduction, including the National

Targeted Programmes for Poverty Reduction (NTPPRs) and the Socio-economic Development Programme for Ethnic Minority Areas (known as Programme 135-Phase I) during the period 2001–2005,⁶ which the government mainly funded, did not have well-designed M&E for their sub-project components. International agencies such as the United Nations Development Programme (UNDP) fund impact evaluations of these projects in their entirety.

In Viet Nam, most development projects have the common objectives of improving livelihoods, increasing income and consumption, and reducing poverty sustainably. These projects only have significant impacts on people's welfare several years after the projects are completed. However, by that time policymakers, stakeholders and researchers will be no longer interested in the impact of the projects, and funding may not be available for impact evaluation.

Recently, quantitative impact evaluations have received increasing attention. Researchers and staff in research institutions, as well as in ministries such as the Ministry of Agriculture and Rural Development (MARD) and Ministry of Labour, Invalids and Social Affairs have received training on impact evaluation.⁷ Nowadays, most large-scale projects in Viet Nam have an M&E component with some focus on impact evaluation design. The government also advocates impact evaluation studies by providing logistical support and funding for impact evaluations.

Several large projects have had good baseline surveys and impact evaluation designs from the beginning. For example, Programme 135-Phase II, which was implemented in 2006–2010, had a baseline survey of 6,000 households in 2006 and an endline survey of the same households in 2012 (IRC 2012). The impact of this programme was estimated using household fixed-effects and difference-in-differences estimators (IRC 2012).

Large projects using ODA loans from the World Bank, such as the Northern Mountain Area Poverty Reduction Programme (phase II) and the Poverty Reduction in the Central Highlands Project, also included designs for impact evaluations from the beginning.

Difficulties in impact evaluation

In addition to project owners' low attention to quantitative impact evaluations, there are several difficulties to conducting good quantitative impact evaluations in Viet Nam. This section discusses these difficulties.

⁶The NTPPRs are also referred to as the National Targeted Programme on Hunger Eradication and Poverty Reduction (HEPR).

⁷ For example, training that Martin Ravallion (World Bank) delivered at the Viet Nam Academy of Social Science in 2007; training that Daniel Westbrook (Georgetown University) delivered at MOLISA in 2008.

Unobserved selection of beneficiaries

Most projects have criteria to select beneficiaries in their designs, but do not fully document the selection process. Except for some projects in which the participants are self-selected, such as credit and vocational training projects, people are often willing to participate in projects if they are entitled to join them. It means that the selection process can be easily observed if the selection criteria are strictly followed.

However, a leakage problem remains, because non-eligible people and households still participate in programmes. The Ministry of Labour, Invalids and Social Affairs (MOLISA 2004) showed that around 33 per cent of participants in the credit programme for the poor (a sub-project of the NTPPRs) were not eligible to take part, whereas many eligible households were not included. The project officers were more likely to provide loans to (ineligible) non-poor people to ensure the repayment rate. This poor targeting of the credit programme is also mentioned in other studies such as Nguyen (2008) and MOLISA (2009).

Other sub-projects of NTPPRs, such as a health project for the poor and an education support project, also had problems in the selection of beneficiaries (MOLISA, 2004). The problem of targeting in Programme 135 was also pointed out in MOLISA (2009). It seems that projects that were funded by international loans and grants, such as from the World Bank, UNDP, and Asian Development Bank (ADB) followed selection criteria more strictly. Yet, the selection process was fully observed. From our experience, in most projects, there is always a political problem in selecting beneficiaries.

Complex and multiple overlapping projects

In Viet Nam, a large number of development projects support disadvantaged people, such as the poor and ethnic minorities, simultaneously. Some people may be taking part in other projects (for example, poor and ethnic minority people may be covered by the NTPPRs and the Socio-economic Development Programme for Ethnic Minority Areas).

When we visited a poor commune with a large proportion of ethnic minorities in Lao Cai province, the commune head said that they had been covered by six poverty reduction schemes at the same time. IRC (2012) showed that province leaders tend to distribute funding to local areas equally. If a commune or a district participates in one project, it will be less likely to participate in other projects.

To evaluate an intervention, we need to construct treatment and control groups. However, the treatment and control groups may also participate in other projects that have similar objectives. As a result, the groups are contaminated and it is difficult to separate the effects of other simultaneous interventions when evaluating the impact of an intervention.

