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Industrialization and poverty eradication in Vietnam

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DECLARATION

I, Hau Thi Bich Duong, declare that this thesis, submitted in fulfilment of the requirements for the award of Doctor of Philosophy in the Faculty of Business, University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged. The document has not been submitted for qualifications at any other institution.

Hau Thi Bich Duong
4 September, 2016

ABSTRACT

The alleviation of poverty in society is an imperative of governments and an influence on economies around the world. Economic growth has for many decades been believed to be a placatory instrument but reliance on economic development does not necessarily yield optimum results. Hence, poverty reduction has also been a fascination for researchers who seek to target specific questions thus contributing to the social welfare of defined populations. These cumulative efforts of researchers are intended to initiate change in government policies thus transforming the world into the way we would like it to be.

This thesis is dedicated to answering a set of such questions by presenting a quantitative assessment of industry related variables in Vietnam. The study proceeds by integrating conceptual and empirical literature relating to the topic of investigation. The topic of poverty has attracted significant attention and has therefore been studied extensively. Prominent contributors such as economist Amartyr Sen and the World Bank institution are drawn upon to present a concise definition of poverty. Poverty lines are then presented as a mechanism used to initiate quantitative assessments of poverty. This concept is delineated in the context of Vietnam. International and Vietnamese empirical studies are reviewed and a background to Vietnam's economic reform process is presented. Together, these initial steps form a platform from which the study emanates.

The thesis then aims to examine the relationship between poverty reduction and the manufacturing sector in Vietnam using household-level and provincial-level data obtained from reliable Vietnamese sources. At the household level, cross-section and panel data models are used to investigate the empirical relationship between the percentage of household members who are employed in the manufacturing sector and household per capita income and household per capita expenditure. Probit models are used to investigate the empirical relationship between the percentage of household members who are employed in the manufacturing sector and a household's propensity to fall into poverty. The fraction of household members working in manufacturing sector is found to be positively associated with household per capita income and household per capita expenditure. This study also finds that a household's probability

of being in poverty is strongly and inversely related to the fraction of that household's members working in the manufacturing sector.

At the provincial level, the spatial relationship between poverty and the manufacturing sector is econometrically investigated by estimating cross-section models, fixed effect models as well as spatial lag and spatial error models. The results show that there is a spatial relationship between poverty rates among neighbouring provinces. Furthermore, due to spatial spillovers, that the relationship between employment in manufacturing and poverty reduction is not straighforward. Policymakers need to take into account locational and connectivity issues to ensure that manufacturing activities can contribute effectively towards poverty reduction.

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LIST OF ABBREVIATIONS

ADB	Asian Development Bank
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
EEC	European Economic Community
ES	Enterprise Surveys
ESDA	Explanatory Spatial Data Analysis
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GFC	Global Financial Crisis
GNI	Gross National Income
GSO	General Statistics Office
GSO-WB	General Statistics Office and World Bank
HDI	Human Development Index
IMF	International Monetary Fund
MOLISA	Ministry of Labour – Invalids and Social Affairs
NCP	National Census on Poverty
OLS	Ordinary Least Squares
PPP	Purchasing Power Parity
SEDP	Socio-Economic Development Program
SEM	Spatial Error Model
SLM	Spatial Lag Model
SOE	State Owned Enterprise
TFP	Total Factor Productivity
TPP	Trans-Pacific Partnership
TVET	Technical-Vocational Education and Training
UNIDO	United Nations Industrial Development Organisation
USAID	United States Agency for International Development

USD	United States Dollar
VA	Value Added
VASS	Vietnam Academy of Social Sciences
VCCI	Vietnam Chamber of Commerce and Industry
VHLSS	Vietnam Household Living Standards Survey
VLSS	Vietnam Living Standards Survey
VND	Vietnam Dong
WTO	World Trade Organisation

CHAPTER 1 INTRODUCTION

1.1 Background to the Research

A key econonomic issue in modern societies is poverty - the deprivation of basic human needs such as food, shelter, and education. In today's world it is unfortunate that many individuals and households still languish without their basic needs being met. Satisfaction of these basic needs is regarded by most countries and our largest economic institutions as an imperative to raising living standards. All nations must address the issue of poverty at some level, particularly because, as a country develops economically, so too will the desires of its citizens.

Vietnam is a lower-middle income country which has made significant progress in eradicating poverty. Though Vietnam's economic position is not currently regarded as lofty by world standards, it is nonetheless remarkable because of the way and speed with which it was transformed from a centrally planned low-income economy to a market-oriented middle-income economy. Vietnam's dramatic transformation began in 1986 when it embarked on an economic reform program known as *Doi Moi*. This program, it is argued, was the primary reason for the country's speedy economic development (Beresford, 2008). Its GDP growth since 1986 has been impressive when compared to neighbouring countries and it is now a member of various regional and international groups such as the Association of Southeast Asian Nations (ASEAN), Asia-Pacific Economic Cooperation (APEC) and the World Trade Organization (WTO). These achievements have allowed the nation to augment its citizens' wellbeing but more must be done, particularly because recent observations indicate that poverty reduction in Vietnam has been slowing down.

The next phase of Vietnam's economic development has already been laid out by the government's Socio-Economic Development Strategy (SEDP) for the 2011 – 2020 period. This strategic plan outlines Vietnam's aspirations to become a modern, industrialised country by 2035 and this goal is laudable. The term 'industrialisation' is generally defined to cover four main industrial sub sectors – mining, manufacturing, construction and utilities – but is used more narrowly in this thesis. The focus in this thesis is on manufacturing, defined as the "… activity where inputs are transformed into different forms of product, so that value is created at different stages in the production process" (Weiss, 2011, p 1). Practically, by looking at country data, and

discursively, by examining academic literature, the progress of the manufacturing sector has proxied well for overall industrial progress. The two terms are therefore considered synonymous and are used interchangeably throughout this thesis. This also follows from an observed tendency in the literature on development economics (UNIDO, 2013; Weiss, 2011).

Broadly speaking, industrialisation has been a positive driver of economic development throughout history, hence why Vietnam's long-term strategic plan may be deemed praiseworthy. Nevertheless, the link between such economic development and the improvement of people's well-being is tenuous. To date there remains an unclear theoretical relationship, as well as mixed empirical evidence, between the two issues. Pertinent questions relating to Vietnam's strategy for industrialisation and poverty reduction must therefore be addressed. The complexity of issues such as this means that there is much research that remains to be done. Complex problems require in-depth investigations, and we must strive to understand the multiplicity of influential factors.

This study seeks to investigate influential factors involved in the relationship between the manufacturing sector and poverty reduction. To date this relationship remains unclear. "Trickle-down" economic theory, for example, represents a common attempt to disseminate the link between industrialisation and poverty reduction. It stipulates that tax cuts for wealthy investors will result in industrial expansion and spur overall economic growth which, over time, will replace and eventually surpass any lost government revenue from said taxes. Citizens, it is argued, will then benefit from higher incomes and lower priced goods and services in the medium to long term. However, efforts to achieve this trickle-down effect have not proven to be achievable. One study, exploring the time period 1979 – 2005, has shown that incomes in the US economy of the lower quintile rose by six percent as a result of such policy. This sounds reasonable but when compared to the eighty percenty increase of those in the top quintile it appears that wealth had trickled up, not down (Greenhouse, 2008).

The literature review in Chapter 2 delves more deeply into the empirical evidence and theoretical approaches. It is shown that ambiguity exists in empirical research and also that various theoretical approaches may contain disparate explanations. However, some common threads are noted. One important thread noted in Chapter 2 literature review is that manufacturing has the potential to play a

significant role in reducing poverty across a variety of international and Vietnamese contexts. This is particularly relevant in the context of an export oriented manufacturing sector whose effects cascade into the creation of higher incomes for the poor. Vietnam has been engaging in export oriented policy but recently there has been a downturn in Vietnamese manufacturing and this may be deemed worrisome. A robust manufacturing based trade environment is deemed to be a contributing factor to poverty reduction in developing economies (World Bank 2001)[1]. This observation provides the motivation for this research.

1.2 Research Objectives and Research Questions

The study aims to analyse the relationship between industrialization and poverty alleviation in Vietnam. The main goals of this study are to:

(i) evaluate the status of poverty in Vietnam

(ii) identify the relationship between the development of the manufacturing sector and poverty eradication at household level and provincial level; and

The specific research questions for this study on industrialisation and poverty alleviation are as follows:

1) What is the relationship between poverty and the manufacturing sector in Vietnam?
2) Are there differences in the relationship between poverty and the manufacturing sector in rural and urban areas?
3) What is the relationship between the manufacturing sector and poverty at the provincial level?
4) Are there any indirect or induced effects from neighbouring provinces on poverty?

1.3 Justifications for the Research

Poverty has long been an issue of the greatest concern in development economics (Lipton & Ravallion, 1995). The study of poverty begins with the measurement of poverty. Haughton and Khandker (2009) identified four reasons for

[1] Even though the focus of this thesis is manufacturing, it should be noted that the services sector has become increasingly important and thus is also important when examining poverty reduction.

the interest in measuring poverty. Firstly, the measurement of poverty is a necessary way to keep poor people on the world's political agenda with statistically visible information because what gets measured gets attention. Secondly, the quantitative identification of impoverished people allows domestic and international organisations and institutions to target those most in need and intervene where appropriate. Thirdly, measuring poverty allows economists, policy makers and interested parties to predict the effects of, and then evaluate, policies and programs designed to help poor people. Fourthly, quantitative measurements assist in evaluating the effectiveness of institutions whose goal is to help poor people.

These four reasons provide justifications for the measurement of poverty. Further analyses on poverty are facilitated by such measurements. The World Bank (2001) indicates that analyses are important first steps in formulating appropriate strategies for developing nations. Such strategies must consider fairness and human dignity as well as economic growth to be considered morally sound; hence, analyses that take into account poverty are of utmost importance. Once formulated, the aim of these analyses is to inform the process of identifying appropriate objectives by focusing on a specific area. Identification of relevant delivery mechanisms and use of performance indicators will assist the researcher who seeks to enhance national strategies.

World leaders have agreed that addressing poverty at a strategic and national level is supremely important, and their commitment has solidified since the establishment of the Millennium Development Goals in the year 2000. Ostensibly profound achievements have followed from this commitment. According to the World Bank's poverty and equity databases, extreme poverty rates declined considerably between the years 1989 and 2012. Nonetheless, poverty remains prevalent throughout the world. There are also disparate results in terms of poverty alleviation in recent decades from region to region. The successes of regions such as East Asia, the Pacific and Europe, for example, can be contrasted with lagging regions such as and Central Asia and Sub-Saharan Africa. The complexity of the issue is further compounded because poverty reduction does not always run parallel to economic growth – the relationship between economic growth and poverty may not be as simple as the ideas that growth reduces poverty. Therefore, the issue of sustainable poverty reduction has

been an interesting subject for research and indepth analyses, such as that contained within this thesis, that seek to tackle the problem in the long term are necessary.

The research conducted in this thesis focuses on manufacturing's role in reducing poverty, and the topic is relevant particularly for developing countries in Asia. Lavopa and Szirmai (2012) place similar emphasis on the role of the manufacturing sector in poverty alleviation. They conclude that employment and income generated from the manufacturing sector can reduce poverty significantly and directly, hence they describe these as 'direct impacts'. These direct impacts constitute one of three main channels that substantiate the link between the growth of the manufacturing sector and poverty alleviation.

Vietnam presents itself as an interesting case for investigation. There has been remarkable progress in Vietnam with regards to the reduction of extreme poverty and the promotion of shared prosperity over the last two decades since *Doi Moi*. Over that time, the nation experienced high and sustained rates of economic growth, driven by a series of market-oriented reforms. This growth has been accompanied by pronounced structural changes at the aggregate level. In terms of GDP, from 2010-2013, the agriculture sector's share of GDP fell to half of what it was in the early 1990s. The industrial sector, which includes manufacturing and construction, has been the most rapidly growing and dynamic sector in Vietnam, and within this sector, manufacturing accounts for 18.88 percent of the 41.24 percent share of GDP. The services sector has expanded more modestly from levels witnessed in the early 1990s.

Accompanying this shift is the change in the labour force's structure. The agricultural sector accounted for more than two thirds of those employed in the period 1986-1990, but the proportion of agricultural workers dropped steadily to about 46 percent by 2013. Corresponding to this downward trend is an increase in the proportion of workers employed in the industrial sector. In 1990, the number of labourers working in the industrial sector accounted for less than 14 percent of the total labour force, but in 2013 this proportion had increased to 32 percent. That means that each year the additional one percentage point of labourers that moved out of the agricultural sector was almost entirely absorbed by the industrial sector. The percentage of labourers working in the manufacturing sector increased from 11.8 percent in 2005 to 14 percent in 2013.

As noted above, Vietnam has made impressive achievements in poverty reduction in the relatively short period of time since *Doi Moi* and this has been accompanied by significant development of the manufacturing sector in terms of its share of GDP and the labour force's structure. These advancements are tangible but there has been relatively little research dedicated to understanding these positive outcomes. Attention has focused primarily on the relationship between economic growth and poverty reduction, and between sectoral growth and poverty reduction at the macro level. Unfortunately, there is a paucity of studies investigating the spatial aspects of poverty, especially on the relationship between manufacturing activities and poverty rates at the provincial level. Thus, there is a need to undertake further research on spatial aspects of the impact of industrialization on poverty alleviation in Vietnam. This is essential for designing effective government policies for poverty reduction. In addition, there is no empirical study that investigates the relationship between the manufacturing sector, household expenditure, household income and poverty status at the household level through the proportion of household members working in the manufacturing sector.

The caveat mentioned above must be addressed. Kozel (2014) acknowledges the great advancements that Vietnam has made but nonetheless notes that many aspects of poverty in Vietnam have been carried over from the 1990s. Individuals still have low education and skill levels in Vietnam. There is a dependence on subsistence agriculture in many parts of the country, particularly for those people who are physically and socially isolated and who dwell in regions located away from built up metropolitan centres like Ho Chi Minh City and Hanoi. There is also significant disadvantage that can be linked to certain ethnicities in Vietnam. Kozel (2014) finds that the 53 smallest ethnic groups in Vietnam constitute 15 percent of the population but account for approximately half of all poor people in Vietnam. Specifically, these minorities constitute 47 percent of total poor in 2010 up from 28 percent in 1998 and 68 percent of extreme poor in 2010 up from 43 percent in 1998. These statistics are attributable to the fact that many of these ethnic minority groups reside in areas far from the opportunities that industry can provide. Indeed, Kozel (2014) notes that those who escaped poverty were able to do so by gaining better education and skills, migrating to urbanised areas and moving into manufacturing and services roles.

Overall however, the average annual povety reduction in recent years has been decreasing. It has decreased by 2.01 percentage points in three years (the percentage of poor households decreased by 2.24 percentage points in 2011, by 2.16 percentage points in 2012, and by 1.80 percentage points in 2013). Despite these positive results, the statistics show that poverty reduction has been only modest in recent years. Moreover, government policies related to poverty alleviation have been perceived to be less effective recently and this must be reversed. Studies such as the present one will assist in this endeavour.

1.4 Contribution and Significance of the Research

With the objective and the justification of the research presented above, this study is expected to make significant contributions in several areas.

It will contribute to understanding the role of the manufacturing sector and poverty in the existing literature, especially on manufacturing and poverty alleviation, both in the world and in Vietnam in particular.

It will provide empirical analyses at household level in the form of statistical correlations between variables such as the proportion of household members working in the manufacturing sector and a households' per capita income, households' per capita expenditure; households' income poverty propensity, and the ability of households to escape income poverty. Empirical analyses at provincial level are also carried out involving the correlations between the percentage of labour rate working in the manufacturing sector and the poverty rate at the provincial level.

In addition, this study contributes to an understanding of the key factors influencing employment in the manufacturing sector in the context of Vietnam.

The findings from this study will provide insights for policy makers in Vietnam for better understanding of the relationship between industrialisation and poverty eradication at the household and provincial levels.

1.5 Methodology and Data

To achieve the above objectives, this study will adhere to a quantitative methodological framework. Hence, the researcher will attempt to observe phenomena independently of the context within which they reside and abstract these observations with numbers. Context is only considered so that appropriate variables may be selected

and then analysed. The framework presented here includes an initial conceptual and contextual examination and can be described in several steps.

Firstly, the study reviews the country background to provide the context of the study. This will allow the researcher to identify relevant variables to be used in subsequent steps.

Second, it reviews the literature to understand more about poverty issues, and the role of manufacturing and poverty in economic development. This review is essential as it provides additional background and understanding about definitions, concepts and measurement of poverty in developed and developing economies.

Third, it investigates empirical studies relating to poverty and its measurement, especially the correlation between manufacturing and poverty. The investigations cover different approaches to poverty at micro and macro levels. It then suggests an econometric approach based on an income or expenditure function, and a poverty function, to examime poverty and evaluate the impacts of different variables on poverty at household level. At provincial level, the analysis is based on spatial regression.

Fourth, the correlation between manufacturing and poverty in Vietnam is quantitatively analysed by employing a series of econometric analyses. The econometric models used will range from micro (household) using household level data from five surveys in the 2004- 2012 period to macro-level models with spatial dimensions based on aggregated data at the provincial level using household surveys and enterprise surveys (ES) in the 2004-2012 period.

Fifth, results from the empirical analysis are interpreted and discussed. Results from this research are compared with results from other studies about poverty in Vietnam and other countries. Based on the empirical results, policy recommendations are developed to improve living standards of poor households.

The econometric techniques depicted in step four above are well established and will align this study with others that have examined poverty. OLS, Panel and Probit approaches are used to unveil relationships between variables. The data set is also established as a reliable source and several other studies have used it. This methodological consistency with other studies is valuable to ensure that the researcher does make spurious conclusions.

Nonetheless, the chosen set of abstracted variables will differentiate this study and this is important as it allows the researcher to make an original contribution. Furthermore, this study uses data from the Vietnam Household Living Standards Surveys (VHLSS) from 2004 to 2012 conducted by GSO. This research is the first to use the updated 2012 data set to analyse manufacturing and poverty at household level.

A brief look at methodological similarities will demonstrate specifically how this study differs from others in a similar context.

Existing quantitative studies about poverty in Vietnam have applied a poverty function or a welfare function and used the VHLSSs from 1998 to 2008 to examine factors influencing household income or expenditure and poverty status at the household level (Giang & Pfau, 2009; Bui et al. 2014; Hoang et al. 2014). For example, Hoang et al. (2014) used a probit model to investigate the effects of non-farm activity on household expenditure and poverty reduction in rural areas using the VHLSS from 2002-2008. Bui et al. (2014) utilised the VHLSS 2008 and employed the standard consumption and income regression to examine the effect of natural shocks on household income and consumption. However, they do not fully discuss the benefits of welfare resulting specifically from the manufacturing sector and do not consider utilising specific variables relating to the manufacturing sector to capture the effect of industrialization on poverty in Vietnam. Furthermore, these studies do not use updated data until 2012.

In addition, spatial factors are not considered in examining determinants of poverty in the existing quantitative studies. Spatial factors are important, however, for designing socio-economic strategies for localities or regions, especially at the provincial level.

Like the existing quantitative studies about poverty in Vietnam, this study utilises popular approaches such as OLS estimation, Fixed effects and Probit models to examine the relationship between manufacturing and poverty at the household level. Unlike many however, the current study uses data from the VHLSS from 2004 to 2012 conducted by GSO. This research is the first to use the updated data until 2012 to analyse manufacturing and poverty at household level. At provincial level, this study also uses OLS estimations and Fixed effects models in oder to estimate the relationship between the manufacturing sector and poverty rate, but this is the first study that uses matching data from VHLSSs and ESs from the years 2004-2012, which are conducted

by GSO. More specially, it uses a Spatial lag model (SLM) and Spatial error model (SEM) to explore whether there are any spillover effects in terms of manufacturing employment from neighbouring provinces on poverty reduction.

1.6 Organisation of Thesis

This study is organised and presented in seven chapters which are briefly outlined below. Chapter 2 provides a literature review on the nature of poverty, factors impacting on poverty reduction, and the relationship between industrialisation and poverty. Chapter 3 provides an overview on economic development, poverty in Vietnam from 1986 to 2012. Chapter 4 provides a descriptive analysis of poverty levels in Vietnam at national level. Chapter 5 is the first of two analytical chapters in the thesis. It focuses on understanding the relationship between the manufacturing sector and the poor at the household level. Chapter 6 is the second analytical chapter. It focuses on spatial characteristics and understanding the relationship between the manufacturing sector and poverty rates at the province level. Chapter 7 presents conclusion, limitations, policy implications and recommendations for future study.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

Poverty is a core issue for many developing economies (Lipton & Ravallion, 1995). Discovering ways to address poverty can be difficult but recent experiences have shed light on potential ways forward. For many countries, industrial development has contributed to economic growth and created many new employment opportunities. The current study will argue that successful and appropriately staged industrialisation, with its associated growth benefits, can be strategically leveraged to accelerate poverty reduction and enhance the well-being of people in Vietnam. In particular, poverty can be alleviated by generating higher productivity in the industrial sector, through structural shifts in employment (creation of new jobs), through the creation of more well-paid jobs and by benefits associated with knowledge spillovers between industries. The issue is significant and complex and the relationship between industrialization, employment, poverty has therefore attracted the attention of dedicated researchers and policy makers. Researchers have expanded the conceptual and empirical foundations for studying poverty. Many have studied the impact of industrialization on the economy (economies) as a whole.

The aims of this chapter are twofold. Firstly, it will survey the relevant literature regarding poverty and the manufacturing sector and present an analytical and empirically supported case for industrialisation in Vietnam with a focus on manufacturing. This analysis will follow from a detailed explanation of the concepts and measurement issues involved. Secondly, the methodological and econometric framework will be elucidated and data sources will be described.

There are four additional sections in this chapter. Section 2.2 will focus on the concepts and definitions of poverty. Section 2.3 will discuss the measurement of poverty. Section 2.4 will review studies on the relationship between the manufacturing sector, household's income or income, and poverty at both micro and macro levels. This section will also review the theoretical insights into economic development, structural change, and poverty. Section 2.5 will consolidate the literature review and discuss existing research gaps.

2.2 Concepts and Definitions of Poverty

The study of poverty begins with an understanding of the concept and definition of poverty. Researchers on poverty have expanded the knowledge base on these topics over the years.

2.2.1 Concepts of Poverty

As a concept, poverty can difficult to define since there are various ways to approach it. The conventional view of poverty places emphasis on the deprivation of income or consumption. This is a reasonable view because wealth adequately reflects an individual's social circumstances and poverty depicts low wealth. Nonetheless, setting thresholds strictly in these terms may not sufficiently address the issue because one's relative deprivation may be influenced by other circumstances. For instance, an individual may be paid a salary but have it taken away forcefully week to week and therefore may be unable to buy food. Or an individual might not earn a salary but might possess land on which to grow food. In either case, one's deprivation of sustenance may not depend on income. Moreover, poverty strikes hardest when the circumstances of low income earners do not allow them to improve their standard of living (Sen, 1983). Income may therefore seem an arbitrary measure but, as will be seen in the next section, it is a less unreasonable estimate of poverty than may be expected and there are advantages to using it.

In a bid to create a more holistic definition of poverty, the World Bank's *World Development Report 1990,* which focused on poverty, defined poverty as the incapacity to attain a minimal standard of living and perceived poverty as a multidimensional concept which includes deprivation (World Bank, 1990). Ten years later, the World Bank's World Development Report 2001(with the theme "Attacking Poverty") used a definition of poverty with a broadened scope for the term 'deprivation' that includes aspects such as material deprivation (starvation, lack of shelter and clothing, illness…); low level of education and health care; institutional discrimination; impediments by social barriers and norms; and vulnerability (World Bank, 2001). All of these deficiencies can be referred to as 'capability deficiencies' (United Nations Statistics Division, 2005).

The European Union's 'official' definition of poverty also acknowledges that non-monetary deficiencies can contribute to poverty. In 1984, the European

Commission succinctly defined poor people as, "persons, families and groups of persons whose resources (material, cultural and social) are so limited as to exclude them from the minimum acceptable way of life in the Member State in which they live" (EEC, 1985, cited in Spicker et al, 2007).

In Vietnam, the government acknowledges the general definition of poverty that was proposed in the Asian-Pacific Conference on poverty reduction organized in Thailand on September 1993. The proposed definition states:

> "Poverty is a situation in which a proportion of the population does not enjoy the satisfaction of basic human needs that have been recognized by the society depending on the level of economic and social development and local customs and practices" (The Socialist Republic of Vietnam, 2003, p. 17).

The above definition suffices the needs of the present study and will be referred to throughout. It is regarded as apt not only because it is the definition used by the Vietnamese government but also because it consolidates econometric and social dimensions elegantly. There are two noteworthy points. Firstly, the definition recognises that poverty is a binary state. Either one is poor or one is not. This addresses a primary methodological concern in that it allows one to measure poverty; it allows the economist to concisely define what they are measuring and advance the econometric analysis. Secondly, the definition acknowledges that poverty has a contextual element and that one's 'satisfaction of basic human needs' can depend on one's relative circumstances. Those relative circumstances, involving personal, spatial and temporal aspects, represent the theoretical range of the present study; 'who' is involved and 'where' and 'when' the study took place are regarded as contextual limitations and therefore constrain the generalisability of core theoretical propositions made by the economist (Whetten, 1989).

When juxtaposed, these two points may seem contradictory but they are not. The former states that an individual is either poor or not poor. The latter simply indicates that poverty measurement can be problematic.

In its efforts to tackle poverty and social exclusion, the first *Opportunity For All Report* (The Secretary of State for Social Security, 1999) weighed in on the meaning of poverty and poverty measurement and similarly acknowledged the

dynamic nature of poverty in the world. In so doing the report noted that income was an important aspect of poverty reduction but it also pointed out other aspects, including the environment. The report discussed some of the problems of poverty and provided a definition as follows:

> "Poverty affects different aspects of people's lives, existing when people are denied opportunities to work, to learn, to live healthy and fulfilling lives, and to live out their retirement years in security. Lack of income, access to good quality health, education and housing and the quality of the local environment all affect people's well-being. Our view of poverty covers all these aspects." (The Secretary of State for Social Security, 1999, p. 23)

The report continues:

> "Low income is an important aspect of poverty. But short spells of low income may not damage an individual's well-being or their prospects in the longer term... The problem is not restricted to limited income. Poverty exists when those on low income lack the opportunities to improve their position... without an improvement in opportunity, individuals are unable to take control of their own lives."(The Secretary of State for Social Security, 1999, p. 23)

Consolidating these definitions, poverty can be regarded as present wherever people's income (or expenditure) are comparatively low and/or where people lack the productive resources to be able to improve their situation including the alleviation of capability deficiencies.

It must be noted that the term 'poverty' is often attributed to households and families, not just to an individual. Many studies have examined poverty from the perspective of groups of people instead of just individuals (Townsend, 1973; Hick, 2015; Walker et al, 2014; Arpino & Assve, 2014). The rationale behind this is that many, if not the majority, of household members do not or are unable to earn incomes. This means that a salary of an individual, typically the household head, may have to be split up between remaining household members. Surveys intended for multidimensional analysis at the household level are often designed to take this into account. This is advantageous since there are constraints on the amount and quality of data retrievable. Household surveys, as opposed to individual level surveys, can

alleviate this burden. There is a drawback however since this approach does not tend to recognise or include the contribution of productive non-income earning household members. Furthermore, Vijaya et al (2014) noted that observations made only at the household level can mask the observed gender differences in well-being at the individual level. Nevertheless, multidimensional studies on poverty and poverty reduction have tended to accept this weakness, particularly because the circumstances of the household head or highest income earner are usually comparable and thus serve as a reasonable proxy. Income therefore retains an instrumental or 'absolute' characteristic and is a reasonable indicator.

2.2.2 Poverty Lines

In the previous section, two points were raised in regard to Vietnam's (2003) definition of poverty. Firstly, that poverty is a binary position and secondly that it can be a term that encompasses many aspects and may be difficult to measure. Absolute poverty lines are used to address the first of these points in that they permit the user to effectively count the number of people who are either poor or not poor. In this sense they can be considered a reliable way to estimate poverty and compare results but they may not accurately reflect relative deprivation.

To maintain reliability, absolute poverty lines must use consistently available economic data to define the level below which one is considered poor. Thus income (or expenditure) is most often used since these figures are the most easily obtained. Once set, the poverty line defines the level of expenditure (or income) needed for a household to escape poverty (Haughton & Khandker, 2009). Absolute poverty lines are therefore "anchored in some absolute standard of what households should be able to count on in order to meet their basic needs" (Grosh et al. 2008, p. 454). Income, in the form of currency, intuitively serves this purpose not only because it can be 'counted', this benefit applies to relative poverty lines too, but also because it can be reduced or 'anchored' to one global standard through application of purchasing power parity (PPP) – currently this standard is the US dollar.

Absolute poverty lines are used for both national and international purposes and can be considered independently and in conjunction with relative poverty lines, however relative poverty lines are usually used when a country is unable to reliably estimate a set of common characteristics such as income or expenditure (Grosh et al.

2008). A relative poverty line can be established in relation to a country's mean or median distribution of income, but this type has been described as a "special case" (Ravallion, 2001, p6). Rather, relative poverty lines typically refer to those that rise in relation to the population's average expenditure (Ravallion, 2001). This contrasts with absolute poverty lines which seek a static threshold (adjusted only for inflation). Some European middle income countries primarily utilise relative poverty lines but most use absolute poverty lines since the fixed threshold allows the country to compare poverty across regions and time.

An absolute poverty line is "fixed in terms of the standards indicator being used and fixed over the entire domain of the poverty comparison" (Ravallion, 1992, p. 25). In the other words, an absolute poverty line is set so that it represents the same purchasing power year after year (allowing for inflation). The World Bank recently updated one such poverty line in 2008, the international poverty line, which it raised from $1 per day to $1.25, largely due to inflation. The year 2008 therefore represents a starting point for the new 'domain' of comparison. Poverty rates based on the $1 per day absolute poverty line are not comparable to rates based on the $1.25 line. The international poverty line was reviewed even more recently and is now set at $1.90 as of October 2015. The international poverty line is an arbitrary baseline but is particularly useful for international comparisons. It is also valuable simply because it easy to use and can be applied across so many countries. The present study does not use this particular threshold but will refer to again in later chapters.

The international poverty line has advantages, but countries will usually set their own absolute poverty lines because every society has its own views about what constitutes its minimum standard of living. In Vietnam, the government has established absolute poverty lines which have been used for many decades. The Vietnamese government has benefited from assistance from the World Bank in setting these thresholds. These country specific poverty lines will be investigated more closely in Chapter 3.

Absolute thresholds, whilst imperfect, allow the user to divorce external influences, such as scale or geography, from assessments of poverty. This allows users to make precise poverty profiles of a country. Absolute poverty lines are therefore vital for judging the effectiveness of antipoverty policies and specific government projects over time. Furthermore, by focusing on a designated poor segment of a country at a

given time, researchers can design targeted programs and evaluate their success. Good projects can be leveraged or investigated further whilst others can be abandoned.

When using absolute indicators, good projects will be those that reduce absolute poverty. Since absolute poverty is often measured in terms of income, a positive outcome is one that favourably impacts the income of a targeted segment. This resolution in absolute terms can sidestep the problem of relative deprivation because increasing one's income can usually improve that individual's well-being, and the well-being of those around, regardless of other circumstances.

2.3 Measuring Poverty

The previous section established definitions for the relevant terms and concepts used in this study. These concepts will be applied in the proceeding quantitative endeavour and therefore must be metrically delineated as well as defined. This section examines the issues, processes and more definitions associated with measuring the concepts of poverty. A closer, contextual examination is presented in Chapter 3 regarding the measurement of poverty in Vietnam specifically.

It was previously acknowledged that one's definition of poverty depends to a large extent on the norms of the society within which one dwells. Any attempt to measure poverty must consider these factors and will lend respective weight to them. The presence of this contextual dilemma for defining poverty has generated various data gathering and measurement methods. This sub-section delineates the terms and processes associated with poverty measurement. It then examines three measures of poverty which are used for different purposes: the head count index, the poverty gap index and the squared poverty gap index. As will be seen, each method has been tailored for specific purposes, but each follows the same basic path.

Nallari and Griffith (2011, p. 17) outline three steps for measuring poverty: (i) Define an indicator of well being; (ii) Establish a poverty line based on that indicator to distinguish between poor and non-poor; (iii) Generate a summary statistic showing the distribution of this well-being indicator. The nuances of poverty measurement are mostly contained within the first of these three steps. The World Bank (2004, p. 5) notes that the selection of indicators is a "political process, which needs to be undertaken in light of existing constraints".

The term ‘constraints’ here may apply to resource capabilities, but it also refers to the intent of the policy maker or researcher and the framework[2] within which he or she operates. These constraints manifest in the definitions and analysis of goals, indicators and targets. According to the *Poverty Monitoring Guidance Note 1 Selecting Indicators* (World Bank, 2004), a *goal* encompasses a set of objectives which are deemed desirable by the relevant social group. The word ‘desirable’ here demonstrates the reason for the political process mentioned above since that which is ‘desirable’ is contestable. Goals are often expressed qualitatively in ways which are easily communicable to the public such as “improve national health” or “reduce poverty”. *Indicators* are variables that are used to measure progress towards the stated goals. Hospital admissions provide an indication of national health whilst the number of people on low income is an indication of poverty. *Targets* are the quantitative abstractions of stated goals and are conveyed in terms such as, “reduce hospital admissions by twenty percent” or, “eliminate people who earn less than $1.90 per day”.

The definition of an indicator, step one in Nallari and Griffith’s (2011) study, thus depends on the goal being addressed. But indicators, in and of themselves, are insulated from the politics of goal-setting because they are merely abstractions of progress. So, if it can be shown that the goal setting process is apolitical and/or sound then the establishment of an indicator in the measurement process is simplified and need not be subject to severe contemporary scrutiny (assuming it is relevant). The present study seeks to address the goal of poverty reduction. Clearly then, goal setting in relation to poverty is a political process. Fortunately, the reduction of poverty is accepted as a global imperative and there is no debate about whether the goal is sound.

Progress towards a goal can be broken down into various stages[3]. Analysis at each stage will require a separate indicator. The World Bank (2004) describes the purposes of four types of indicator related to each stage: (i) *Input* indicators are used to depict the amount of a specific variable, financial, physical or otherwise, dedicated to the achievement of a stated goal; (ii) *Output* indicators show the amount of goods and

[2]Here, the term ‘framework’ can be equated with ‘methodology’. This will be examined more closely in Chapter 5. These frameworks exist to ensure analytical capability and consistency and, consequently, are effective means of addressing issues, such as poverty, in society.

[3]The temporal aspect of quantitative studies is acknowledged, but constraints of the present study do not allow for more than a cursory discussion here.

services produced by the inputs and can be thought of as the culmination of an activity, event or process. Input and output indicators are referred to as 'intermediate' indicators because they attempt to measure factors that affect outcomes or impacts; (iii) *Outcome* indicators can be thought of as those that show the end result of previous activities involving inputs and outputs, but these indicators do not actually reflect dimensions of well-being. Rather they convey information about key aspects that contribute to well-being; (iv) *Impact* indicators are used to assess well-being directly and provide information about progress towards stated goals. Outcome and impact indicators are referred to as 'final' indicators because they are used to measure the end effects on an individual's (potential for) well-being. These four types of indicators can be exemplified with reference to poverty (reduction), the topic of the current investigation. In this context, an input indicator might be money used to stimulate job creation. Number of jobs created would then become the output indicator. An outcome indicator would be the number of people additionally employed. The relevant impact indicator would then be the incomes of people in the targeted group.

The poverty line can be established, step two of Nallari and Griffith's (2011) process, once the indicator has been defined. To establish an absolute poverty line one must first decide the level of income below which one is deemed poor. For absolute poverty lines, this threshold remains static for the duration of its use, adjusted only for inflation. In the context of poverty measurement, this second step remains apolitical, however it may be argued that the level of thresholds may be manipulated for political reasons, particularly in regard to the formation of policy and as a way of 'juking the stats'.

According to Nallari and Griffith (2011) step three can now be performed and the summary statistic showing the distribution of the defined indicator can be generated. In the context of poverty, this distribution will indicate the number of people who suffer lack of the basic requirements deemed necessary by society. Observations such as this are estimates of the incidence of poverty and are described by the **head-count index**. Ravallion (1992) mentions that the head count index is popular because it is easily understandable and simple to produce. It distinguishes between poor and non-poor and therefore satisfies the requirements of binary analysis. This allows users to assess current poverty levels and is useful for assessing overall progress towards poverty reduction. But studies into poverty (in comparable countries)

seek to determine not only the level of poverty according to an absolute measure but also the depth and severity of poverty.

The ‘depth’ of poverty in society indicates the extent of deprivation among the poor. In other words, ‘how poor are poor people?’ The head count index provides no indication of extent but only asks, ‘how many poor people are there?’ One statistic does demonstrate extent. This is the **poverty gap index**. This index is defined as the aggregate shortfall of average incomes relative to the poverty line. It therefore shows how far below the poverty line poor people are and it provides an estimate of the amount of resources needed to eliminate poverty in a given social group. This index is a better indication than the head-count index because it provides practical information about the resources needed to eliminate poverty (Haughton & Khanker, 2009)

Another index, the **squared poverty gap ratio**, considers not only the depth of poverty but also attempts to estimate the severity of poverty in a group. ‘Severity’ in this context refers to the distribution of income among poor people and is therefore an indication of inequality amongst that group. As with any income distribution, this index will illuminate those poorest in society. These people typically require the most assistance. Policies applied using this index will therefore tend to be focussed on eliminating extreme poverty.

These three measures of poverty are classed within Foster, Greer and Thorbecke’s (1984) set. For these measures, it is assumed that information is available for an indicator of welfare such as income or expenditure per capita and it is assumed that the poverty line has been established. These types of measures are generated according to the formula (Foster, Greer & Thorbecke, 1984, pp. 761-764) :

$$P_\alpha = \frac{1}{n}\sum_{i=1}^{q}\left[\frac{z - x_i}{z}\right]^\alpha$$

Where x_i is the welfare indicator such as income or expenditure per capita, for poor person i, z is the poverty line, n is the number of people in the sample population, q is the number of poor people, and α can be interpreted as a measure of inequality aversion.

When $\alpha = 0$, the above equation reduces to q/n, the number of poor people in the population divided number of the people in the sample population. This measure is

called the headcount ratio or, when turned into a percentage, the headcount index P0. The ratio varies from 0 when there are no poor in a society to 1 when a whole society is poor.

When $\alpha = 1$, the poverty gap index is produced, which shows the shortfall of the poor's income from the poverty line expressed as an average of all people in the population. This index can be written as:

$$PG = \frac{1}{n}\sum_{i=1}^{q}\left[\frac{Z - X_i}{Z}\right] = I.H$$

H is the above mentioned headcount index, while I is often referred to as the "income gap ratio" and defined as:

$$I = \frac{z - \mu^*}{z}$$

Where μ^* denotes the mean income of the poor. This index shows the ratio of mean depth of poverty to the poverty line. The range of poverty gap index is from 0 to the value of H. If everyone gets rid of poverty, no one is poor, and the P1 index equals 0. If there are poor, and the poor have no income at all, the poverty gap P1 equals the headcount ratio H.

When $\alpha = 2$, the squared poverty gap index which is also called the FGT index P_2 is produced. This index also measures the severity (or intensity) of poverty, and ranges from 0, where there are no poor in a society, to the value of the headcount ratio H, when all of the poor have no income. This index gives more weight to poorer individuals, thus it takes into account income distribution among the poor. However, academic and institutional contributions have generated other, more feasible, ways of measuring income inequality in society.

2.4 Literature Review

The concepts, ideas and measurements identified and delineated above constitute the foundations of this study and can be regarded, broadly, as the topic of investigation. The intent in this thesis is to demonstrate the impact of specific factors on these concepts which will allow for appropriate policy direction based on cogent interpretation.

Early investigations in this study directed attention towards the potential benefits of focusing on manufacturing in Vietnam to reduce poverty. It is necessary to parse other studies conducted in this area and understand how certain factors, variables and constructs are related. Understanding the answers to these 'how' questions will allow the researcher to hone her own research questions and this will be necessary before attempting to explain, through theory, 'why' these relationships exist (Whetten, 1989).

The following review of literature is not comprehensive but allows the researcher to map the issues and, in some cases, causality is implied and generalised. Only material that is directly relevant is considered and critiqued. Thus the literature review will help to elucidate what factors are involved and how they interact.

This section is structured as follows. Sub-section 2.4.1 discusses international studies and Vietnamese studies related to poverty and the manufacturing sector at household level. This sub-section focuses mainly on measements of poverty through per capita household income, per capita household expenditure and household poverty status. Sub-section 2.4.2 focuses on international studies and Vietnamese studies related to manufacturing sector and poverty at provincial level. In sub-section 2.4.3 includes the theoretical insights into economic growth, structural change, and poverty.

2.4.1 Studies on Poverty and Manufacturing Sector at the Household Level

a) International Studies

Many of the studies on poverty are aimed at estimating the relationship between pertinent and contextual variables and levels of poverty. It is with these types of studies that the following review of literature is concerned. The literature reviewed in this sub-section is intended to correspond to the analyses conducted in Chapter 5, hence only studies that are concerned with micro level investigations are considered.

At the micro level (household level), Mukherjee and Benson (2003) used the secondary industry occupation variable (household numbers employed in manufacturing sector) to find out one of variables determinated per capita expenditure in Malawi in 1998.