Development projects in Viet Nam often have a large number of sub-projects ranging from supporting households and individuals to capacity building for local staff

and strengthening institutional frameworks. The implementation of projects may last for 3–10 years, and many projects have to be delayed and extended. Changes in the design and implementation of a project will cause difficulties for impact evaluation.

Impact evaluation not designed from the beginning

Most impact evaluations in Viet Nam are not designed at the beginning as part of a project's M&E. Impact evaluations are conducted after project completion mainly because of donor requirements. As a result, the selection process for projects is not well supervised and cannot be observed. No clear explanations are given why some people or households have participated in projects, whereas others have not. In addition, there are no baseline surveys or the surveys are not adequate for robust impact evaluation.

Without reliable baseline surveys and observed selection processes, most impact evaluation studies in Viet Nam must rely on post-project surveys. These surveys often collect data on beneficiaries' perceptions of a project's impact on their welfare. These post-project surveys can also collect current data and pre-project data on welfare indicators to examine the improvement of project beneficiaries' welfare before and after the project. For example, MOLISA (2004) conducted qualitative household surveys to assess the impacts of NTPPRs and Programme 135; McGrath *et al.* (2009) conducted a household survey that collected data on participants' opinion about the impact of rural road projects funded by the ADB, and current and retrospective data on income and consumption.

Once the surveys were completed, the results were analysed to see the distribution of the project participants across the perception of the project, for example, what percentage of participants thought that the project had helped them increase their income. In addition to surveys, impact evaluations also rely on qualitative assessment techniques and case studies.

Unavailable baseline surveys

If projects are randomised or based on selection on observables, impact evaluations must rely on post-programme surveys. However, most projects in Viet Nam are not randomised or based on observable selection, and baseline surveys before project implementation are very important. Yet many projects, such as the NTPPRs Phases I and II, do not have baseline surveys; small projects rarely have because of limited budgets.

For other projects, especially those funded by international loans and grants, there have been baseline surveys. However, surveys may not be implemented properly for a number of reasons:

1. Baseline surveys are conducted after treatment and control groups know if they have been selected. For all projects in Viet Nam, baseline surveys are only conducted after projects have been approved, and these projects list selected

- beneficiaries such as communes and districts. Thus, treatment and control groups have information on whether they may participate in a project. Ideally, when surveyed, treatment and control groups should not be aware of their participation in an intervention. If people know that they are taking part, it can affect their behaviour before the survey begins. As a result, the survey will not capture the situation of the treatment and control groups in a no-project state;
2. Baseline surveys may be implemented a long time after a project begins. For example, the ADB-funded Viet Nam Teacher Training Project conducted a baseline survey nearly a year after the project had begun (ADB 2008a). A baseline survey for the Agriculture Sector Development Program, also funded by ADB, took place nearly three years after the project began (ADB 2009). Similarly, the Northern Mountains Poverty Reduction Project-Phase I (NMPRP-I) conducted a design and baseline survey for impact evaluation two years after project start-up (MPI 2007);
 3. Some baseline surveys do not contain information on non-participants. For example, the baseline survey for the Agriculture Sector Development Program only covered households in project areas (ADB 2009). Clearly, such a baseline survey may be useful for M&E activities, but not for an impact evaluation; and
 4. Baseline surveys often have small samples, which are not representative for the population of participants. In addition, the selection of survey samples is arbitrary, which does not follow standard survey sampling methods. In many projects, such as the ADB-funded Central Region Livelihood Improvement project, survey sampling designs were not well documented and it was not clear to project officers and staff how the surveys were implemented (ADB 2010).

To measure the impact of interventions quantitatively, post-intervention surveys are indispensable. However, some projects do not carry out surveys after start-up. NMPRP-I had relatively good baseline surveys, which covered 423 households in 23 communes, but did not have a post-project survey (MPI 2007). Again, the small budget was the main reason for this. Most projects do not set aside a separate budget for surveys and impact evaluations.

Examples of impact evaluation studies in Viet Nam

Although impact evaluation of development programmes receives little government attention, there are a large number of impact evaluation studies in Viet Nam. The studies can be divided into two types.