Most poverty studies at household level focus on income or consumption expenditures as material dimensions of individual and household poverty. There is considerable uncertainty as to which of these indicators is a better measure of poverty

(c.f. Atkinson, 1991; Ravallion, 1992; Atkinson et al. 1995). In many empirical applications, the measure of choice in developed countries is income while in developing countries it is consumption (Ravallion, 1992). In this regard, transition societies seem to occupy an intermediate position between developed and developing economies, with many empirical studies making use of both welfare measures (see, e.g., Keane & Prasad (2002) for Poland, Gorodnichenko & Sabirianova Peter (2007) for Ukraine, Gorodnichenko et al. (2010) for Russia).

The adoption of an appropriate model usually depends upon the primary purpose of the study. A common method used to analyse poverty is based on income equation, which postulates that real consumption or income is a function of observed household characteristics. However, dependent variable could be a numerical consumption variable or a defined binary variable. A study following the former method usually attempts to explain the level of expenditure or income per capita; the dependent variable is a function of household, individual and community characteristics. One concern about this approach is its inability to distinguish poor and non-poor households (Minot, 2000). With the latter method, a research that is based on a certain poverty line and per capita expenditure data often investigates the determinants of whether a household is poor or not. The dependent variable, which is also a function of the same characteristics as aforementioned, is binary; therefore, it directly relates to poverty. Nevertheless, applying the dichotomous regress and model faces the concern with losing some of the information due to counting on a poverty line (Haughton & Khandker, 2009).

For the first approach, the natural logarithm of total daily per capita consumption or income of survey households is considered as the dependent variable. Studies that use this approach include: Glewwe (1991) in Côte d'Ivoire in 1986; Datt et al (2000) in Mozambique in 1997; Appleton (2001) in Uganda in 1992; Mukherjee & Benson (2003) in Malawi in 1998; Datt & Jolliffe (2005) in Egypt in 1997; Bruck et al (2010) in Ukraine in 1996 and 2004; Sakuhuni et al. (2011) in Zimbabwe in 2005; Onyeiwu & Liu (2011) in Kenya in 2007 and 2009; Gounder (2013) in Fiji in 2002-2003.

It must be noted that under this approach the definition of per capita consumption or income of surveyed households differs between countries. For instance, in Egypt, per capita consumption was regarded as the sum of total food

consumption (including food that the household purchased, grew, and received from other sources for 123 food items); total non-food (the sum of expenditures on 45 non-food items, including expenditures on fuel, clothing, schooling, health, cleaning items, tobacco, and several miscellaneous items), non-durable-good expenses; estimated use value of durable goods (constructed for 22 items by estimating rates of depreciation for items and using estimated interest rates from the Egypt Integrated Household Survey data); and an actual or imputed rental value of housing (Datt & Jolliffe, 2005). By contrast, in Malawi, per capita consumption included total food consumption, whether purchased or home grown; total nonfood nondurable goods expenditure, including gifts to others outside the household; estimated use-value of durable consumer goods; and rental value of housing for the household, actual or imputed (Mukherjee & Benson, 2003).

Several sets of independent variables are used to explain household income and household expenditure. Most of the empirical studies used popular exogenous determinants such as household and community characteristics, namely household demographic, education levels and occupation, agricultural saturation, access to services and utilities, community characteristics and access to services at the community level variables. Exogenous variables are assumed to influence the values of endogenous variables, but are not influenced by those variables in return because no feedback relation between the endogenous and exogenous variables is assumed (Judge et al. 1985).

An important limitation reviewed in Chapter 2 is that only one study (Mukherjee & Benson, 2003) used the secondary industry occupation variable (household numbers employed in manufacturing sector) to unveil the relationship between the manufacturing sector and poverty at the household level. Haughton and Khandker (2009) divide them into four general groups: Regional, community, household and individual characteristics, while Glewwe (1991) groups explanatory variables into five categories: Household composition, regional dummy variables, physical assets, human capital and community characteristics.

Apart from a linear model, several studies have used probit models or logistic regressions to estimate the determinants of poverty. In Cote d'Ivoice and Sri Lanka such studies were conducted with the probability of a household being in poverty defined as the dependent variable (see Grootaert, 1997; De Silva, 2008). In order to

estimate the probability of a household being in poverty, the dependent variable is a dummy variable. It takes on the value of 1 if a household's per capita expenditure is below the poverty line. Otherwise, it is 0. In a study on Sri Lanka, De Silva (2008) used absolute poverty lines such as Rs. 1,206 (national), Rs. 1,391 (urban), Rs. 1,189 (rural) (see De Silva, 2008). In Grootaert's study of Cote D'ivoire, three poverty lines were used – one set at plus and the other minus 25 per cent of the basic line; and a third line was set at 75,000 CFAF per year (Grootaert, 1997). These studies demonstrate the diversity of methods that can be employed to assess determinants of poverty. Whilst diversity exists in results too, poverty probability, the generated statistic in these studies, is particularly useful for discovering which factors can have the greatest impact on poverty reduction.

Some studies have used both the linear model and the probit model due to the merits attributed to both approaches (cf. Appleton, 2001; Brück et al., 2010; Grounder, 2013; Kedir & Sookram, 2013). The welfare functions utilise the full information on the distribution of income and expenditure while the poverty functions collapses this information into two values (Ravallion, 1992; Grootaert, 1997). However, there is debate in the literature on the efficacy of these models because the level regression analysis lacks the ability to distinguish between poor and non poor households (Minot, 2000).

In particular, constant parameters are imposed over the entire distribution, thus it is merely assumed that the effect of household characteristics and other variables on welfare is constant over the entire distribution. Additionally, the level regression is criticized for the not paying explicit attention to the poor and giving excessive weight to outliers (Baulch & Masset, 2003). In contrast to the level regression, the discrete method finds that information could be lost due to the use of a binary dependent variable.

b) Vietnamese Studies

Vietnamese poverty studies typically utilise an early series of Vietnam Household Living Standard Surveys (VHLSS) that provide a rich, standard and qualified data source on households' expenditure and income. Notable are the recent studies by Giang and Pfau (2009), Bui et al. (2014) and Hoang et al. (2014) who

applied a poverty function or a welfare function and used the VHLSS to examine the factors influencing household income or expenditure, poverty and inequality.

In the study of Giang and Pfau (2009), a probit model similar to that used in some international studies was used to examine the determinants of poverty in both urban and rural areas with the VHLSS 2004. This study focused on Vietnamese elderly. Hoang et al. (2014) also used a probit model to investigate the effects of non-farm activity on household expenditure and poverty reduction in rural areas using the VHLSS from 2002-2008. It was found that the probability of poverty was reduced by 7-12 percent, if an additional household member was involved with non-farm activity. This also helped to increase household expenditure by 14 percent over a two-year period, quite a significant increase.

The insights gained from the above studies were consequential for the researcher in the formative period of the present study. In particular, it was found that the user list of the VHLSS was extensive. This does not necessarily make the surveys efficacious but it does lend usability to the data source through consensus. The above studies also highlighted and confirmed a suspicion that manufacturing had a significant role to play in Vietnam's continuing development – a primary concern for the current researcher.

Bui et al. (2014) utilised the VHLSS 2008 and employed the standard consumption and income regression to examine the effect of natural shocks on household income and consumption. Additionally, in order to identify the determinants of poverty at the household level, Le (2013) adopted a reduced form of the determinants of household welfare that could be estimated in a simple natural log linear specification. This study paid more attention to urban poverty and used the Urban Poverty Survey 2009– a survey conducted in Vietnam's biggest cities. The Urban Poverty Survey is thus contrasted with the VHLSS as a data source in that it focuses on urban poverty whereas the VHLSSs are representative of the entire Vietnamese population, covering both urban and rural areas and encompassing all regions.

Minot and Baulch (2005) and Minot et al. (2006) examined the relationship between poverty and common indicators for both urban and rural areas utilising the VHLSS in 1997-1998 and 1999 Population and Housing Census in conjunction with other sources. These empirical studies demonstrated which household characteristics

affected real per capita expenditure. These studies also exposed the likelihood of a household becoming poor based on measures of household welfare.

Results were consistent across these studies. In both studies, populous households were associated with lower per capita expenditure in both urban and rural areas. In rural areas, households with a large proportion of elderly members, children and/or women were more likely to be poor, however in urban areas only those households with burdensome young humans were likely to be poor. Concerning ethnicity in rural areas, the coefficient was significant at the 10 percent level but it was not statistically significant in urban areas. The educational level of the household head was a good predictor of a household's per capita expenditure as these variables are jointly significant at the 1 percent level in both rural and urban areas. The head's occupation was a statistically significant predictor of per capita expenditure in rural and urban areas. A head of household who was working in a skilled occupation was better off than other households; for regional dummy variables, in both rural and urban areas, households living in four southern regions were better off than those in the Northern Uplands (Minot & Baulch, 2005; Minot et al., 2006).

Empirical studies such as those parsed above have provided a sound base from which to make some relevant observations. Firstly, like the international studies, some studies about the relationship between poverty and the various factors in Vietnam have employed a welfare function and/or a poverty function since these are two main regression techniques for analysing the determinants of poverty (Haughton & Khandker, 2009). Secondly, most of the aforementioned Vietnamese empirical studies produce results using the VHLSS from 1997 to 2008 (Giang & Pfau, 2009; Bui et al., 2014; Hoang et al. 2014; Minot & Baulch, 2005; Minot et al. 2006). Thirdly, the household and individual-level characteristics of Vietnamese studies using the VHLSS are comparable to international studies[4] (Vu & Baulch, 2011). This consistency is beneficial for those concerned with measuring poverty and developing effective strategies to combat the problem. As discussed in Chapter 2, the World Bank (1999) and World Bank (2012) has utilised evidence garnered from such studies to inform

[4] Common characteristics include household size, household head's ethnicity, proportion of children, proportion of elderly, proportion of female, human capital (educational levels), occupation categories and participation in non-farm economy. These popular poverty indicators were also listed among potential poverty indicators at household level.

their reports and support our theoretical understanding of poverty and poverty reduction.

Many key characteristics of poor households in Vietnam at the end of the 1990s and in 2014 are still the same, although poverty has fallen dramatically. The key characteristics of poor households at the end of the 1990s drew on the 1993 and 1998 Vietnam Living Standards Survey (VLSS) whereas those of poor households today drew on the 2010 VHLSS. Kozel (2014) addresses the latter set and notes the key characteristics of poor households including: "low education and skills, dependency on subsistence agriculture, physical and social isolation, specific disadvantages linked to ethnic identity, and exposure to natural disasters and risks." He continues with an affirming statement: "Those who moved out of poverty acquired more schooling and job skills, diversified out of agriculture and into manufacturing and services, and reduced their exposure to seasonal hardships and shocks through income diversification and migration". Furthermore, demographic factors such as high dependency ratios and possessing a female as head of a household become less correlated with poverty (Kozel, 2014). Households with three or more children were more likely to be poor even after adjusting for economies of scale (Kozel, 2014) – a point which is neither vague nor trivial.

As can be seen, the complexity of studies such as these deepens as the microscope is focussed and researchers must take account of this fact. One way to hone the present study is to ignore less pertinent details, provided doing so would not significantly jeopardise findings, and focus on those with greater impact on the topic of investigation. Scrutiny of studies such as Hoang et al. (2014) and Kozel (2014) demonstrated the importance of certain factors. In particular, these authors found that improvements to peoples' well being have generally resulted from technological advancement and diversification. In those cases the authors noted that education and a more skilled workforce were vitally important. Therefore, the current study will utilise variables that align with these findings.

A major limitation of the above studies is that they do not fully discuss the benefits of welfare resulting specifically from the manufacturing sector. This is an unfortunate omission and research gap especially when the Vietnamese government has put forth an ambitious objective of becoming a large industrialized country by 2035. There are a few studies on the manufacturing-poverty link for Vietnam. Some of

these studies can be placed within the Lavopa and Szirmai's (2012) framework e.g. Nadvi and Thoburn (2004); Thoburn, Sutherland and Nguyen (2007). Specifically, the role of manufacturing in poverty reduction was acknowledged by Nadvi and Thoburn (2004) and Thoburn, Sutherland and Nguyen (2007) and policy guidance was inferred. Nevertheless, these studies were mainly qualitative. Quantitative data was used for descriptive purposes only.

Nadvi and Thoburn's (2004) research used qualitative and quantitative methods based on data gathered from previous research and from interviews conducted in 2002. The study aimed to provide insights on the ebb and flow of employment in the Vietnamese textile industry (p.258). The results showed that female workers who worked for state-owned enterprises (SOEs) had higher wages compared with workers in small private firms because subsidized state credit was available to SOEs. Furthermore, those with residency status seeking employment in SOEs faced fewer barriers to waged work within their own regions (Nadvi & Thoburn, 2004). This means that the poorest groups of people in Vietnam did not gain from the ebb and flow of the trade environment.

In the study of Thoburn, Sutherland and Nguyen (2007), the authors used primary data which was collected from eighty "semi-structured interviews" during the period 2001-2002 in Hanoi and Ho Chi Minh. Respondents were selected from seven state-owned enterprises and one Vietnam-Taiwan joint venture to trace the impact of employment and restructuring in the Vietnamese textile industry on poverty. The researchers pointed out that employment in the textile industry assisted workers acquire assets and enabled them to save their money. In contrast, retrenched workers were losers because of the lack of mechanical skills (p.362). However, they acknowledged that the sample size was small and did not make claims to be representative of the textile industry in Vietnam (p.351) since data on household characteristics were only collected from eighty people in two cities. Also, they emphasized that quantitative data was just used descriptively in the research (p.351).

2.4.2 Studies on Poverty and the Manufacturing Sector at the Provincial Level

Sectoral contribution to nation's economic development can vary by country and there will always be contextual circumstances which may help or hinder each sector. This sub-section analyses international and Vietnamese studies to determine the

extent, across different contexts, of manufacturing's contribution to various countries' economic development.

a) International Studies

Park (1998) and Lavopa and Szirmai (2012) emphasized that industrialization affects poverty alleviation in the medium and long term via rapid economic growth and the generation of income-earning opportunities for the poor. Specifically, Lavopa and Szirmai (2012) found that rapid expansion of the manufacturing sub sector, especially in lower income coutries, contributed to employment and poverty reduction more greatly than other sectors. This implies that countries with underdeveloped industrial and manufacturing capabilities would benefit disproportionally from large scale manufacturing investments compared to industrialised counterparts.

In presenting their findings, Lapova and Szirmai (2012) classify the contributions of the manufacturing sector according to three main channels. This classification system is particularly useful for the researcher attempting to disseminate findings. The three main includes: (1) employment and income generated within the industrial sector (direct impact); (2) employment and income generated in other sectors due to linkages between the manufacturing sector and the rest of the economy (indirect impact); (3) employment, productivity growth and income generated in other sectors due to the growth-enhancing character of the manufacturing sector (induced impact). This chapter's discussion focuses on the first pathway.

Direct impacts include the benefits experienced within the sector. Lapova and Szirmai (2012) note that as manufacturing expands workers can improve their standard of living regardless of their skill level because the manufacturing sector is able to absorb less educated workers and provide them with stable roles and superior compensation. This assertion is backed by empirical evidence which showed that, even after controlling for certain characteristics, the average wages of manufacturing employees was 8.4 per cent higher in the USA (Helper et al. 2012). Higher incomes, they argue, are not country specific. Rather they are necessary in the sector and are offered as a motivatory tool – productivity is higher in the faster paced sector and therefore downtime must be minimised.

Increased incomes and poverty reduction are explicated as direct impacts in this article but there is another associated advantage which relates to income inequality or

fairness in society: Lapova and Szirmai (2012) note that the existence of the more dynamic and high paid sector lends itself to a more equitable existence since it exposes a middle ground of earnings between the high and low end in society.

Direct impacts are, however, limited by the fact that increasing productivity will eventually constrain the employment market. Furthermore, the authors note that the significance of these direct benefits is mitigated by the proportion of people employed in manufacturing – typically between 10 – 20per cent of the country's workforce in developing Asian nations (exceptions include countries like Taiwan whose manufacturing sector constitutes around 30per cent of total employment). This suggests two things. Firstly that less developed nations would again stand to gain most from manufacturing expansion. Secondly, whilst the direct benefits generated within the sector are significant, the greatest benefits are those associated with the creation of indirect and induced employment in other sectors.

One such study conducted at the provincial level was completed by Ali et al. (2014). In this study conducted at the district level in Pakistan, the number of workers employed in the manufacturing sector was chosen as a reasonable proxy for assessing how the manufacturing sector impacted on multidimensional poverty by head count. This figure was estimated by using OLS. The author noted that, "Manufacturing sector employment significantly reduces the poverty levels in Pakistan" (Ali et al. 2014, p26). Ali et al.'s (2014) study may not be generalizable across all contexts. Nonetheless, their results provide evidence that the industrial sector must play a greater role than was previously acknowledged. Studies such as these imply that industry is a better catalyst than agriculture in reducing poverty. A contrasting study conducted at the district level was performed by Deaton et al. (2014). This panel study found no evidence that an increase in manufacturing employment share affected poverty rates in Canada. The great advantage of Deaton et al.'s study is that it examined regional variation in poverty. Studies such as this that go into deeper analyses of regional poverty can provide valuable information about the specific characteristics of poor people, for instance, where they are concentrated and why poverty exists there. This country, however, resides in a very different context. Canada is a developed nation with significant resources and high average incomes so these results may be expected.

In addition, it is noted that contiguous provinces could affect each other. Hence, if a study could not detect spatial autocorrelation, the estimated results will be

biased (Higazi et al., 2013; Joshi & Gebremedhin, 2012; and Sameti & Farahmand, 2009). For example, in the work of Hagazi et al., 2013, the authors applied spatial regression models to contiguous data such as the SEM and the SLM. Data was from Egypt's census for 93 counties in 2006. The dependent variable was the percent of individuals classified as poor (those who make less than $1 daily), and predictors were demographic indicators, such as education level, and vocation. Explanatory Spatial Data Analysis (ESDA) was performed to examine the existence of spatial clustering and spatial autocorrelation between neighbouring counties. The ESDA revealed spatial clusters and spatial correlation between locations. Recommendations were drawn regarding the two spatial modes used and were provided to decision makers with regard to the spatial dependence found, and neighbouring counties which need more attention and more allocation of resoures in the areas of the given predictors.

Joshi and Gebremedhin (2012) utilised cross-sectional country level data from 1990 and 2000 for 420 counties in the Appalachian region to examine determinants of poverty and income inequality. The experimental results from 1990 data showed a positive correlation between one districts' poverty rates. So if a district was adjacent to another with a high poverty rate it also tended to have a higher poverty rate. Adjacent districts with low poverty rates tended to maintain low levels of poverty and in some cases were reduced even further.

Similarly, in the work of Sameti and Farahmand (2009), through spatial econometric techniques, it was found that growth and inequality had spatial dependence. Neighbours within the Euro-Mediterranean region could influence a country's economic growth and inequality.

There are ample studies which provide similar results to those above and some common themes are noted. In particular, increased employment in manufacturing is considered as an important contributor to poverty reduction in many of the studies. Whilst the term 'manufacturing' does not proxy wholly or even adequately for the term 'industrialisation' it can reflect overall industrial progress. This distinction allows for the imputation of appropriate variables in section 6.3 – those relating to manufacturing only.

It must be noted that the above studies are located across different contexts, so to test whether such imputations exist reasonably this study must also consider studies conducted in the Vietnamese context. To date there is a paucity of such studies.

b) Vietnamese Studies

Recently there have been two empirical studies relating to sectoral growth which have pointed out the positive nexus between the industrial sector and poverty reduction in Vietnam.

At the provincial level, Pham and Le (2012) used the random effect model. The dependent variable was designated as the poverty rate and was calculated from Vietnam household living standard surveys (VHLSS) from 1998 to 2008. The independent variables were designated as the share of agriculture, industry and service sectors in each province, GDP per capita and Gini coefficient. The authors found that there was a positive association between the industrial sector and poverty reduction in provinces where the share of industry was large – a one percent increase in the proportion of the industry leads to a 0.57 percent lowering of poverty. The authors also stressed that the development of industry is associated with the construction of industrial parks and that industrial development is synonymous with the formation and development of a strong labour market, especially for highly skilled workers in Vietnam. These reasons supported the result that industrial sector contributed to poverty reduction in high industry-share provinces. However, this study did not examine whether the employment in manufacturing sector influences poverty rates at the provincial level. This is a relevant omission since industrial parks and export processing zone are considered as an ideal place for manufacturing base.

In addition, a number of researchers were also interested in geographically disaggregated estimates of poverty using the small area approach. In this method, both household survey and census data were combined (Minot, 2000; Minot et al., 2003; Gian & Van der Weide, 2007; Cuong et al., 2010; Cuong, 2011). The authors identified the relationship of the household characteristics, such as the head of household characteristics, local characteristics and the poor households, and predicted the probability of a household being in poverty. From that the authors determined poverty rates at commune and district levels. From the information on district-level and commune-level poverty rates and the utilisation of GIS software, the authors drew the maps of poverty at district and commune levels in Vietnam. Studies such as these precede comprehensive poverty mapping techniques which can then be used to estimate poverty and inequality at the provincial, district and community levels. However, these studies depended much on the level of generalized data (provincial,

district or village levels), but the reality in Vietnam is that VHLSSs are only representative at the provincial level (except census data).