The first is required by the project owner or organisations that are financing the project, and the evaluation is often included as a project component. For most projects, even small ones, an impact evaluation is often conducted after completion. Most of these impact evaluations are not well designed for measuring the causal effect of projects. In this kind of evaluation, little or no attention is paid to technical issues, such as survey design and estimation methods. However, as concern about impact evaluation increases, M&E in general and impact evaluation in particular are better designed from the beginning of projects. Attention is being given to issues of how to get unbiased estimates about an intervention's impact and dealing with selection bias.

The second type of impact evaluation is independent studies that academic researchers implement. These aim to measure the quantitative effect of a programme or policy. Most academic studies on impact evaluation are aware of selection bias and try to address this.

There are at least two reasons for the numerous impact evaluation studies in Viet Nam. Firstly, it is a country with high economic growth and remarkable poverty reduction rates. A large number of programmes and policies exist that are of interest for policymakers and researchers. Secondly, Viet Nam has many surveys that can be used for impact evaluations, including surveys of households and companies.

Household surveys conducted during the 1990s and 2000s are an important data source for impact evaluation studies. These surveys were well designed according to the World Bank's Living Standards Measurement Study (LSMS). They include the Viet Nam Living Standard Surveys (VHLSS) in 1993 and 1998, and Viet Nam Household Living Standard Surveys () in 2002, 2004, 2006, 2008 and 2010. The surveys contain detailed data on household and commune characteristics. Some surveys set up panel data, which are very helpful for impact evaluation of national or large coverage programmes.

The next section presents several examples of impact evaluations. We have classified the studies according to the methods used to estimate project impact.

Before and after comparison

A large number of impact evaluation studies conducted project assessments that asked beneficiaries about their outcome changes before and after the project's implementation. These studies did not have baseline surveys.

For example, in the impact evaluation of the Rural Infrastructure Sector Project and Provincial Rural Road Improvement Project, which were implemented by Ministry of Transport with loans from ADB, a post-project survey was conducted to collect perceptions about the project's impact from 400 households in project areas (McGrath *et al.* 2009). The survey asked households whether the roads had increased a number of

outcome indicators, such as non-farm employment, production, access to market, income and consumption. Other social outcomes such as education, health care, environments were also covered.

The survey showed that investment in infrastructure had made a positive impact on livelihoods and well-being for most of the people in the sub-project area. These included: higher sales; lower input costs; better access to input suppliers; more competitive (lower) cost of input supplies; increased occurrence of traders; lower costs of transport; access to new technology; increased non-farm employment; more opportunities for non-farm employment; diversification of products; and increased income and consumption.

MARD implemented a resettlement and migration programme in 2006–2010. Households were supported when they moved to border, coastal and other areas with special difficulties. The main objectives were to reduce poverty, protect households from natural disasters, and increase forest coverage. Households were self-selected and it was difficult to measure the programme's causal effect. MARD conducted a post-programme impact evaluation in 2010. Do (2010) collected information on the impact assessment of participating households. It found that most participating households were poor. Around half the households thought that their living standards had improved because of the programme; whereas the rest thought that their living standards had not improved or had even worsened.

Another example is the ADB-funded Rural Enterprises Finance project that operated in 2001–2007 (ADB 2008b). The objective was to support government efforts to reduce poverty and promote private sector investment in rural and agriculturally based businesses by providing credit to the household and enterprise sectors, micro-businesses, and low-income households. A post-project survey was conducted in 2008 that covered 658 borrowers in 16 provinces. Some 94.8 per cent of respondents indicated that the project had significantly improved their annual income. The sub-loans for small and micro-enterprises were said to have contributed to employment creation. The survey also indicated that the project had helped beneficiaries to expand their production or business, which increased income and consumption and reduced poverty.

Similar qualitative surveys were also conducted in the impact evaluation of the NTPPRs and Programme 135 in 2001–2005 (MOLISA 2004), and the mid-term impact evaluations of the NTPPRs in 2006–2010 (UNDP and MOLISA 2009). The surveys showed that the beneficiaries all agreed that the programmes were relevant and had made a good impact on their living standards. However, there were no baseline surveys for the NTPPRs, and the duration between start-up and the time of review was not long enough to detect the programmes' impact.

In general, subjective questions are not very reliable for evaluating the causal effect of interventions. Participants can never know the counterfactual outcomes: what

would have happened if the intervention had not been implemented. In addition, if people know the purpose of a survey, they may not provide correct answers. They will tend to give a positive assessment in the expectation of receiving the intervention in the future.