A limitation of studies above is that the authors did not utilise specific variables relating to the manufacturing sector. In particular, the authors omitted those which have been deemed relevant for the present study in order to capture the effect of industrialization on poverty in Vietnam. Yet form follows function. The form of the present study follows from intent to address manufacturing sector and its respective sectoral impacts. This provides an acute level of specificity by examining one channel by which poverty may be reduced. The form of the above studies follows from intent to identify and explain the channels themselves. Hence, some important questions are overlooked and some variables have been neglected. Nonetheless, these variables are only discernible after gaining insights from studies such as those mentioned above.

Sections 2.4.1 and 2.4.2 have highlighted empirical literature that generally supports the role of manufacturing in poverty reduction. These studies were selected to demonstrate this potential. Yet there are studies that have investigated the role of other industrial and non-industrial sectors and these have found that these too can make a significant contribution. Dorosh and Thurlow (2016), for example, measured sectoral poverty-growth elasticities in five African countries. They found that the respective agricultural sectors of each African nation still contributed most to poverty reduction but was matched and in some cases surpassed by the services and manufacturing sectors.

Such ambiguity is not difficult to find in empirical literature and exists due to contextual differences between respective fields of investigation. Hence the findings of Vietnamese and international studies above may only be able to give us partial knowledge. A more comprehensive account of the relationships between sectoral growth and poverty reduction must be found in theoretical literature. There is already a bulky array of literature emerging on this topic and many studies are supported by empirical findings. This literature is referenced throughout this thesis and is used particlarly to lend support to important discussion points. This theoretical literature, reviewed in the next section, seeks an optimal explanation of causality - one that accounts for discrepencies in empirical findings.

2.4.3 Theoretical insights: Structural change, Economic growth and Poverty

The theoretical literature on economic development and structural change can be divided into two main strands. Harmonisation between the two approaches has been problematic and becomes even moreso when attempting to locate the welfare enhancing aspects. The first version, which was brought to prominence in the 1950's by Kuznets, examines the historical context of economy-wide phenomena and seeks a comparison of the transformative experiences of advanced and developing economies. Economists have tended to focus on specific features of such transformations rather than focussing on generalised, economy-wide depictions. This approach places macro features, such as industrialisation, urbanisation and migration, as central to the historical evolution of nations' structural change. This approach endured until supply shocks of the 1970's catalysed a more acute focus on shorter-run issues (Syrquin in Chenery and Srinivasan, 1989). Thus a second approach emerged which tends toward microeconomic issues grounded by sound theoretical underpinnings.

The following discussion embraces the first approach and presents an overview of the discourse surrounding these macro issues. Kuznets (1957) illustrated many of the issues as a set of "stylized facts". These are considered to be empirical regularities discovered through his research which depict the development of modern economic structure and processes of structural transformation. It is argued that these facts, which are discussed more below, are not necessarily theoretically elegant but maintain a pragmatic element by allowing for appropriate policy formation (Syrquin in Chenery and Srinivasan, 1989). These policies may be directed toward welfare enhancing aspects of economic growth and a discussion of such possibilities concludes this section.

Rostow (1960) uses the macro approach and presents a historical depiction of what he deems the five stages of economic development[5]. Three features are noted as particularly important for nations that are positioned for industrialisation within the third stage - take-off. First is the acceleration of capital accumulation and doubling of interest earnings within the economy until it reaches a point where, "Growth becomes its normal condition. Compound interest becomes built, as it were, into its habits and institutional structure" (Rostow, 1960 pp 3-4). The accumulation of capital is now

[5] The five stages include (i) traditional society; (ii) preconditions for take-off; (iii) take-off; (iv) drive to maturity and; (v) the age of high mass consumption (Rostow, 1960).

recognized and inserted into most discussions of economic development in one way or another as a defining feature. Second, he notes the importance of technological stimuli for a burgeoning, industrialising economy but hastens to add that this is not the main feature. Thirdly he notes that the presence of a strong and willing government - one that recognises the imperative of commerce - is a necessary precondition for take-off. Critics of Rostow have pointed out that this generalised view cannot be substantiated across all economic contexts. Similarly, uniform transition through each stage may not be achievable given that nations do not possess endogenous mechanisms of transition (Gerschenkron, 1962).

A fourth macro feature which, when added to this list, can be coupled with capital accumulation to form the two most important bases of economic development and structural change is defined under the 'staple approach' (Hirschman, 1958). This might also be referred to as a nation's comparative advantage. The staple of an economy is defined as the exploitation of a nation's endowments and natural resources. This approach indicates that demand pressures a response whereby the factors of production, land, labor, capital and entrepeneurship, are leveraged. Discussion in Chapter 3 of this thesis presents evidence which will imply that Vietnam is well positioned to take-off based on these two main features. The second feature mentioned, technology, is assumed to be easily transferrable in a global society. The third feature mentioned, strong and willing government, is also demonstrated in Chapter 3 but it is implied that more policy direction may be needed.

Trade represents another important consideration for developing economies. One study, conducted by Balassa (1979), seems to support the stages approach which paralells Rostow's (1960) insight. It is understood that lower income countries are not able to compete with already industrialised countries and therefore rely on industrial imports. Without the presence of significant capital, such underdeveloped nations can only delve into import substitutions in light industry. However, as capital accumulates and a country reaches the next stage that the country begins to export some manufactures. At a later stage that same nation may assess the feasibility of heavy industry substitution and exportation. Syrquin (in Chenery and Srinivasan, 1989) pinpoints Japan as a prime example of this situation. Thus Balassa (1979) showed that development of a nation's economy will move through each stage based on its comparative advantage i.e.: based on differences in physical and human capital.

Accordingly, the structure of exports changes as a nation progresses through each stage of economic growth and produces more advanced manufacturing goods. This increasingly favourable trade environment is featured in Kuznets' (1966) work and is cited as a characteristic of contemporary industrialisation.

More recent studies have also provided support for the temporal or "staged approach". The referenced authors do not go into great detail on the 'welfare-enhancing' aspect of industrial development but Haraguchi and Rezonja (in Szirmai et al, 2013, p1) note that:

> "Countries at different development stages have comparative advantages in different industries. Identifying latent comparative advantages and understanding their evolutions helps countries pursue welfare-enhancing industrial structural change, something many developing countries have been struggling to achieve."

Kuznets (1957) stressed this point and noted that a nation's capacity, rate and direction of structural change are highly dependent on its current circumstances and economic status. Kuznets' seminal work is not an acute portrayal of the 'welfare-enhancing' aspect of industrial structural change but is centred around the premise that a nation must adopt the most appropriate structural change and industrial strategy to maximise its growth potential. His study also showed that inequality rises in the first stages of industrial development as profits are returned to the 'savings class' but subsequently drops off as they are more equitably distributed. Kuznets' depiction of the inverted 'U' shape displays this trend. His work is referenced again in Chapter 3 of this thesis.

Similarly, Atlenburg (in Szirmai et al, 2013) notes that a nation's industrial policies should align with the state's respective administrative and governance capabilities in order to promote expedient and sustained economic growth. It is for this reason that the economic and political background of Vietnam is examined in Chapter 3. Chenery (1979) also presents an empirically based examination of the bases for structural change leading to growth across a variety of contexts. His contribution to development theory is extensive and he finds a common theroretical thread – countries

at given average income levels (subject only to their respective sectoral composition and focus) become industrialised and this allows them to prosper.

The literature reviewed thus far has concentrated empirical and theoretical work which demonstrates the potential of industrialisation as a conduit to prosperity and much of the literature on development economics, at least that which relates to less developed countries, has pointed to this positive nexus. Indeed, there is consensus. UNIDO (2013) disseminates further and make an interesting point that the case for industrialisation in advanced economies should not be cast aside. The report argues that nations at three stages of specificity can benefit from different activities: (i) less developed countries have the greatest potential for growth by investing in agro-industry, textiles and garments; (ii) middles income countries have the greatest potential for growth by investing in heavy industry including metal fabrication and automobile manufacturing and; (iii) advanced economies have the greatest potential for growth by investing in high tech industries, innovation and by committing to service jobs associated with such industries.

The case for industrialisation is therefore considered strong from a purely economic viewpoint and moreso for less developed countries. Nevertheless, such arguments stumble through ambiguity when attempting to decipher how such industrial policies, structural change and economic growth can contribute to the reduction of poverty across various economic and political contexts. For a greater insight into this relationship, a contrast between neo-classical and Keynsian theory is presented below.

The neo-classical approach to explaining poverty accepts the classical economic premise that individuals are endowed with unequal sets of skills and conditions and these can be either burdensome or beneficial. But the neo-classicalist also accepts the role of market failure in the form of externalities, moral hazard and adverse selection and these can all excacerbate poverty in individuals. Though neo-classical theories, like their classical counterparts, espouse wariness of government intervention, there is considered to be a level of assistance that can be offered to the poor that can maintain their level of well-being without affecting the efficiency of the overall system. Microeconomic strategies are therefore considered to be highly leveragable by neo-classical economists.

Classical and neo-classical theories of poverty tend to focus on individual characteristics and accordingly prescribe microeconomic and, in the case of classical economics, *laissez-faire* solutions. But another set of theories, based on the work of Keynes, suggest that the macro perspective is actually more important. Keynesians believe that economic growth, for example that which can be achieved through industrialisation, is central to poverty reduction, hence there is a tendency to focus on fiscal policy, as opposed to employment solutions, as a means of propelling growth-enhancing industry and reducing involuntary unemployment. This, it is believed, will spur long term growth and augment the overall capacity of the nation's economy to grow thus contributing to the well-being of its citizens. A tenet of this perspective is that government intervention is required across an array of economic issues including industrialisation strategies. To reduce poverty, it is argued that resources should not be offered directly to the poor but should be invested into the economy more broadly. Jung and Smith (2007) described this activity as the "socialisation of investment". However, a blanket approach to public investment is eschewed. Rather it is thought that investment in certain sectors is more beneficial than others. As Davis and Sanchez-Martinez (2014, p 39) mention:

> "The focus on public investment to attain the complimentary goals of economic growth, employment and poverty reduction is strongest in certain crucial sectors which are considered to be the strategic in the sense that they exhibit the highest multiplier effects."

UNIDO (2006) echoes this sentiment and makes a clear distinction between the effectiveness of a strategy that provides basic human needs directly to the poor and the effectiveness of a pro-poor industrialisation strategy aimed at raising incomes. This latter type of strategy is comparable to "giving a person a fishing rod" instead of simply "giving a person a fish", as is the case in the former type of strategy.

UNIDO (2006) distinguishes between agro-based industrialisation strategies and labor-intensive industrialisation strategies and the authors elaborate in sequential chapters. It is noted that agro-based industrialisation strategies have been well established and remain a viable option for low income countries. Labor-intensive strategies, on the other hand, are acknowledged as having strong potential but remain

an underresearched area. The publishing organisation claims in the report that the agro-based strategies align with their own corporate mandates but it is also mentioned that further research into labor-intensive strategies would be welcomed and would contribute to a richer understanding of the issue. The report notes that such a strategy is successful, and can only be successful, in the presence of two conditions.

Firstly, the strategy must comprehensively involve the poor. This is a concern for policy makers who formulate such strategies. 'Comprehensive' involvement of the poor is not easy, however, especially when important spatial relationshps may be overlooked. Thus a pro-poor industrialisation strategy that was previously deemed positive may falter in the presence of contributory studies, such as those involving provincial level data. The current study considers such data in Chapter 6.

Secondly, the strategy must be viable in the long term. The determination of 'viability' requires significant appraisal of that industry and a country's circumstances (economic status, geography, proximity to supply chains, availability of technology, etc). In favourable circumstances it is theorised that labour-intensive industrialisation strategies can be an effective way to reduce poverty.

For both types of strategy, agro-based and labor-intensive, there is a strong reliance on manufacturing to absorb workers. This is due to the nature of activities undertaken, typically involving production and assembly. Successful East-Asian industrialised economies have thrived by competitively engaging in high tech manufacturing industries involving such activities. This has benefitted the poor not only because such jobs attract higher wages but also because exposure to newer technology can be leveraged by a more skilful and experienced workforce in the future. Furthermore, such jobs, though considered 'high-tech', require no significant level of education to attain. This contributes to satisfaction of the first of the conditions mentioned above – poor people can be involved comprehensively.

Theoretical insights, such as that offered by UNIDO (2006), into the relationship between industrialisation and poverty reduction often focus on employment generation. This insight provides reasoning for the imputation of employment related varibales in the current study. Employment generation under the human capital approach to economic development stresses the synergistic role of skilled employment as both a driver of economic growth and an effective way to reduce poverty in society (UNIDO, 2013; Weiss, 2011; Davis and Sanchez-Martinez,

2014). The major challenge relateing to this insight relates to the application of poverty-reducing policies in practice. Targeting key drivers of welfare-enhancing structural change can be difficult when there are lack of incentives to do so in the private sector. The expansion of human capital, including the development of education and skills and subsequent reduction of poverty, is one such area that would be neglected in a competitive marketplace because employers must outlay significant funds to achieve this goal (UNIDO, 2013). The same underinvestment applies to innovation and technology because these facets of business are not easily appropriable in underdeveloped economies and are subject to coordination failures.

Thus UNIDO (2013) mentions that policy makers with an industrialisation agenda must: (i) harmonise policy in practice with the existing political system because politicians will not underwrite prescriptions that do not do so; (ii) strive to attain strong leadership that aligns with the transformative agenda; (iii) encourage dialogue between public sector policy makers and private sector experts thus ensuring that all stakeholders needs are considered and; (iv) augment the management capabilities of those tasked with industrial policy making. Given these conditions, UNIDO (2013) makes an argument for government policies that focus on manufacturing growth. The implied benefits of such growth manifest in the creation of better paid and more beneficial labour conditions for workers which then results in reduction of poverty.

Saleem and Donaldson (2016) reinforce this sentiment. They argue that it was only the presence of an active government and the ability of the economies in the six nations examined (Japan, South Korea, Taiwan, Thailand, Hong Kong and Singapore) to adapt that allowed those nations to reduce poverty primarily through industrialisation. The theoretical insight garnered from this study is that *laissez-faire* style governance cannot contribute significantly to poverty reduction. Instead there must be a powerful and state sanctioned approach which focuses on industrial development and structural change.

The discussion above maintains a common thread – that manufacturing is regarded by theorists as a significant driver of structural change and economic growth and that such growth can be reconciled with policies aimed at reducing poverty in society. Industrialisation agendas, such as that espoused by Vietnam, may therefore be regarded as positive from a social welfare perspective. Nevertheless, such agendas

must pay heed to the economic, temporal and spatial potential of the country within which they are applied. For example, it would be folly to expect a lower-middle income country such as Vietnam to excel in the production of automobiles when there are serious competitors like China and South Korea to contend with in the region. Clearly, Vietnam does not possess competitive advantage in this area. Hence, policy prescriptions must be reinforced by research which demonstrates where these potentialities reside. The current research seeks to elaborate on these potentialities in the context of Vietnam and policy recommendations in Chapter 7 are therefore derived empirically and theoretically.

2.5 Summary and the gaps in the existing studies

a) At the household level (refer to 2.4.1):

Overall, the literature on the impacts of industrialization on poverty reduction in Vietnam is still relatively sparse. This caveat may point to a general unwillingness on behalf of the bulk of economic researchers who have tended to concentrate on strategies and drivers of economic growth whilst overlooking the potential welfare enhancing aspects. Such unwillingness may be understandable since all the seminal theoretical work on industrialisation, some of which is reviewed in section 2.4.3, has shyed away from this challenge. Kuznets' research (1957) is a prime example. It has helped us to understand how a developing nation progresses through various stages of development. It also exposed how income inequality manifests and then recedes over time. However, this work, and other research of that significant era, did not directly specify on a micro scale the mechanisms by which poverty reduction may be achieved. The above review of more recent empirical and conceptual literature has highlighted ways in which this challenge might be approached, however a more comprehensive attempt at deriving a sound economic theory of poverty reduction is still required.

The reviewed studies have demonstrated where advancement can be made. The development of the manufacturing sector, coupled with enhancement of educational opportunities and health, were noted as salient starting points. Pham and Le (2012), Minot (2000) and Minot et al. (2003) provided evidence of this. Lapova and Szirmai (2012) established a foundation for analyses regarding direct, indirect and induced impacts. Studies such as Glewwe (1991) and Minot (2000) have provided

sound methodological insight which can be used to further our understanding. There remains much work to be done on this topic and it will require adherence to empirical methods to expose specific and significant contributors to poverty reduction.

The present study attempts to provide in depth empirical evidence on the links between poverty reduction and the manufacturing sector in Vietnam. It was noted above that existing quantitative studies have not included manufacturing as a determinant of household poverty in both the cross-sectional data and panel data using recent surveys. This distinguishes the present study from others conducted in a similar context.

This is the first empirical study that investigates and attempts to prove whether the ratio of a household's skilled labourers based on vocational education positively influences household expenditure, household income and poverty status. Vocational education includes short-term technical worker, long-term technical worker, professional high school, vocational college, and from college to Doctor of Philosophy (PhD). Existing studies have merely examined the effect of educational levels of a household head and using education levels[6] as proxy variables.

Whilst the government has recognized the importance of the number of skilled household members, no empirical study has yet investigated this role in the industrialization process. The government has set out a Technical-Vocational Education and Training (TVET) Development Strategy for 2011-2020. The overall objective of the strategy is to ensure that by 2020 vocational training will be supported to improve income, reduce poverty, enhance sustainably and ensure social security (Vietnam, 2012a)

This study is expected to shed more light on the effects of manufacturing sector on households' expenditure, households' income and poverty status in Vietnam. It will also analyse the links between vocational education, employment and poverty.

In the effort to extend the research on poverty in Vietnam, this study uses the updated data of Vietnam's household survey, namely, the VHLSS 2012. With this updated data, the study can compare the role of employment in the manufacturing

[6] In the VHLSS, educational levels are divided into 12 main groups: (1) no diploma, (2) complete primary school, (3) complete lower secondary school, (4) complete upper secondary school, (5) complete short-term vocational training, (6) long-term vocational training, (7) professional high school, (8) vocational college, (9) junior college diploma, (10) bachelor degree, (11) master degree, (12) doctorate.

sector across two stages in Vietnam's development. First, in its early stage of development when it was a low-income country. Second, when Vietnam had become a lower middle-income country by the end of 2010.

b) At provincial level (refer to 2.4.2):

This study attempts to analyse factors that may be important for poverty reduction at the provincial level. More specifically, it considers two main questions:

- What is the relationship between poverty rates and the manufacturing sector at the provincial level?
- Are there any indirect or induced effects from the neighbouring provinces on poverty reduction?

The design of the econometric analysis that follows maintains a similar approach as those discussed above yet it differs from others conducted Vietnam.

Firstly, this will be the only quantitative study that investigates the relationship between the Vietnamese manufacturing sector and poverty rates at the provincial level using percentage of workers in the manufacturing sector as an imputed variable. The study also proceeds with a combination of two kinds of data (VHLSSs and ESs) in 2004, 2006, 2008, 2010 and 2012.

In considering the relationship between the Vietnamese manufacturing sector and poverty rates at the provincial level, this study also explores the presence of indirect and induced effects. In particular, the study investigates whether growth in the manufacturing sector can be associated with positive outcomes such as the creation of employment or increased incomes. In so doing, the role of industrialisation in poverty reduction is stressed and this will add to the body of knowledge concerning poverty reduction in the Vietnamese context.

Secondly, this study uses the proportion of skilled workers as an exploratory variable. This is estimated at the provincial level. Such spatial information is a weighty addendum to the analytical base of this thesis, particularly because it fills a considerable research gap.

Thirdly, this is the first study in Vietnam that uses spatial regression approach to unveil correlation between observations and poverty rates. The benefits of spatial information are acknowledged elsewhere in this study.

In brief, the above review of literature (refer to 2.4.1 and 2.4.2) outlined the major concepts and variables, and the relationship between them, in studies into poverty. The limits of these studies are acknowledged. Nonetheless some common insights have been obtained. The intent of this section is to apply these insights to design a model that meets the requirements of the current investigation. This design will require adherence to certain economically grounded principles.

CHAPTER 3 VIETNAM'S ECONOMIC BACKGROUND

3.1 Introduction

The Vietnamese economy has experienced rapid economic growth and undergone significant structural changes since the mid-1980s. The purpose of this chapter is to provide a review of these economic developments in order to provide the economic context for understanding the country's achievements in poverty alleviation. The context and trends observed will illuminate those factors that are most important for poverty reduction at Vietnam's current stage of economic development. The imputation of appropriate variables in subsequent analytical chapters (Chapters 5 and 6) will rely on the observations made here.

The chapter divided into three more sections. Section 3.2 discusses Vietnam's most significant economic reforms, known as *Doi Moi*. Section 3.3 discusses economic performance and structural changes in the post *Doi Moi* period. Section 3.4 discusses the importance of understanding macroeconomic factors and how they contribute to poverty alleviation.

3.2 Overview of Economic Transformation

Vietnam's economy was based on Soviet-styled central planning. The centrally planned economy operated from the latter half of the 1950s until the economy started to make a transition to a market economy in the mid-1980s. The period of central planning can be divided into two periods of time (during the war-time period from 1954 to 1975 and during the post-war period from 1976 to 1986 after the country became unified). However, there were certain degrees of market elements and piecemeal reforms in the centrally planned economy. These led the way to a successful transition to a free market economy following the introduction of economic reforms known as *Doi Moi* in 1986. This section presents discussion in two further parts. Firstly, the historical background of *Doi Moi* is examined. Secondly, Vietnam's most significant economic reform is investigated along with economic developments since that time.

3.2.1 Historical Background of *Doi Moi* (1954-1986)

During the period 1954 – 1975, the Vietnamese economy was based on Marxist-Leninist principles and adapted the traditional Stalinist central planning model

to suit local conditions during wartime. Following the defeat of the French at Dien Bien Phu in 1954, and with its strong ties to the Soviet bloc, transition to a centrally planned economy seemed inevitable. Thus, according to the neo-Stalinist model, land reforms were immediately sought in 1954-55. Rural collectivisation and urbanisation followed soon thereafter in 1959-60. A period of 'socialist transformation' simultaneously influenced commercial institutions thus driving down private investment and mitigating the operation of a free market in Vietnam. By the early 1960s the Soviet impetus had saturated the Vietnamese landscape, at least in the north, and the orthodox institutions of central planning were cemented (Fforde, 1999).

Institutions under the traditional Stalinist model are arbiters of the central government. Authority in such systems is wielded, often via use of force, and is not granted (Funnell, Cooper & Lee 2012). Fforde and de Vylder (1996) note that this authority and monopolisation of industry is used to drive economic development with resources being directed and allocated through the state's distribution systems. Such monopolisation in Vietnam allowed the state to focus on their priority tasks of national construction and propagation of heavy industry, particularly from 1960 onwards (Harvie & Tran, 1997). In the agricultural sector, plans and targets became managed centrally and targets would be drawn up annually. These plans would then cascade down through lower levels where cooperative plans would be drawn up. The Vietnamese Government's emphasis on agriculture during the fledgling years of communist Vietnam was evidenced by its large scale investment in infrastructure there. Agricultural cooperatives subsequently employed in the government's service paid significant agricultural taxes and sold produce back to the state below market price. In the industrial sector similar planning principles were established. Targets were set for state owned enterprises (SOEs) and inputs were governed centrally. According to the plan, outputs were then traded via the state's monopolised channels (Fforde & De Vylder, 1996).

The advancement of the Stalinist model rallied people and resources in Vietnam and was a catalysing force for the liberation of the South. Unfortunately, as was the experience of many fledgling under communist principles, the central planning system distorted the nation's economy and inefficiency ensued. The country suffered from misallocation and underutilisation of resources thus stunting its economic growth

potential (Harvie & Tran, 1997). The central planning system also crippled the country's ability to source materials internally thus placing great reliance on imports. Dang (2004, p.19**)** notes that the political and ideological force emparted by 'Soviet-style' governments retain a common characteristic in that they themselves become the greatest constraint on the pace of reform, "slowing it or, in the early stages especially, negating or annulling initiatives to overcome crises in the economy."

The deterioration of the Vietnamese economy was tempered by the thoughts of Ho Chi Minh and a cultural impetus[7] which placated the Stalinist model and made the experience authentically Vietnamese. In the North, where the Stalinist agenda had sprouted, obedience to 'socialist duty' was not intense. The North Vietnamese economy tended to respond to local stimuli and eschewed property norms of the Stalinist model in the agrarian economy. This response to local and household demands was evidence of a relaxation of Stalinist principles and an at least tacit acknowledgement of a countervailing market. Furthermore, units of the state sector were encouraged to seek economic prosperity outside the centrally governed and Stalinist plan (Fforde, 1993). Ideologically and in principle, the Vietnamese economy resembled a Soviet style 'command economy' from the late 1950s. However local imperatives, whether derived culturally, commercially, rhetorically or otherwise, meant that many of the mechanisms of the command economy were not implemented in practice, particularly in the south which did not provide a fecund ideological base for communism (Mallon & Van Arkadie, 2004).

Central planning only became possible in the south following victory in the Vietnam War and unification in 1975. Prior to this during the period 1954 – 1975 the South had followed the US model of capitalism. The acknowledgement and exercise of a capitalist-like market in the South meant that transition to a command economy would be difficult (as will be seen, the presence of this market based economy in Vietnam's past also meant that transition back toward a free market economy would be eased). The state pushed this agenda for four years but could not implement the model successfully. Agriculture was, at this time, a major economic contributor in the South

[7] The Vietnames people have an eclectic background, have suffered through periods of imperialisation and war and have had to recover their national independence more than once but they retain a strong sense of nationalistic pride. The fortitude of the Vietnamese is acknowledged but investigated no further here.

but farmers, perhaps struggling with the new model or suffering from the indignities of collectivisation, could not match previous levels of output (Beresford, 1993). This may have been expected since policy in centrally planned economies focuses on consistency of inputs and outputs but does not aim to achieve resource efficiency (Ivanov & Peleah, 2010). With this quandary various 'fence-breaking' activities were opened up and the Vietnamese economy slid further from away from central command.

During the period 1979 – 1983 the product contract system in agriculture was one of the most common and thereby significant changes to the Soviet-style command economy. This system had emerged during the 1960s where various small scale provincial experiments had begun (Dang & Cuong, 1999; Dang, 2004). Under this system land would be apportioned to individual households who would retain responsibility for most of the physical work. Larger cooperatives agreed to engage all other logistical and support work including the provision of inputs, ploughing, irrigation and maintenance. Contracts were then arranged by the state for fixed levels of output and any surplus achieved could be sold at the pre arranged price or on the free market. This represented a significant boon for cooperatives and farmers as it improved their terms of trade and fuelled incentive which was previously absent. The contract system was installed in January 1981 by Directive #100-CT (Florde & de Vylder, 1996; Dang & Cuong, 1999; Dang, 2004) and decentralisation became, at least partially, formalised in agriculture. Efficiency gains in the economy's largest sector at the time ensued since greater flexibility allowed the economy to respond to both static and dynamic processes (Fforde & De Vylder, 1996).

Nonetheless, if Vietnam sought to retain a prosperous economy intact and maintain the welfare of its people it had to turn attention to heavy industry, attract direct foreign investment and continue to transition to a more market oriented economy (Perkins & Vu, 2010). By the end of the 1970s foreign aid from China and the West had sharply declined and supplies flowing into state based industry had shrivelled. Thus many monopolised factories facing the reality of their competitive frailty necessarily engaged in activities outside of the central plan. The benefits of such activities were quickly realised, particularly in cases where factories traded on the free market. These factories could raise cash levels thus allowing them to incentivise

employment, buy new materials or access markets that were previously unavailable (Fforde & De Vylder, 1996). Chronologically, the progression of industrial reform more or less paralleled that in agriculture. By the late 1970s the seeds of reform were sewn.

A significant step in Vietnamese industrial reform occurred at the Sixth Central Committee Plenum in August 1979. Here the idea of 'three interests' – the state, the collective and the individual – was approved. The institutional recognition of any entity with interest outside of central command was philosophically and pragmatically ground breaking (Dang, 2004). In January 1981 the Government Council issued Decree No. 25-CP and the idea became the 'Three Plan' system. The three Plans would be governed individually and separately. Plan A was the prerogative of the state. Plan B would be governed by local institutions and businesses. Plan C entailed all other market based activities. This piece of legislation was a potent rhetorical step in severing central command's hold of Vietnamese industry however in reality it merely formalised arrangements that had existed for years (Dang, 2004). Occasionally these arrangements were evidenced as policy. In some cases in the South, capitalist models were temporarily advocated to spur growth and transition away from communism.

Later in 1981, Directive 100-CT and Decree 25-CP were introduced for agriculture and industry respectively. These pieces of legislation formally recognised and encouraged fence breaking activities thus severing central command's overt role (Fforde, 1999). Market forces began to play a larger role and Vietnamese commerce benefited from the optimisation of resource allocation both human and material. With this, local businesses were provided a foundation to grow and Vietnam's capital base expanded (Fforde & De Vylder, 1996). With official government decress including those above the augmented role of the market became formalised and transition from central command was irreversible.

This sub section has demonstrated historical abrasiveness between the political goals of central command and the practicalities of Vietnamese commerce and has shown that the spread of socialism in Vietnam was never fully able to take root. Even during the most thorough period of transformation the free market and private economy were not eliminated. Thus, Vietnam's central planning model adapted. The use of contracts in agriculture and the government's encouragement of market forces

in industry provide evidence of this adaptation. Though the Vietnamese economy was not strong by the mid 1980s even compared to other fledgling communist nations, it had already begun to improve significantly and was well poised for seminal reform. The culmination of this economic reform schedule occurred in 1986 and was known as *Doi Moi.*

3.2.2 *Doi Moi* (Economic Reforms)

Doi Moi (economic reforms) was approved at the Sixth Party Congress held in December 1986 and heralded the abandonment of central planning in Vietnam (Fforde & De Vylder, 1996). Poignant aspects of this reform schedule included the recognition of weaknesses of the centrally planned model and a willingness to alter policies so that they could become more market oriented. As was discussed earlier, progress towards economic reform was eased in some cases where capitalism had previously existed (i.e. the South) and in others where the juxtaposition of market based transactions with central command transactions had illustrated the former's worth. Such a transformation was underpinned by three main pillars: (i) market-oriented reforms; (ii) stabilization of the macroeconomic environment; and (iii) Vietnam's pro-active intergration into the regional and world economy. A numbers of measures taken in accord with these policy objectives have significantly broadened Vietnam's economic opportunities and enhanced its capacity to realize those opportunities. This sub section presents instances of reform associated with DoiMoi whilst examining their respective sectoral effects and delineates Vietnam's economic progression since that time. Discussion also focuses on the process of changing the thinking of industrialization and restructuring of the sector in Vietnam through the congresses of the Party.

The inception of *Doi Moi* in December 1986 had immediate implications for the economy of Vietnam and many previous efforts by the state to centralise and restrict competition under central planning were now modified or reversed. This meant the effective abandonment of the neo-Stalinist central planning programme (Fforde & De Vylder, 1996). Reforms and privatisation in industry were slow to begin with largely due to a 'socialist orientation' and unwillingness to reform. Hence private economic activity benefited first and foremost under these new conditions (Riedel, 1995). Riedel (1995) notes that, "Stores and restaurants opened up almost as fast as they were cracked down in 1978". The year 1986 thus represented a significant turning

point. Under *Doi Moi* the state recognised the value of a dynamic economy - flexible and able to respond to contemporary forces. Communities and businesses responded with optimism.

The initial impetus of *Doi Moi* contributed to the expansion of industry in Vietnam. This expansion represents significant progress, particularly because this aspect of the economy was recognized as a priority long before 1986. In fact, from the Third Congress of the Party (1960), the problems of industrialization and restructuring of economic sectors wereacknowledged as key areas where the Vietnamese economy must be improved. The reports state that socialist industrialisation was necessary and, in particular, the nation should concentrate on the "development of heavy industry in a reasonable manner, and strive to develop industry and light industry". At the time, the Vietnamese government was guided by the Soviet-style central command economy, so the term 'reasonable' here seemingly refers to the parameters of communist economics and the limited role of the market.

Industrialisation and restructuration were acknowledged, stressed and adjusted via the Fouth, Fith and Sixth Congresses of the Party (Bui, 2006). Then, with the 'reasonable' barriers dismantled in 1986, Vietnam took a direct and market based approach to solving the problems of industrialization and restructuration.'Major economic programs' were focussed on the task of augmenting heavy industry and infrastructure. This policy rather strongly advocated developmentin a relatively independent and market based manner. The only other notable adjustment was that sectoral development priorities in 1986 focussed on energy industries (electricity, coal, petroleum) instead of further developing a number of heavy industries, as was the intent of previous five Party Congresses.

Policy directed towards the promotion of industrialisation became focussed on the absorbtion of inefficient or underutilised manpower and subsequently steering this manpower towards the production of three economc staples – food and foodstuffs, consumer goods and export goods. Here it is important to note the link between Vietnam's industrialisation policy and the manufacturing intensity of those targeted economic segments. All segements are manufacturing intense (including mainly support activities for the production of food and foodstuffs), hence there has been an overt acknowledgement of this sub-sector's role in Vietnam's ongoing industrialisation

process. The present study will seek to build upon these foundations laid in 1986 and investigate their merit in contemporary society.

Along with above mentioned policy directives and concurrent adjustment of investment structure, Vietnamese policy was directed at the development of an economy that adhered to market principles and encouraged most forms of ownership. The following milestones are particularly important:

In the agricultural sector, farmers' conditions had improved considerably. Land reforms of 1986 resolved to give farmers the right to choose what they produced on their own land. These rights were enhanced again in 1988 when the Politburo issued Resolution 10 leading to the decollectivisation of agriculture. This resolution further loosened the state's grasp on commerce and led to the return of household agriculture. Positive responses were observed. Vietnam moved from a net importer of rice before these reforms to the third largest exporter (Beresford, 1993). Gains were experienced with other agricultural products including coffee, rubber and soy. By the late 1980s, these achievements in agriculture, coupled with major exports from large scale petroleum operations at the Bach Ho oil field, allowed Vietnam to turn its trade deficit into a sizeable surplus (Perkins & Vu, 2010).

Non-state units in the industrial sector would now be allowed to compete with SOEs where interests were deemed non-strategic. In 1987 *Doi Moi* had also entrenched a relatively liberal investment law when compared with other South-East Asian countries and this, coupled with its geographical proximity to global supply chains and abundant labour resources (US Deparment of State, 2013), made Vietnam a more attractive foreign investment prospect despite embargoes at the time.

A series of reforms were also conducted in other sectors, once again demonstrating willingness for change. Many of these targeted the financial sector and sought to prepare or right the economy with regard to the stabilization of inflation and interest rates. In 1989 the exchange rate was floated, hyperinflation was arrested and the banking system adopted a real interest rate. Also in 1989 the services sector received a considerable boost when price controls were removed from factor markets (Fforde & De Vylder, 1996). Thus progress was made towards macroeconomic stabilization and a foundation for growth was laid. The legal system, trading environment, financial environment and building capacity were similarly overhauled in 1989 leading to the complete transformation of Vietnam's economy from centrally

planned to market based in less than a decade (Dollar & Ljunggren, 1997; Fforde, 1999).

This tremendous series of reforms during the period 1986 – 1989 and particularly in the year 1989 allowed Vietnam's economic transition to be described as an example of 'bold reform' or as a 'big bang' approach to economic transition similar to that experienced by Eastern Bloc countries (Dollar, 1996; Riedel & Comer, 1996; Riedel, 1997). Perkins and Vu (2010, p. 8) indicate that the Vietnam's transition to a market economy was rapid, "partly by choice and partly out of necessity," whilst Riedel and Comer (1996) argue that the style and rapidity of Vietnam's transition smacks of an absentee IMF orthodoxy.

Yet the view that Vietnam's economy somehow exploded out of the ashes tends to focus on the tremendous year of reform, 1989, and neglects more subtle instances of officious reform which occurred from 1986 – 1989. Additionally, reform may have appeared hasty on paper but circumstances, wrought over far less explosive periods of time, may have eased Vietnam's transition. As mentioned above, these circumstances included capitalist sympathies in the South and recognition of a countervailing market from which benefits could be garnered in the North. The potent ideological influence of Stalinism was seemingly not enough to control Vietnam's economy. Agricultural and industrial concessions by central command had been made almost since the war's end.

Thus, the year 1989 may more aptly be described as a culminating year in Vietnam's history of reform. As was discussed in section 3.2.1, much of the boldness attributed to this year of reform, 1989, was the result of a gradual implementation of microeconomic reforms. Indeed, the Vietnamese trading environment that had been supplanted by central command during the post war years 1975 – 1986 had forced the adaptation of many economic units who found prosperity in the marketplace. The 'big bang' of 1989 can therefore considered to be a carefully executed cultural and commercial transition, perhaps guided by acquiescence to market forces, and supports the view that transition was more cautious and evolved from the practicalities of Vietnamese commerce (Naughton, 1996). Naughton (1996) furthers this argument indicating that an extant free market in Vietnam was an upshot of previous government policy which had forced certain economic units to seek markets whilst simultaneously not restricting them. The raft of reforms in 1989 might therefore be most significant in

that they signposted Vietnam's full transition to a market based economy. However, in some cases state based protection and inefficiency remained and it was recognised that more had to be done to drive the economy. This typically involved the elimination of any leftover hindrances to trade. Progress from this point was then a matter of restructuration, stabilisation and deceleration of reform. *Doi Moi* was successful in achieving these goals and driving Vietnam's economy through the 1990s. But the speed of this economic progress has slowed more recently. The next section will outline economic trends in Vietnam since *Doi Moi* and will emphasise the role of industrialisation in arresting this slowdown.

3.3 Post- *Doi Moi* (Economic Reform) performance and trends

Officially, Vietnam has been transitioning from a centrally planned economy to a market oriented economy for less than three decades. During this time impressive results have been achieved. Vietnam has built up an impressive record of economic growth that has also been equitable and stable. GDP growth per capita has averaged 5.5 percent a year since 1990, yielding a three and a halffold increase in average income. Only China performed better. Growth has benefited from a remarkably stable and strong, externally oriented economy. External trade has been a major driver, much of it powered by strong foreign direct investment. Thanks to high economic growth and shared success for all people, social outcomes have improved dramatically across the board. As a result, poverty has fallen rapidly.

The many achievements since the launch of the *Doi Moi* reforms have certainly contributed to the ambitious goals set forth within the 2011– 2020 Socio-Economic Development Strategy. This document establishes the objective "to become a basic industrialized country with the foundation of a modern and industrial country by 2020." By 2035, 60 years after Reunification, Vietnam aspires to become a modern, industrialized economy—next in a succession of East Asian economies to have made the transformative journey to upper-middle or high-income status such as the Republic of Korea, Singapore, Malaysia, China, and Taiwan.

The achievement of such industrial aspirations will require a focus on economic restructuration. For a country at Vietnam's stage of economic development, this will involve a transformation from a small production economy based on traditional crafting techniques to industrial production based on modern technology. There are

several basic criteria which reflect these macroeconomic, structural factors. These include GDP, workforce structure and exports structure.

This sub-section reviews salient features of Vietnamese economic performance since *Doi Moi*. This macroeconmic background must be understood in order to provide a foundation of understanding and a baseline from which assessments of progress can be made. Poverty alleviation, in the context of industrialisation, is the enduring goal of this study hence social aspects related to industrialization and structural change are emphasized where appropriate.

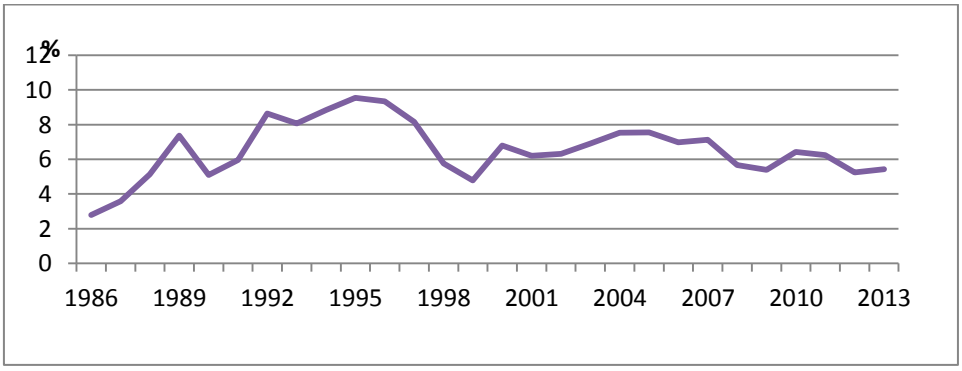
Analsysis of key macroeconomic variables and social contexts will illustrate where further advancements can be achieved.

GDP growth and Poverty

Despite periods of low growth rates, in general the average growth rate per year for the period 1986-2013 was relatively high. Over the past two decades, 1993 – 2013, Vietnam's annual GDP growth averaged 6.25 percent. This growth rate is strong compared to other Asian countries at similar stages of economic development.

Vietnam's strong history of growth is illustrated in Figure 3.1. This graph also shows where notable fluctuations occurred. GDP growth for the period 1991-2005 was strong despite the Asian Economic Crisis and averaged around 7 percent per year From 2006- 2010 this strong trend slowed down to 6.3 percent per year and from 2011-2013 fell to around 5.62 percent. However, in 2013, GDP growth is showing signs of recovery from its lowest growth rate since 1999. GDP growth was 5.42 percent in 2013 (Figure 3.1).