Comparison between treatment and control groups

Several impact evaluation studies compared project outcomes between treatment and control groups. For example, Nguyen (2003) used the 2002 to examine the impact of three national poverty reduction programmes on exemption from educational fees, provision of health care insurance, and micro-credit for the poor. The study used propensity score matching to control for differences in observed characteristics between the participants and non-participants. It found that there were no impacts on expenditure per capita. On average, households that received micro-credit were more likely to have a pig, cow, buffalo or horse than other households.

Shaffer (2004) also used the 2002 and propensity score matching to examine the impacts of the National Targeted Programme on Hunger Eradication and Poverty Reduction (HEPR) and Programme 135-Phase I. The study found that the HEPR health and micro-credit components had no effect on either healthcare use or household expenditure. However, the positive effect of education support on school attendance was statistically significant.

Bales *et al.* (2007) assessed the impact of free health insurance for the poor (a health support component of HEPR). Using propensity score matching and the 2004, the study found no significant impact of health insurance on health care use. However, health insurance was found to help beneficiaries reduce inpatient treatment expenses.

Janaiah *et al.* (2004) investigated the impact of an irrigation project on agricultural production and poverty reduction in three provinces. Using propensity score matching with single cross-section data, the study showed that the project reduced costs and increased yields; and in one province reduced the poverty rate of beneficiary households.

Doan *et al.* (2011) used propensity score matching and their own survey to examine the impact of household credit on education and healthcare spending by the poor in peri-urban areas of Ho Chi Minh City. The study controlled for post-treatment variables and pre-treatment income and assets. The estimation results showed that household credit had significant and positive impacts on education and healthcare spending in beneficiary households.

Panel data methods

Propensity score matching using single-cross section data may produce biased estimates, because the selection process has not been fully observed. When data before and after a project are available, panel data methods, such as difference-in-differences or fixed-effects regressions, are widely used to measure the impact of a project.

Programme 135-Phase II, which was implemented in 2006–2010, conducted good baseline and endline surveys of 6,000 households (IRC 2012; Phung *et al.* 2013), and covered treatment and control groups. The survey sampling followed a standard method and was well documented. The questionnaires and survey instruments were similar to those used in the World Bank's LSMS. Communes were selected based on several criteria, which included the poverty rate, proportion of ethnic minorities, and location in coastal and boundary areas. However, there were also political issues in selecting treatment groups, and the final selection of communes could not be fully interpreted by the documented selection criteria.

The control group sampled in the surveys was selected from those with similar characteristics to the treatment group in the baseline. The impact evaluation methods used were household fixed-effects and difference-in-differences estimators. The results showed that the project helped ethnic minority households increase their ownership of assets and durable goods. Among higher-order outcomes, the project had a positive impact on rice productivity, income from agriculture, total household income, and per capita income.

The World Bank funded the Northern Mountains Poverty Reduction Project Phase II (NMPRP-II), which the Ministry of Investment and Planning (MIP) is implementing in 2009–2014. This project aims to increase income and reduce poverty in six provinces in the north. This project selected communes that had a poverty incidence above 40 per cent. A baseline survey of 1,800 households was conducted in 2010. A post-project survey will also be conducted. The impact evaluation methods proposed in this study are discontinuity and difference-in-differences (IRC 2009).

Khandker *et al.* (2009) investigated the impact of a World Bank-financed rural electrification project (REI) on the welfare of households in project areas. To increase households' access to electricity, the REI expanded grid connections to 600 previously un-electrified communes in 2000–2004. In the second phase of the project, which began in 2005, a further 300 communes were connected to the grid. The selection of the 600 communes in the first phase was not random. To evaluate the impact, the study used household fixed-effects and difference-in-differences estimations, with panel surveys of 1,100 households conducted in 2002–2005. They found that grid electrification had significant positive impacts on households' cash income, expenditure and educational outcomes.

As mentioned, panel household data exists for Viet Nam that allows a large number of impact evaluation studies using fixed-effects or difference-in-differences estimators. For example, using VHLSS and data, Van de Wall (2002), Van Den Berg and Nguyen (2011) evaluated the effects of social protection programmes. Van de Wall (2002) examined the poverty targeting and impact of Viet Nam's public safety net on the incidence of poverty using the 1993 and 1998VHLSS. The methods used in this were fixed-effects regression and instrumental variable regression. The study found that social insurance and subsidies did not reach the poor effectively. However, social transfers helped to reduce the incidence of poverty by approximately 2.8 percent. Van Den Berg and Nguyen (2011) used data from the 2004 and 2006 and fixed-effects regression to measure the effect of public transfers. The study found that the impacts of public transfers on poverty were quite low, because of low coverage of the poor and the relatively low amounts transferred to them.