Figure 3.1 GDP Growth in Vietnam (1986- 2013)



Source: World Bank (2015)

The initial three years after *Doi Moi*, where GDP growth averaged 3.9 percent, can be seen as preparation for a transition to a new model of economic governance, one that has proven to be more compatible with GDP growth. In all years since, Vietnam has maintained a reasonably stable and strong growth rate however there have been unfavourable factors. Economic growth in Vietnam fell sharply due to the impact of recent financial crises, particularly the Global Financial Crisis from 2008 – 2009, which adversely affected Vietnam's trading environment. In the context of the world economy during the period, there were many uncertainties. High inflation rates were prevalent and the nation suffered from domestic production problems. So the economic objective of Vietnam currently is to control inflation and achieve macroeconomy stability. Therefore, the growth rate 5.42 percent (2013) is considered a reasonable increase. In addition, if we exclude factors of price increase (in constant prices), per capita GDP in 2013 was 3.75 times higher than in 1985. This represents an increase of 4.83 percent per year. In 2013, per capita GDP in Vietnam was ranked seven in Asian countries with the growth rate around 9 percent. It was just higher than Cambodia, Laos and Myanmar. Nonetheless, the gap between Vietnam and other countries in the region has narrowed significantly.

Other macroeconomic indicators, such as Gross National Income (GNI), also point to positive economic progress. The World Bank adopts the Atlas method to estimate GNI. According to their calculations[8], GNI per capita increased from 170 United States Dollars (USD) in 1993 to 1170 USD in 2009, a real change of 660 percent in Vietnam. By contrast, China's GNI over the same period started at 410 and rose to 3610 in 2009, an 880 percent change. Cambodia's started at 202 USD and rose to 700 USD, a 350 percent change. A relatively low starting point and notable improvement in per capita incomes has pushed Vietnam over the threshold of low income countries. Vietnam is now classified by the World Bank as a lower-middle income country. This relative and positive trend has continued since the end of GFC. Income per capita increased from 1270 USD in 2010 to 1,740 USD in 2013.

As discussed above, GDP in Vietnam has grown strongly for over two decades. Bui (2006) note that GDP growth must be coupled with economic restructuration,

[8] Income group classified by the World Bank based on GNI per capita using the Atlas method: Low income is $995 or less; lower middle income $996-$3,945; upper middle income $3,946-$12,195; and high income $12,196 or more.

particularly in the mobilisation of labour, to sustain such improvement. The issue of restructuring of economic sectors is one of the main concerns of the process of industrialization and a nation's industrial progress can be assessed under three criteria.

The first criteria is percentage of GDP by sector (argriculture, industry and sevirce). Depending on the country's stage of economic development, this commonly used criterion indicates that a country's economic structure should ascend from agrarian economics through industry and towards services as the nation becomes more successful. This trend is reflected by techonolgical uptake by sector. Typically the services sector accounts for the highest proportion of technology within an economy followed by industry then agriculture. Further to this, productivity improves following technological enhancenments so GDP growth and productivity in the non-agricultural sector usually oustrip the agricultural sector.

The percentage of GDP by sector is useful as it provides a snapshot of a nation's stage of economic development and can show where attention may be needed. It must be noted however that contextual factors may perturb the value of this evaluative tool. A researcher may, for instance, have to consider natural disasters, the country's natural resource endowments, war or any number of confounding factors before evaluating, or indeed benchmarking, that country's sectoral contribution. Hence the percentage of GDP by sector is most relevant when it compares countries of similar economic and cultural backgrounds or when it is averaged over not-short time spans as this mitigates extraordinary short term factors.

More valuable information about economic restructuring can be gained by analysing the sub sectors within an economy. This is true because the subsector structure can better reflect quality aspects and the level of modernization (Bui, 2006). Within the industrial sector, for example, manufacturing is a sub-division that requires highly technical skills as well as strong capital and modern technology involved with activities such as mechanical engineering, industrial electronics, pharmaceuticals and cosmetics. A higher proportion of GDP in this subsector will show that an economy reached a higher degree of industrialization than a proportion favouring the field of mining, industrial assembly or agro-processing. The sub-sectors that reflect industrialisation best within the services sector include those that combine high quality services with modern technology. These include insurance, banking, consulting and

telecommunications. Small scale activities, manual, low technology and field activities, such as those in civil service, are indicators of a less industrialised economy.

The second criterion by which a nation's industrial progress can be assessed is the labor structure working in different production areas. In terms of macroeconomic analysis, the labor structure is a solid indicator of industrialisation and accounts for socio-economic factors (Bui, 2006).

The third criterion is export structure. This aspect relates closely to percentage GDP by sector as patterns in exports typically follow output by sector. Since it is accepted that agriculture will contribute most to GDP in earlier stages of economic development, it is expected that this sector will contribute most to an underdeveloped nation's exports. It is likely that an underdeveloped nation's labor force will also reflect this agricultural bias at the time of evaluation.

Current and historic appraisal of Vietnam's economic structure and performance indicates that the country has been guided by capable hands. Rapid growth of the economy has been accompanied by a profound change in the country's economic structure including the restructuring of value added (VA) by sector and labor respectively. Two decades ago, Vietnam was primarily rural, with nearly 80 percent of the population living in the countryside and only 20 percent residing in cities and towns. The urban sector was dominated by two major economic and political hubs: Hanoi in the north and Ho Chi Minh City in the south.

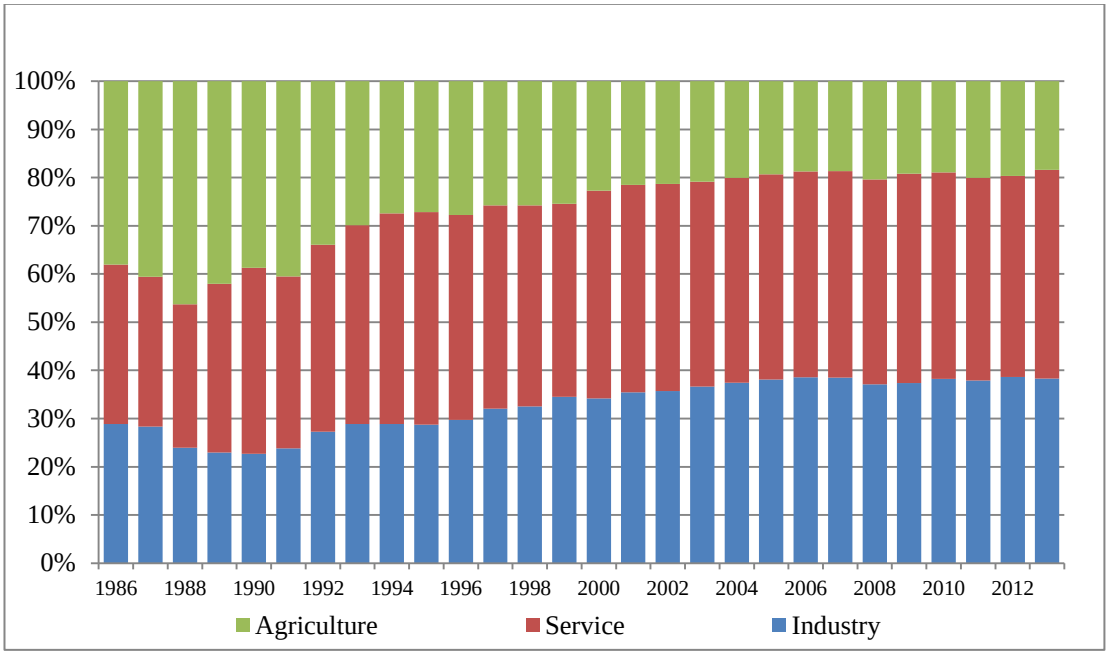
Figure 3.2 shows that GDP growth in Vietnam from 1986 – 2013 was not uniform across sectors and followed a path of industrialiation. Most notably, the agricultural sector's contribution to GDP growth halved over this time period. The industrial and services sectors' contributions increased evenly.

Overall, the agriculture sector (cropping and farm sidelines) played an important role in the early years of Vietnam's development success. However, its share of GDP has fallen to half of what it was in the early 1990s, and in 2010 it contributed only 18.3 percent of GDP. Industry, which includes manufacturing, construction, and utilities, has been the most rapidly growing and dynamic sector and currently makes up 38.3 percent of GDP. Services contribute 43.3 percent, modestly higher than the level in the early 1990s.

It can be seen in Figure 3.2, from 1988- 2005, there is a clear change in GDP growth by sector. Agriculture's share of GDP in 1988 accounted for over 46 percent,

but its share declined rapidly to around 19 percent in 2005 (reduced around 1.2 percent per year). In contrast, the industrial sector's share of GDP has tended to increase from 1990 displaying an approximate 23 percent share to over 38 percent in 2005. In the service sector, the share of GDP has also tended to increase from around 38.5 percent in 1990 to 42.5 in 2005. This means that industrialization has profoundly changed Vietnam's economic structure. The proportion of added value of the industry sector in the GDP rose from 22.67 percent in 1990 to approximately 40 percent in 2005 (almost double within 15 years). The industrial sector has actually played a leading role in the development and the restructuring of the entire economy.

Figure 3.2 Sectoral Composition of GDP in Vietnam (1986- 2013)



Source: World Bank (2015)

However the restructuring tends to slow down in recent years due to the GFC in 2008 and from 2011- 2012, the socio-economic situation in Vietnam continues to be affected by the instability of the world economy due to the financial crisis and debt crisis in Europe has not been resolved. For agriclutrue sector, it is 20.4 percent in 2008 and 19.3 percent in 2013. For the industrial sector, it is 37 percent in 2008 and 38.3 percent in 2013. For service sector, it is 42.5 percent in 2008 and 43.3 percent in 2013. From 2008- 2013, the argriculture sector just reduced nearly 1 percent, while the industry sector increased 1.3 percent followed by the service sector with 0.8 percent.

The share of the service sector also increased since *Doi Moi*, but growth there has become more modest since the 1990s.

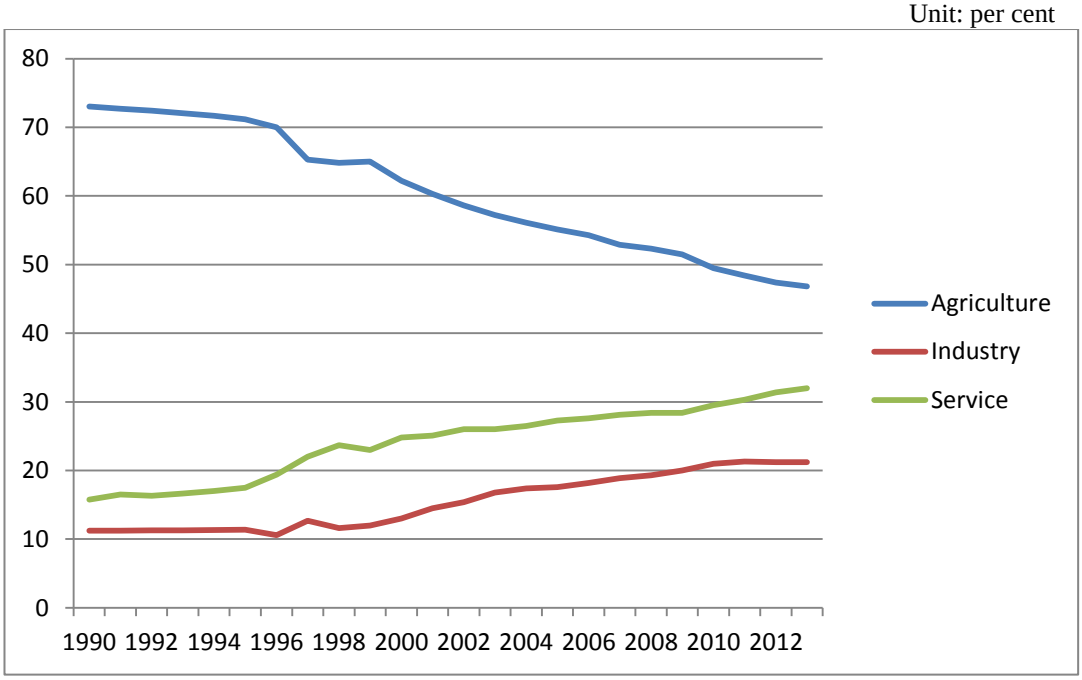
One feature of Vietnam's economic structure is particularly relevant for the present study – the contribution of the manufacturing sector to GDP has remained quite stable since 1997 (see Figure 3.2 and Table A3.1 in the Appendix to Chapter 3). This may be the result of a trend towards producing high-tech products in Vietnam over the last two decades. One of the outstanding issues in the industrial restructuring from 1990- 2013 is in the VA of the sub-sectors in the industry sector have an increase in the various levels in which the manufacturing sector increased from 12.26 percent in 1990 to 17.5 percent in 2013, compared to other sub-sectors within the industrial sector, the share of the manufacturing sector is the highest. In particular, according to the report of the General Statistic Office (2013), the food and beverage production, textile, apparel manufacturing, production of leather and related products, paper manufacturing, metal products (except machinery and equipment), production of computer and electronics, motor vehicles are the major contributors to the growth in the manufacturing sector with the production index over 10 percent. These are labor-intensive industries. Hence, the relatively high growth rate, the industry has contributed actively in maintaining and creating new jobs for the economy. Basically, the equivalent of an increase of the share of manufacturing sector per average annual GDP of countries East Asian countries such as Janpan, Korea and Taiwan in the first periods of industrialisation in 1950s, 1960s and 1970s (see Appendix to Chapter 3).

In terms of the labour force's structure (Figure 3.3 below), the composition of Vietnam's labour force must align with her longer term economic goals and must correspond with continuing patterns of GDP growth. The agricultural sector accounted for more than two thirds of those employed in the period 1986-1990, but the proportion of agricultural workers dropped steadily to about 46 percent in 2013. Corresponding to this downward trend is the increase of the proportion of workers employed in the industrial sector. In 1990, the number of labourers working in the industrial sector accounted for less than 14 percent of the total labor force, but in 2013 this proportion had increased to 32 percent. That means that each year the additional one percentage point of laborers that moved out of the agricultural sector was almost entirely absorbed by the industrial sector. The annual average growth of labour fource in the industry sector in from 2004- 2014 is 4.42 percent and 4.95 in the sevice sector,

while this rate in the agriculture is -0.02 (Bui, 2006; GSO, 2014a and GSO, 2015). The percentage of labourers working in the manufacturing sector increased from 11.8 percent in 2005 to 14 percent in 2013 (GSO 2014a and 2015).

Figure 3.3 Employment by Sector in 1996-2013

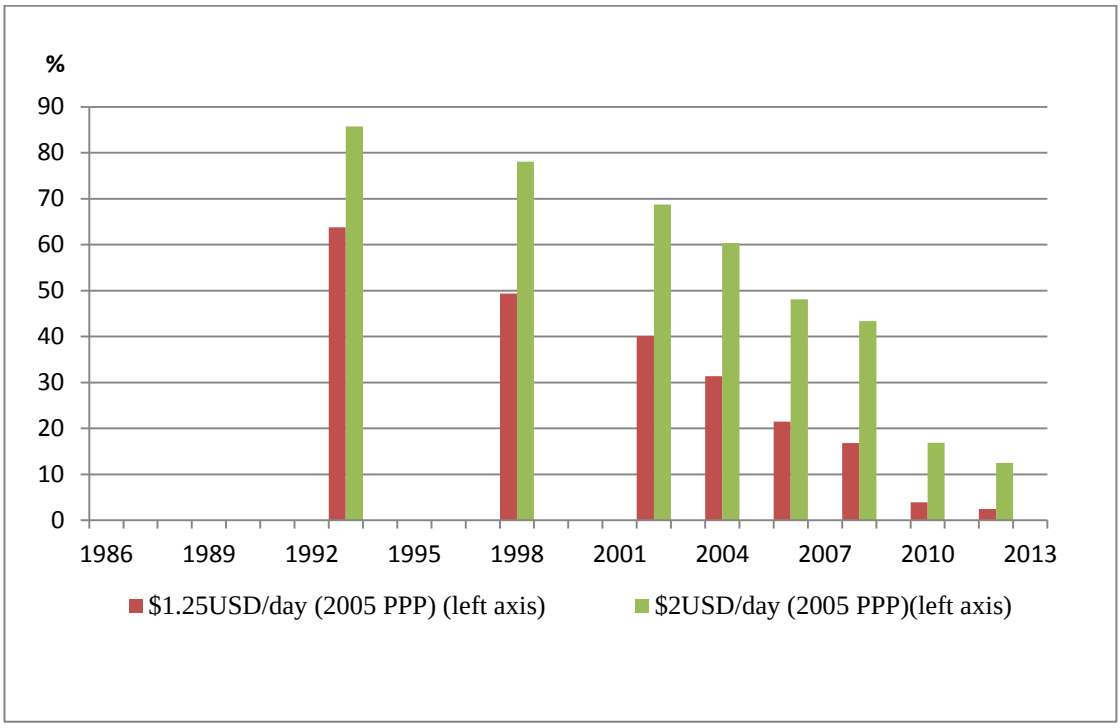
Unit: per cent



Sources: Bui, 2006 (1990-1999); GSO, 2015 (2000-2013)

In parallel with economic growth, changes in economic structure and the above achievements, Vietnam has gained impressive achievements in poverty reduction in a relatively short period of time. It can be seen from Figure 3.4 that rapid and sustained economic growth has improved the lives of many Vietnamese people. Vietnam's historical growth patterns have been remarkably pro-poor; growth in per capita gross domestic product (GDP) averaged 5.4 percent a year between 1990 and 2013 with GDP per capita has been increased from 98 USD in 1990 to 1907 USD in 2013. Vienam's poverty rate fell rapidly and consistently from over 85 percent in 1993 (according to the poverty line for $2 USD/person/day) to around 13 percent in 2013. Furthermore, the extreme poverty rate ($1.25 USD/person/day) had almost disappeared. The $1.90-a-day poverty rate fell from 50 percent in the early 1990s to 3 percent in 2014. In contrast, inequality had increased by a relatively small margin but was still average compared to world levels

Figure 3.4: Poverty in Vietnam using international poverty lines (1986- 2013)



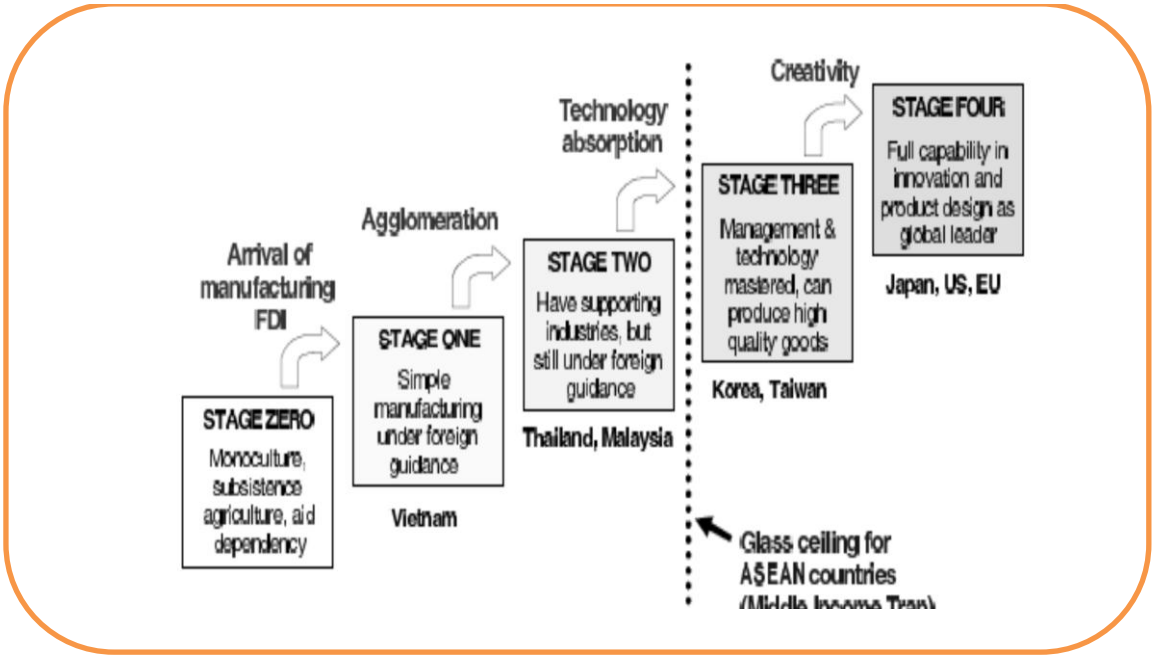
Sources: World Bank (2014)

This is a significant and positive step in the implementation process of industrialization and modernization in Vietnam because the nation is currently in the first stage of industrialization and is trying to reach the second (see Figure 3.5). As acknowledged elsewhere, manufacturing's contribution to industrialisation is crucial to a country's continuing ascent.