Several studies quantitatively evaluated the impact of health insurance. Wagstaff and Pradhan (2005) measured the impact of health insurance using the 1993 and 1998 VHLSS and a difference-in-differences with propensity score matching method. The study found that health insurance increased health care contacts. Sepehri *et al.* (2006) used the same data and a variance of fixed-effects regression, and found that health insurance decreased out-of-pocket expenditures by around 36–45%. Wagstaff (2009) used three rounds of from 2002, 2004 and 2006 and a method called triple differencing with matching, and found that free health insurance significantly reduced out-of-pocket spending, but not health care use. Nguyen (2012) used the 2004 and 2006 panel data and a difference-in-differences with propensity score matching method to estimate the effect of voluntary health insurance. The study found that voluntary health insurance helped beneficiaries increase annual outpatient contacts by 45 per cent and inpatient contacts by around 70 per cent.

Van de Walle and Cratty (2002), Mu and Van de Walle (2007), and Nguyen (2011) also used difference-in-differences or fixed-effects regression methods to examine the effects of rural road rehabilitation projects on household welfare. The studies found that rural roads improved transportation and local markets. Nguyen (2011) showed that rural roads had a positive effect on household income and the working hours of households living in villages with passable car roads.

Instrumental variable methods

When valid instruments are available, instrumental variable regression is preferred to panel data methods. Van de Wall (2002) measured the impact of Viet Nam's public safety net on the incidence poverty using the 1993 and 1998VHLSS's. In addition to household fixed-effects, the study used instrumental variable regression with access to

the public safety net in 1993 used as the instrument for determining the access to the public safety net in 1998. Previous access to the public safety net was strongly correlated with current access, but might have been weakly correlated with current outcomes.

Nguyen (2008) measured the impact of a micro-credit programme for the poor using instrumental variable regressions and data from the 2002 and 2004. The instruments used were the distance of villages from the closest bank and the poverty rate of communes. Households that lived far from a bank were less likely to borrow. Households in poor communes were also less likely to borrow micro-credit, because there were a large number of eligible households in poor communes and competition for favourable loans may have been greater. The study found that the programme had positive impacts on borrowers' income and helped reduce poverty. Quach and Mullineux (2007) used the 1993 and 1998 VHLSS's to investigate the impact of formal and informal credit on household expenditure. The instrument for household credit was available credit at the village and commune levels. The study found that credit helped increase household expenditure.

Although the instruments in the above studies were strongly correlated with endogenous variables, they might not be excluded in the outcome equations. Finding a valid instrument for a project is very challenging in impact evaluations, as well as empirical studies in social science.

Randomisation methods

Interest in experimental impact evaluation has increased. However, experimental designs that contain randomised elements have rarely been implemented in Viet Nam for two reasons. Firstly, project owners and researchers are still not familiar with randomisation in impact evaluation and pay them little or no attention. Many people think that conducting baseline and endline surveys is enough for impact evaluation. Secondly, randomisation means exclusion of some eligible people and policy makers will be criticised if they cannot explain why they are not allowed to participate. Arguments to phase the project, such as limited funding or capacity, are not easily defended.

Randomisation was initially planned for several interventions but was eventually rejected. For example, an M&E study that proposed an experimental design in the M&E system for the Poor Communes Livelihoods and Infrastructure Programme (P-CLIP).⁸

⁸ Based on the World Bank's on-going support for NMPRP and the Community Based Rural Infrastructure Project, the Ministry of Planning and Investment (MPI) invited the Bank to consider support for a follow-on operation to help finance and add value to the NTPPRs, which were being re-designed in 2006–2010. The proposed operation was referred to as P-CLIP.

The main objectives of P-CLIP were to reduce poverty and foster secure and sustainable livelihoods for those living in the country's poorest and most disadvantaged communes. The programme covered regions with the highest poverty, including the Northern Mountains, North-Central Coast, Central Highlands, and Mekong Delta. A British company, ITAD, conducted the M&E design (ITAD 2006), and suggested several ways to randomise programme components. However, the government did not approve or implement these experimental designs.

Another example is a cash transfer project for the poor with an ODA loan from the World Bank. The project, designed in 2010, would provide cash to poor households with children under age 16 in four provinces in 2014. In the initial plan, only a randomly selected number of districts from the project provinces were covered. However, the government did not support randomisation and in the end the project covered all of the districts in the provinces.

Perhaps an exceptional case of a well-designed randomised control trial in Viet Nam is the impact evaluation of a large-scale behaviour change campaign on hand washing with soap (Chase and Do 2012). The project randomly selected communes in three provinces for the project. The communes were exposed to an information campaign through the media and interpersonal communication activities during January and October 2010. The media campaign consisted of television spots on national and regional channels. As a result, there was no control group for the media campaign component, and the study could not evaluate the impact of this component. The interpersonal communication activities focused on mothers of children under the age of five, grandparents, and women aged 18–49. The Viet Nam Women's Union, health workers and teachers in communities carried out promotional activities, which included meetings and information dissemination. The study found that the campaign had no effect on behaviour.

Conclusions

The main objective of an impact evaluation is to assess the extent to which an intervention has changed outcomes for beneficiaries. The main issue in impact evaluations is missing data. We cannot observe beneficiaries in two states – participating and not participating – at the same time.

Unless the intervention is randomised, we cannot predict outcome data of the participants in the absence of the intervention by outcome data of the non-participants. Beneficiaries are selected based on their decisions and those of the intervention administrators. Different methods in impact evaluation rely on different assumptions on the relation between the outcome process and the intervention selection process to

estimate the counterfactuals. The selection of a particular method to evaluate the impact of a specific intervention depends mainly on the available budget and data sources.

In Viet Nam, quantitative impact evaluation was introduced in the early 2000s and has received increasing attention from international agencies and researchers. Most foreign-funded development projects contain an M&E component. International agencies, especially the World Bank and UNDP, play an important role in introducing impact evaluation into Viet Nam by organising impact evaluation training courses for local researchers and policymakers, and requiring an impact evaluation component in development projects.

State-funded projects often do not have an impact evaluation component. However, international organisations often fund studies on impact evaluations of State-funded projects. The design process of a project or a policy can involve researchers from government organisations and independent consultants, who are often hired from technical assistance projects funded by international agencies.

A difficulty in the impact evaluation of development projects in Viet Nam is the complexity and overlap of projects, which have often been designed as packages of supports with many sub-components. In addition, a large number of households, communes, districts, provinces maybe participating in similar projects at the same time. Finding a clean control group for a treatment group is not easy. Another difficulty is political involvement in beneficiary selection, which makes the project selection process unobservable. Randomisation for impact evaluation is also hard to implement.

For most development projects, especially projects started before 2005, although M&E systems may have been designed, no clear design for quantitative impact evaluation was included. Impact evaluation has often been conducted after the project's completion and without any preparation for it at the beginning. As a result, the selection process cannot be observed. In addition, there are no baseline surveys or they have not been well designed for impact evaluation.

Without baseline surveys and a full understanding of selection process, most impact evaluation studies in Viet Nam rely on qualitative surveys after the project's completion. These surveys collect data on beneficiaries' perceptions of project impacts. The surveys may also collect current and retrospective data to examine changes in beneficiaries' welfare. Impact evaluations also rely on qualitative assessment techniques and case studies.

Although quantitative impact evaluations of specific interventions are not often conducted, there have been a large number of academic studies on quantitative impact evaluation of large-scale programmes, such as social protection, micro-credit and health insurance programmes. Independent researchers conducted these studies using the available data sets. The most widely used are the VHLSS and household surveys, which were collected during 1990s and 2000s. Popular impact evaluation methods used in these

studies were propensity score matching, instrumental variable regression and panel data estimators such as difference-in-differences and fixed-effects.

Impact evaluation is very costly, but it is not necessary to measure the causal effect of every intervention. If policy makers and project owners are interested in the causal effect of a project, well-designed impact evaluations should be carried out from the beginning and an adequate budget should be set aside to ensure their implementation.

Quantitative impact evaluation should be understood as a continuous process at the project's design stage. Control and treatment groups should be designated before a project's implementation and tracked so that the selection process and problems of attrition and substitution can be observed. Randomisation elements may be integrated into the project to increase the internal validity of the impact evaluation. Finally, baseline and post-project surveys should be conducted in similar ways using the same survey instruments.

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