Figure 3.5 displays the archetypal progression of a country through the stages of industrialisation. Vietnam is plotted as a stage 1 nation, still in the agglomeration phase, and faces one more step before meeting the challenge of the middle income trap. Progress through each stage depicted above will lead to an overhaul in employment structure (Ohno 2009). The first stage of industrial progress is accompanied by changes in the way each sector (agricultural, industrial and service) contributes to GDP (Soubbotian 2004). Typically, agriculture's contribution to GDP drops as a country progresses. These changes will then catalyse a shift in labour from the agricultural sector to the industrial sector then finally to the service sector. In an advanced, post-industrial economy such as the USA, the services sector will become the main contributor towards GDP and the majority of labourers will be employed there. In the USA the agricultural, industrial and services sectors account for

approximately one, nineteen and eighty per cent of GDP (2014 estimate) respectively (Central Intelligence Agency 2014).

Figure 3.5: Stages of Industrialization



Source: Ohno (2009, p28)

Although Vietnam has progressed through the initial phase of industrialization and modernization, it is still a country with backward labour structure showing disproportional levels of agricultural labour compared to its ASEAN neighbours. For labour employed in agriculture, Vietnam ranks third on the list of ASEAN countries and Asian countries following Laos and India. Thus the portion of the labour force employed in agriculture is still very high in comparison to many neighbouring countries which experienced a similar pace of industrialization (GSO 2014b)

Correcting this disparity is important to maintain Vietnam's longer term goals. Specifically, Vietnam must plan to avoid the 'middle income trap' in the next phase of industrialisation whilst expanding industry's physical and capital base in the short term (Ohno, 2009). To achieve its longer term goals, this author notes that policy must be front-loaded and must pragamtically seek to upgrade the human resource capabilities of industry (Ohno, 2009). This means that successful economic restructruration in Vietnam will require investment in workfore development to meet the increasing demand for skilled workers.

Currently, trained workers constitute only 15.2 percent or 7.7 million out of 50.4 million[9]workers in Vietnam[10]. Out of the 50.4 million employed, only 3.7 percent or about two million people have received some form of formal education or vocational training. Furthermore, access to education and vocational training is limited in rural areas thus creating an observable gap between the number of skilled workers in rural and urban areas.

This structural dilemma has led to the curtailment of the industrialisation process in Vietnam because employers, particularly those in manufacturing and higher tech industries, are unable to attract sufficiently skilled workers to be able to drive their firms forward. This situation is evidenced by the CIEM-WB survey in 2012 (cited in World Bank (2012, p9), one aspect of which examined reasons for firms turning away potential employees. The types of firms in the sample varied but a common response was that, "applicants lacked required skills". MOLISA (2007)[11] documented similar findings, reporting that nearly half of all foreign investment firms had to introduce new or adjust existing training programs. Furthermore, MOLISA (2007) found that 25 per cent of trained workers did not satisfy the skills and knowledge requirements of employers. Table 3.1 below displays the inappropriate nature between Vietnam's current stage of economic development and the educational make-up of the Vietnamese work force. According to the GSO's report on Labour Force Survey 2014 (GSO 2015), out of 52.74 million workers, only 9.6 million workers are trained, which accounts for only 18.2 per cent of the employed population. Only 3.7 per cent of the working population has received formal vocational education and training and there is a gap between urban and rural in terms of access to training (34.4 per cent for urban and 11.2 per cent for rural areas). The share of trained workers was lowest in the Mekong River Delta (10.3 per cent) and Central Highlands (12.3 per cent) and was highest in the two most economically developed centers of Vietnam, namely Ha Noi and Ho Chi Minh City. In regard to the share of workers with university qualifications or higher results were varied across regions, Ha Noi and Ho Chi Minh city, the most concentrated of employed had the highest rates at 18.9 per cent and 20.9 per cent,

[9] This figure includes all people who are fully employed, under-employed, self employed and those who are employed informally.
[10]Source: GSO's report on Labor and Employment Survey (2011)
[11] Source: vietnamnet 10/7/2011, available at http://www.vietnamnet.vn/vn/giao-duc/29744/chat-luong-lao-dong-bat-dau-tut-hau.html.

respectively. These findings point to the low quality of employment in Vietnam and the associated variances by region. A skilled workforce is critical for sustainable development, higher paid jobs and meeting the requirements of industries that use modern technology and management practices.

These surveys are crucial because they show that if Vietnam seeks to elevate itself from low-middle income status it must address structural issues and seek to educate and train a higher number of its workers more effectively. If it does not, Vietnam will not have to worry about the middle income trap for many more years.

The CIEM-WB employer survey, 2011 (cited in The World Bank, 2012, p9) also shows that current training programs in Vietnam are inadequate for the current needs of employers. According to the survey (2011), employers placed value on soft skills such as team work, communication and organisational skills however these were not being advocated or taught in government funded programs. Poor infrastructure, inflexibility and lack of collaboration between institutions and employers have also contributed to the problem but these challenges can be improved but will take some thoughtful action, trust and respect among individual workers and among large institutions.

The above dilemmas concerning employee skill levels cannot be resolved quickly, but Vietnam can attain the greatest results and catalyse the industrialisation process once again by concentrating its efforts here. As seen in tabular format below, the current composition of Vietnam's labour force is not well suited to the second phase of industrialisation. The World Bank (2012) notes that the skills base of Vietnamese workers must be augmented by increasing the number of vocational and educational training facilities, expanding physical capital and removing any further hindrances. The current study extends this line of thinking by investigating how the presence of skilled workers, particularly in manufacturing, can impact on household welfare and the reduction of poverty[12].

The Vietnamese government acknowledges the enduring challenges encapsulated in Table 3.1 and its response has not been frivolous. Two pieces of legislation have typified its response and these are juxtaposed suitably against the National Assembly's Strategy for Socioeconomic Development. In 2011, the

[12]*Source*: Vietnamnet 10/7/2011, available at http://www.vietnamnet.vn/vn/giao-duc/29744/chat-luong-lao-dong-bat-dau-tut-hau.html.

government introduced the first Human Resource Developmnet Strategy for the period 2011 – 2020. This document provides the government with oversight and allows it to steer workforce development in a way that may be deemed theoretically or pragmatically apt. The Strategy defines specific development targets and allows the government to track progress towards these goals. The second significant piece of legislation was the Vocational Training Development Strategy ratified in 2011 and set for the same period, 2011 – 2020. This document was similar in nature to the former, this time establishing targets for levels of vocational and educational training. In both cases, the government retains the ability to guide organisations through the educational process and can provide solutions in either case.

Table 3.1: Structure of working population by training types in 2014

Residence/Socio-economic region	Untrained (per cent)	Academic training (per cent)				
		Total	Vocational training level	Technical secondary school	College	University
Entire country	81.8	18.2	4.9	3.7	2.1	7.6
Male	79.5	20.5	7.5	3.4	1.6	8.0
Female	84.1	15.9	2.1	3.9	2.6	7.2
Urban	65.6	34.4	7.7	5.6	3.2	17.9
Rural	88.8	11.2	3.6	2.8	1.6	3.1
Socio-economic region						
Northern Midlands & Mountains	84.4	15.6	3.8	4.6	2.4	4.7
Red River Delta (*)	79.8	20.2	7.7	3.6	2.5	6.4
North & South Central Coast	83.6	16.4	4.3	4.1	2.1	6.0
Central Highlands	87.7	12.3	2.7	3.3	1.5	4.9
Southeast (*)	83.4	16.6	4.5	3.4	1.7	6.9
Mekong River Delta	89.7	10.3	2.4	2.3	1.1	4.4
Ha Noi City	61.6	38.4	9.3	5.1	3.1	20.9
Ho Chi Minh City	67.5	32.5	7.2	3.5	2.9	18.9
(*) Red River Delta excludes Ha Noi City and Southeast excludes Ho Chi Minh City						

Source: GSO, 2015

A more hands-on approach to economic restructuration is desirable since it provides the government an element of control which can then be leveraged in instances where the imperatives of industrialisation are not being met. Vietnam presents such a case. Figure 3.2 shows that the industrial sector's contribution to GDP has stalled recently and this structural hesitation is unacceptable for a country seeking to progress through to the second stage of industrialisation. Table 3.2 below also displays this trend but further disaggregates based on industrial sub-sectors. The sharp

drop in manufacturing's share of GDP in recent years is particularly relevant when considered in the current research context. The industrial stall generally, and manufacturing stall in particular, is deemed unacceptable because manufacturing has been acknowledged, since the industrial revolution, as a catalyst for economic improvement and a major contributor to peoples' well-being (Kaldor, 1957).

This is a key point in justifying the current research agenda and reference to Kaldour's theory rams this point home. Of primary importance to Kaldor's (1957) *Theory of Economic Growth,* was the conlusion that manufacturing was able to generate dynamic, responsive and growing returns compared to agriculture and thus was better able to accumulate capital and augment productivity by expanding production capabilities. To evidence this empirically, a report conducted by the United Nations Industrial Development Organisation (UNIDO) contrasts the positions of two countries, Ghana and South Korea (UNIDO, 2013). Both countries were noted as having similar starting points however South Korea was able to move away from the agrarian economy by focussing on manufacturing whereas Ghana was not able to do this. As noted by UNIDO (2013, p17), "fourty-five years later these structures had changed rapidly... such that in 2005 Ghana's GDP per capita was only a tenth that of the Republic of Korea". Kaldor's (1957) conclusion is also supported by the presence of strong forward and backward multipliers in manufacturing (discussed elsewhere).

The problematic nature of a stall in industry generally and manufacturing specifically becomes even more pronounced when GDP information in Table 3.2 is juxtaposed against rates of employment in Table 3.3. It is noted in this latter table that employment rates in manufacturing far outstrip employment rates in mining and utilities thus there is far more potential for the manufacturing sub-sector to contribute to poverty reduction via increased employment of skilled and semi-skilled workers. In other words, the manufacturing sector can contribute to poverty reduction vertically by creating more higher paid jobs and horizontally by employing more people overall than its sub-sectoral counterparts. The potential of the manufacturing sector to raise more people's incomes must not be overlooked. In addition, the positive contribution of manufacturing sector to GDP and the high growth among the industry sector have been continuing to be recognized in the reports of the government between 2013 and 2016. In fact, the manufacturing attained the high growth rate of 11.90 per cent in 2016, higher than the year 2015's increase of 10.60 per cent and 8.45 per cent in 2014.

In 2016, the manufacturing contributed considerably to the general GDP growth with 1.83 percentage points. In contrast, in 2016, the mining and quarrying declined by up to 4.00 per cent, reduced 0.33 percentage points of the general GDP growth rate. (GSO, 2014, 2015 and 2016). Again, this is the primary concern of this thesis and the empirical evidence located in Chapters 5 and 6 will reinforce the conceptual and theoretical sentiments discussed here.

Table 3.2: Sectoral Composition of GDP by sub-industry sector (2004-2013)

Year	Scope of sub-industry sector[13]		
	Mining and quarrying	Manufacturing	Construction
2004	10.17	20.32	6.23
2006	10.20	21.29	6.08
2008	8.93	21.10	5.92
2010	10.86	19.68	6.15
2012	12.62	18.55	5.38
2013	11.49	17.49	5.13

Source: GSO at https://gso.gov.vn.

Table 3.3: Employment by sub-industrial sector (2004-2013)

Year	Scope of sub-industrial sector		
	Mining and quarrying	Manufacturing	Construction
2004	0.69	11.44	4.62
2006	0.59	11.76	4.62
2008	0.62	12.91	5.31
2010	0.56	13.54	6.33
2012	0.55	13.81	6.36
2013	0.51	13.92	6.37

Source: GSO at https://gso.gov.vn.

Today the catalytic effects of manufacturing and industrialisation are acknowledged and understood. Yet in Vietnam, as can be seen in Figure 3.2, these lessons are seemingly ignored. Failure to heed these lessons may not result in further degradation of Vietnamese peoples' well-being but it will not improve it significantly either. To effectively contribute to a nation's economy and subsequently to the way we want the world to be, UNIDO (2013) indicates that structural change, particularly a

[13] Industry corresponds to Vietnam Standard Industrial Classification (VSIC) divisions (Decision numbered 10/2007/QD-TTg on 23/1/2007 of Prime Minister issued the Viet Nam Standard Industrial Classification 2007.

change from agriculture to manufacturing, is necessary. Vietnam has not yet achieved this goal.

The manufacturing stall reflected in Figure 3.2, discussed in relation to Tables 3.2 and 3.3 and observed in Figure A3.1 (Appendix to Chapter 3) may seem inconsequential – manufacturing's contribution to GDP is reasonable compared to other countries and agriculture's share is dropping – however as noted above and in Figure 3.5, Vietnam is not yet ready to ascend from the middle income trap. Hence the manufacturing stall is worrisome. Figure 3.2 does not indicate a Vietnamese regress towards agrarian economics, but it does illustrate where policy makers might focus their attention to kickstart the industrialisation process.

This segment, dedicated to sectoral structure, has illustrated a weakness in the context of industrialisation in Vietnam. Whilst employment in manufacturing has been steadily increasing, manufacturing's contribution to GDP has stalled and even dropped in some years since 1990. This presents a dilemma for Vietnamese policy makers since academic sources tell us that the manufacturing's contribution to GDP should be increasing, not stagnating or decreasing as seen in Figure 3.2. If policy is not directed toward addressing this issue then Vietnam's ascent through the stages of (catch-up) industrialisation depicted in Figure 3.5 may be slowed, or it may not eventuate. Either option will be unpalpable for policy makers and constituents alike. This segment also demonstrated the importance of augmenting labour skills in Vietnam to drive industrialisation within the country. As per the above discussion, the types of skill required will include those that contribute to manufacturing. These skills can be endorsed by government to catalyse structural change but are more often introduced and expanded through the development of the private sector within a nation's economy.

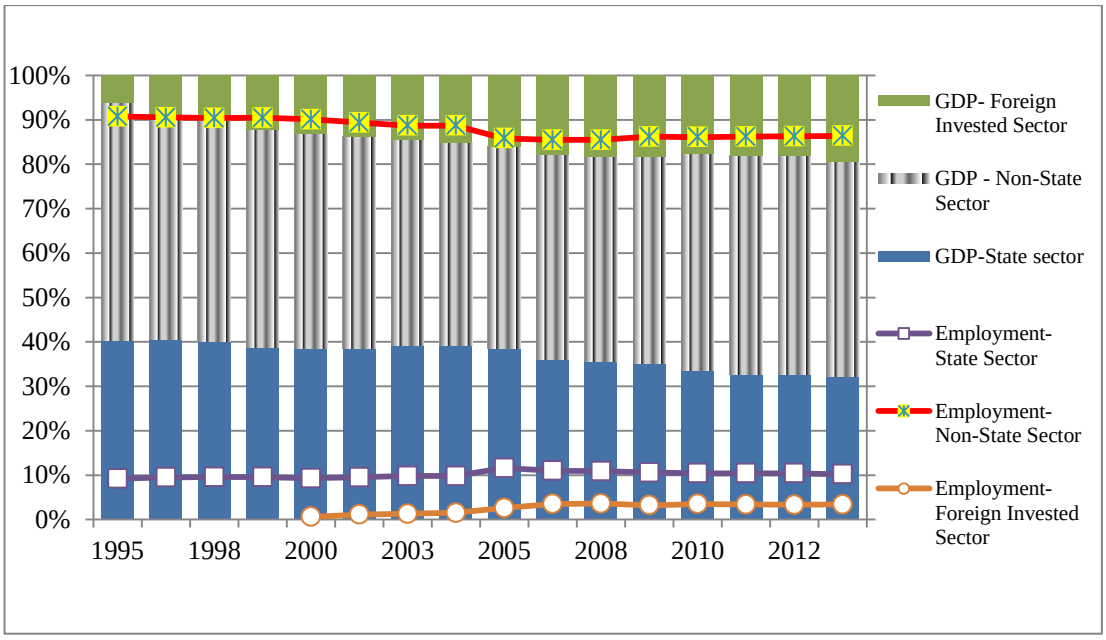
Private Sector Development

The Comecon network that had promised to deliver growth may have sustained Vietnam's economic progression. However, Vietnam's reliance on this possibility quickly faded through the 1980s as the Soviet Bloc gradually disintergrated. Previous sections in this Chapter have demonstrated that, to perform well economically, Vietnam had to enter the marketplace and spur private investment. Since *Doi Moi*, Vietnam has achieved this.

In 1990, just four years after *Doi Moi* was introduced, the country had about 1,000 private sector production facilities. By the year 2000 this number had exploded to 35,000 non-state enterprises. The number of non-state enterprises in 2003 rose again to over 65,500 and since then the total number of non-state enterprises has risen more than 20,000 per year. In terms of contribution to well-being, the state economic sector retained a leading role in social investment programs, accounting for nearly 60 percent during the years 1999-2002. However, this percentage decreased to below 40 percent by the end of 2014 (GSO, 2014).

The notable expansion of the private sector in Vietnam is evidenced by respective changes to GDP growth by sector and by changes in proprietorship during the period 1995-2013. Figure 3.6 below indicates that the non-state and the foreign investment sectors' contribution to total GDP increased, while the state sector's contribution to total GDP tended to decrease. This reflected equitisation of transitioning SOEs and mobilisation of labour to other more profitable enterprises and demonstrates the increasing role of the non-state sector and the foreign investment sector in the economy.

Figure 3.6: GDP Growth and Employment by Ownership



Source: GSO (2005, 2008, 2012)
Note: The share of employment in non-state sector from 1995-1999 included the employment working in foreign invested sector.

Figure 3.6 is significant because it shows that Vietnam is poised to move to the 'technology absorption' phase (Ohno, 2009) of industrialisation. In the second phase, a country has neither the labour force capacity (due to lack of skills) nor the capital structure to develop its industrial power. However, the expansion of the private sector in Vietnam, both domestically and under foreign guidance, has continued for some time. As seen above, the FDI sector has contributed more than 15 per cent to GDP for over 15 years and has more recently jumped to around 20 per cent. The non-state sector's contribution to GDP has also surged, but not as sharply as the FDI sector. GDP contribution and ownership structure depicted in Figure 3.6 therefore suggest that a change from Phase 1, 'agglomeration', to Phase 2, 'technology absorption', will soon occur.

To evidence this further, Figure 3.8 below shows FDI capital registered in Vietnam since 1994[14]. The graph illustrates a steady yet low rate of FDI from 1994 until 2005 when Vietnam joined the WTO. From that point, FDI spiked, then fell sharply again since the GFC.

The timing of the GFC was particularly bad in the context of Vietnamese industrialisation because it dissuaded FDI. This burgeoning contributor may have allowed Vietnam to progress unhindered but, as can be seen, that changed after 2008. Vietnam will now require a new strategy, find new aspects to leverage, in order to continue its progress towards Phase 3 of industrialisation. FDI will continue to play a large part in Vietnam's economic development, but recent economic constraints mean that the continual appraisal of the trade and investment environment will be keys for success. Vietnam has had a positive history with regards to trade and investment since *Doi Moi.*

Trade and Investment Reform

Before the renovation period, Vietnam had trade relations with the world but the country was mainly tied to the Soviet bloc. As mentioned above, political events in the the Soviet Union and Eastern Europe in the early late 1980s and early 1990s put pressure on Vietnam to seek new and previously usurped partners. The introduction of

[14] It must be noted that FDI was not a significant contributor to any Asian country's GDP prior to the cut-off point for the graph, 1994, but this was particularly the case for Vietnam during the 1970s and 80s since the country was bound to the Comecon network.

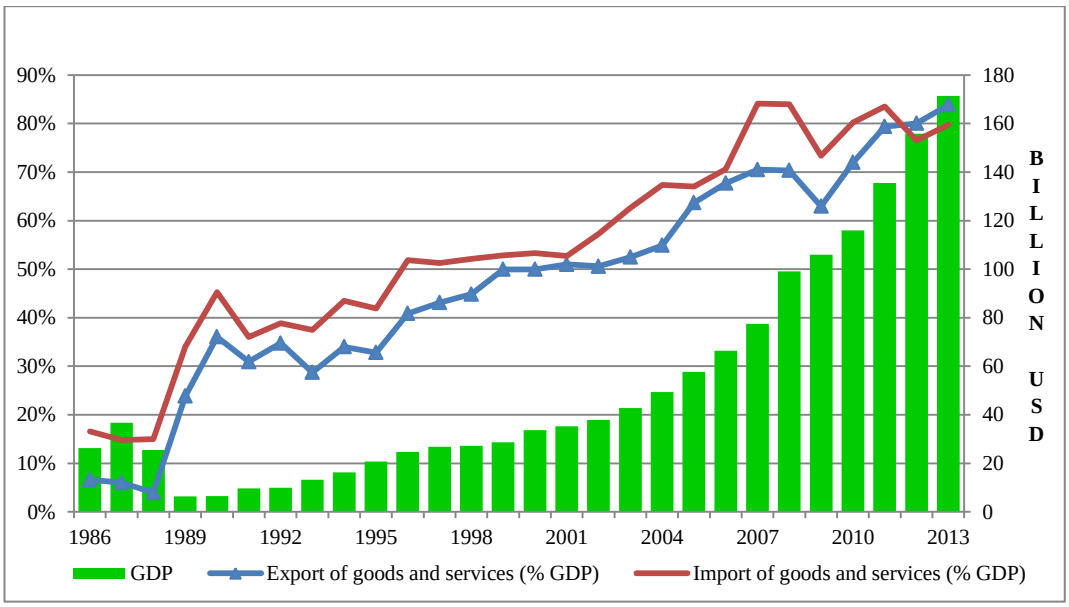
Doi Moi in 1986 opened Vietnam's doors to trade and foreign investment. The Foreign Investment Law, introduced in 1987 and updated in 1990, lent legal and institutional credence to the country's commitmentfurther augmenting foreign investment and international trade. In 1993, Vietnam normalized relations with three international financial institutions, mainly the World Bank, IMF and ADB. This was a milestone for the re-integration process of Vietnam into the world economic system. Further events cemented Vietnam's palce on the world stage. Vietnam officially joined ASEAN on 28th July 1995; conducted a program of tariff reductions commensurate with the framework of tariff preferences which were common for the ASEAN Free Trade Area in 1996; andjoined the Economic Cooperation Forum Asia - Europe Meeting (ASEM) that same year. Two years later, Vietnam again attended the Economic Cooperation Forum Asia - Pacific (APEC).

Bilateral trade agreements between Vietnam and the United States signed in July 2000 were effective from December 2001. This was the next step in the integration process. In 2007, the economy took a big step in the integration process when Vietnam became an official member of the WTO. In late 2014, Vietnam completed negotiations of free trade agreements with South Korea, and the Customs Union Russia-Belarus-Kazakhstan. Following in the spirit of active, positive integration, Vietnam continues to search for partners and is currently negotiating free trade agreements with the EU. Similarly, Vietnam is now negotiating for inclusion into the Trans-Pacific Partnership (TPP). The TPP is an initiative that is advocated by the WTO and will have implications for Vietnam if accepted. Despite the history of reform and positive change alluded to in this and the previous paragraph, Vietnam still maintains high tariffs to dissuade foreign businesses. Gillen (2011) argues that this may be due to the lingering state-centric culture. Vietnam must amend these tariffs and move to pass legislation that improves labour rights if it seeks to meet the criteria for inclusion into the TPP. If resistance to these ideas is overcome, successful inclusion into the TPP will mean Vietnam stands to gain most out of any country, benefiting from a 0per cent tariff rates on exports to the USA (Marston, 2015). This would be a significant boon for the Vietnamese economy which currently exports $7 billion worth of apparel to the USA – a figure that comprises 35 percent of total US apparel imports and is second only to China.

International integration brought many benefits to the economic development of Vietnam primarily by freeing capital resources sandwiched in the centrally-planned economy and by expanding the collective mindset. However, the process is not yet complete. Vietnam's integration commitment will require her to gradually eliminate protection mechanisms and subsidies, improve the transparency of operations and policy mechanisms, promote the construction of standard modes of production and incentivise a managerial and entrepreneurial culture. Further integration will promote the transfer of transnational capital, technology and market incentives and will increase national competitiveness generated by FDI. The opening of the market since the early 1990s radically changed the direction of Vietnam's economic development for the better but more can be done to integrate and reduce further barriers to trade. A country's openness to trade can be gauged by referring to its level of 'economic openness'.

During the early years of *Doi Moi*, economic openness (total export and import value of goods and services to GDP) improved significantly, increasing threefold in one year, reaching more than 81 percent of GDP in 1990 (Figure 3.7). The general trend of economic openness increased until 2009 and 2010 when world demand declined due to the economic crisis. Noticeably, the size of exports and imports had a strong correlation.

Figure 3.7: Openness (Export/GDP and Import/GDP in Vietnam (1986-2013)



Source: World Bank, 2015

This reflected Vietnam's ability to take advantage of very good opportunities created by international trade integration. In the first phase of *Doi Moi*, the country's domestic resources were insufficient, especially capital goods for industrialization and modernization. This shortfall was offset by foreign markets through imports. Vietnam's export structure was also adjusted. Whilst the export of traditional goods such as agricultural products, crude oil and other natural resources was maintained, Vietnam's new ability to source inputs internationally meant that the export of industrial products was augmented. Data observed from Figure 3.1 compliments this information – industrial and manufacturing contribution to GDP steadily inclined since 1990 but, as mentioned, has stagnated more recently.

Further conclusions may be inferred. The country's population has reached 90 million people and every year about 1 million people join the labor force. This represents a significant economic driver but much of the entering labor force remains largely rurally based, possess few skills and lack education with high technology. This problem is somewhat resolved through the process of international economic integration which solves for jobs in labor-intensive sectors such as textiles and electronics assembly. However, long term growth cannot rely on products based on low or medium technology and labor intensive sectors. Solutions to this problem will come in the next stage of Vietnam's economic development where it must choose new strategies to succeed.

Attracting and using foreign direct investment (FDI) capital

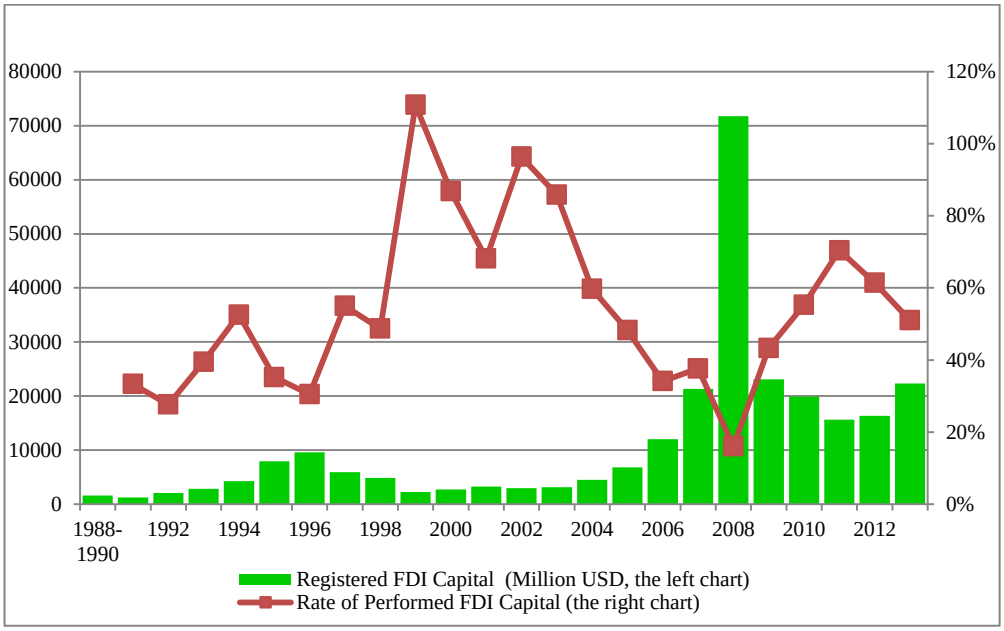
Moreover, one of critical factors for the economic growth of Vietnam after *Doi Moi* has been the impact of FDI. FDI flow into Vietnam started in 1988 after the Law on Foreign Investment was promulgated in 1987. From 1988-1990, there were 211 FDI projects registered to invest in Vietnam with total registered capital of over 1.6 billion USD. However, FDI actually performed significantly only from 1991 onwards. In 1994, the scale of FDI was equivalent to 10 percent of GDP and contributed significantly to the achievement of high growth in the years before the Asian financial crisis. This event also marked the end of the wave of FDI with the first time in Vietnam (Figure 3.8).

Capital flows recovered slightly from 2002-2004, and it started to increase remarkably in 2005, the start of a second wave of FDI. The country's investment principles improved with the integration process – a factor that explained success in attracting FDI in Vietnam. In the first wave of FDI, Vietnam joined ASEAN in 1995 and FDI peaked one year later. The same thing occurred when Vietnam joined the WTO in 2007 and FDI reached the highest level in history in 2008 during the second wave. FDI capital in Vietnam is divided into two main branches: investment into production projects and investment into banking and finance. With the first branch, the role of FDI is reflected in the contribution in the GDP structure, the production value and/or contribution exports. By the mid 1990s, the FDI sector contributed one quarter of the total of industrial production value and more than 6 percent of national GDP. Ten years later, the corresponding proportion was 43.8 percent and 15.99 percent (GSO, 2005, 2008, 2012 and 2014).

Figure 3.8 below showed that the percentage of implemented FDI capital from1986 to 2012 was not high. There was no corresponding upward trend to registered FDI capital however this reflected global economic instability at the time. On the other hand, it also demonstrated the fact that there were still obstacles in the internal business environment of Vietnam. The decline in FDI inflows after 1996 indicated the investment environment improved slowly, the limitations of the economic and administrative system (Suri & Dinh 2006). There was a decline in registered FDI capital after 2008 because of the global economic crisis. However, the implemented value of FDI capital was very stable, around 11-12 billion USD per year for the period 2008 - present.

In addition to impressive achievements in economic growth, revamping the economic structure as well as in reducing poverty and social equity as above, the thirty-year journey of renovation has also seen many great achievements in the other fields.

Figure 3.8: Registered and Implemented FDI Capital (1988- 2013)



Source: GSO (2005, 2008, 2012 and 2014)

Only about 30 per cent of the rural population had access to clean water in 1990, but after two decades this proportion was up to 83 per cent. The enrolment rate in primary education in 2009 reached 95.5 per cent. The completion rate in primary education was 88.2 per cent and the literacy rate of people aged 15 to 24 was 97.1 per cent. In the health care, the proportion of the population who was covered by health insurance had grown very rapidly, particularly over the past few years, reaching 60 per cent in 2010 (World Bank 2015), and increased to 68 per cent on in 2012 (UNDP 2014, p54). The percentage of people who were covered by health insurance or book/free healthcare cards had increased from 37.4 per cent to 72.1 per cent between 2004 and 2012. Notably, the lowest income earners in society had greatest access to some form of free health care (Table 3.4). This proportion indicates a pro-poor strategy in allocating health care and it reflects the undeniable efforts of the government in providing basic public services equitably. Budgetary constraints have probably been the primary cause preventing authorities supplying free public services to all people.

The continuous growth in Human Development Index (HDI) in Vietnam is evidence of its social development during the reform process. Income growth and the creation of an environment of equality in education and health care are fully impressed into thegrowth of the HDI. The index had risen continuously from 0.463 in 1980 to

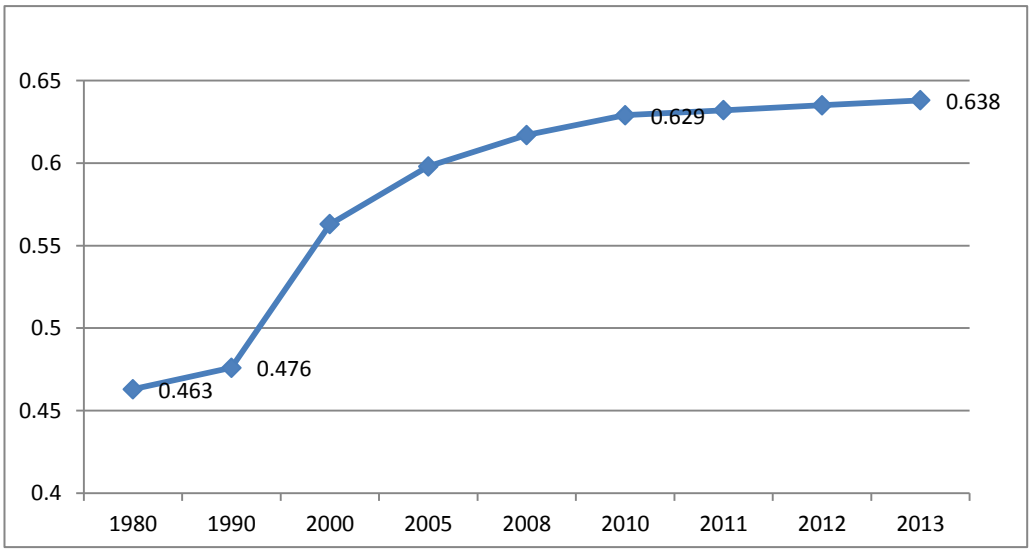
0.638 in 2013. During this period, the index grew most rapidly during Vietnam's formative years, 1990-2000 (Figure 3.7)

Table 3.4: Percentage of inpatient treatment and outpatient treatment having health insurance or free health care certificate by income quintile (per cent)

Year	Total	**Quintile 1**	**Quintile 2**	**Quintile 3**	**Quintile 4**	**Quintile 5**
2004	37.4	44.1	32.3	31.7	35.3	43.3
2006	57.4	71	52.9	49	53.5	60.9
2008	61	72	55.7	53	57.4	66.5
2010	66.7	74.1	61.2	60.4	66.6	70.9
2012	72.1	81.5	67.7	66.6	69.4	75.3

Source: GSO, 2004, 2006, 2008, 2010 and 2012

Figure 3.9: Human Development Index in Vietnam (1980- 2013)



Source: Human Development Reports (UNDP, 2014)

3.4 Discussion and Summary

This chapter has provided general information about Vietnam, outlined Vietnam's economic transformation over the course of three time periods, 1954 – 1975; 1975 – 1986 and; 1986 – present day, has situated *Doi Moi* as the most significant stage in Vietnam's economic reform and has reviewed Vietnam's economic performance since the inception of *Doi Moi* in 1986. A brief overview of the Soviet-style model of governance that pervaded the Vietnamese psyche and landscape during the period 1954 – 1986 was provided. Processes common to socialist transformations were described and shown to have occurred in Vietnam during war and post war periods. Despite the potent ideology flowing from the North, this chapter demonstrated that the practicalities of commercial and social life restricted Vietnam's full

engagement with the Soviet agenda. Socialism had not taken root to the extent that market economics was made redundant. Whilst remaining under the auspices of the state, many SOEs, as well as private enterpirses in the South, had maintained ties to the open market. Thus the reformation agenda undertaken from 1986 followed a path of little resistance and the transition to a market based economy in Vietnam was eased. Vietnam is now situated as a lower middle income country thanks largely to this radical reform schedule however, as was shown above, the schedule was not blasted into action but was rather influenced by an overweening market and the slow devolution of responsibility from the centre. The chapter showed that many of the policies and pieces of legislation brought into effect in the late 1980s had emerged during Vietnam's fertile transformative years 1975 – 1986.

A brief socio-economic overview demonstrated that the Vietnamese economy has been restructured since *Doi Moi*. In particular, agriculture's share of GDP has declined significantly and, whilst industrial GDP has gone up, manufacturing in the country has remained fairly static and contributed remarkably to industry's share of GDP. Nonetheless, with the proportional increase in industry, the services sector has expanded and driven Vietnam's economy further. These changes are largely reflected in the composition of employment in Vietnam. The share of the labor force working in agriculture has fallen, while the share in the industry and sevices has doubled. Labor-intensive light manufacturing goods now represent the fastest-growing component of exports. These result in advances in well-being reflecting on the results of indicators such as poverty indexes and GINI and HDI. The high economic growth and structural change of the economy is one of the important resouses for social reinvestment with the aim of creating a job, a rise in household's income and improving the quality of life of Vietnamese citizents. More specifically, the absolute number of poor people living in Vietnam has dropped sharply, and reductions in the poverty headcount have been accompanied by notable reductions in the depth and severity of poverty. In contrast, poverty reduction is also beneficial to the economic growth and the economic restruction. When the absolute poverty lines reduce significantly, the high economic growth has been witnessed. This is because that most of the policies such as the investment in education, employment, and infrastructure, health care are aimed not only to increase the poor's income effectively, but also to increase the production capacity of the economy. Vietnam now achieves similar ratings to much more

advanced economies, falling just short of its close and more developed neighbours Singapore and Malaysia. Whilst the poverty indicators are positive, inequality in Vietnam is pervasive, yet still within acceptable thresholds. Growth levels may have slowed but this represents a minor concern for policy makers. Therefore, it is vital to examine the relationship between industrialization and poverty alleviation in Vietnam.

In fact, the manufacturing sector's development strategy is one of 2011– 2020 Socio-Economic Development Strategies in Vietnam with the objective "to become a basic industrialized country with the foundation of a modern and industrial country by 2020" and by 2035 Vietnam aspires to become a modern, industrialized economy. This strategy is aimed at creating the growth in the manufacturing sector and in the other sector (agriculture and sevice sector). This will lead to the job creation and income and poverty reduction. The results of poverty in Vietnam examines through income, expenditure, the ability of escape poverty, employment and poverty reduction in this thesis.

In summary, Vietnam's modern economic background is eclectic ranging from Stalinist roots in the 1950s, through a 1980s renaissance and finally into a modern market economy. Underlying attention to market mechanisms throughout Vietnam's history has meant that poverty reduction has progressed and is progressing reasonably but more must be done. Indicators suggest that inequality remains. To understand how economic policy impacts on the welfare of constituents, the next chapter will make use of household surveys to describe poverty in Vietnam and provide a workable definition. It will also examine several of the poverty reduction strategies used in Vienam up to this point. This will then be used to inform the data capture and analysis phase of this thesis.

CHAPTER 4 POVERTY STATUS IN VIETNAM

4.1 Introduction

Economic growth, coupled with reductions in inequality and poverty, are three imperatives of modern societies. However, national comparative advantages, tax rates, sectoral advantages, levels of human capital, geographic hindrances or boons, war, trade statuses, natural phenomenon, and so on, can all contribute to the pace with which these imperatives are met. These contextual factors are regarded as challenges to be imputed, analysed and understood by researchers who aim to build a knowledge base, thereby contributing to improving living standards.

Chapter 3 described recent economic trends in Vietnam in the context of a reforming free market economy and focussed on structural changes. It is the profound structural changes experienced in Vietnam that have increased the industrial and services sectors'contribution to GDP while the agricultural sector's share has steadily decreased. The labour force in Vietnam has increased overall in the industrial and services sectors. Urban population is rising and the rural population is on the decrease. This change in the economic structure has reflected a change in Vietnamese business' modes of production with a movement primarily towards more modern areas with higher labor productivity and greater added value. As a result, the per capita income of Vietnamse citizents has risen and the share of the the population living below the international and national poverty lines has declined dramatically.

To gain a deeper understanding of poverty in Vietnam, this chapter discusses poverty measurement in Vietnam in section 4.2. Section 4.3 presents the Government of Vietnam's poverty reduction policies, relevant programs and the results of implementation of objectives and tasks of poverty alleviation. Section 4.4 analyses poverty status in Vietnam by drawing on existing data and research to identify who the poor are, where they are located, and why they are poor. The chapter will be summarised in section 4.5.

4.2 Poverty Measurement in Vietnam

As mentioned in Chapter 2, there are two main approaches to poverty measurement in Vietnam as well as various complimentary methods. The Ministry of Labour – Invalids and Social Affairs (MOLISA) uses income to construct the poverty

line and this approach is suitable for social programs dedicated to raising income per capita/household. The second approach, developed by the General Statistics Office and the World Bank (GSO-WB), is used to gauge poverty levels over time based on per capita consumption. This section introduces the relevant organisations then describes compares and contrasts these two main approaches to poverty measurement in Vietnam.

4.2.1 The MOLISA Income Based Poverty Line

The MOLISA is a government ministry that operates within Vietnam on a nation-wide scope. The Ministry is committed to functions in areas including employment, vocational training, occupational safety, gender equality and child care. These functions collectively encompass "labour and social issues and people with special contribution" (MOLISA, 2010)

In accordance with its social role, the Ministry develops official urban and rural poverty lines at the start of every five year period as per the Socio-Economic Development Plan (SEDP). The relevant SEDPs for the present study were established as follows: (i) May 4th 2001 for the period 2001 - 2005, Prime Minister's Decision No.71/2001/QD-TTg aimed at National Targeted Programs (Vietnam, 2001); (ii) February 5th 2007 for the period 2006 – 2010, Prime Minister's Decision No.20/2007/QD-TTg aimed at the National Target Program on Poverty Alleviation (Vietnam, 2007); (iii) January 30th 2011 for the period 2011- 2015, the Prime Minister's Decision No.09/2011/QD-TTg aimed at the National Target Program on Poverty Alleviation (Vietnam, 2011a) and; (iv) October 8th 2012, Prime Minister's Decision No.1489/QD-TTg aimed at the National Target Program on Sustainable Poverty Alleviation (Thu tuong Chinh phu, 2012).

Once established, MOLISA applies the poverty line to calculate relevant measures and monitor and update its list of households below that threshold. One of the primary purposes of this process is to determine eligibility for a number of targeted poverty reduction programs. Eligible households, through a budgetary process, can then become beneficiaries of targeted government programs such as the Government's Resolution No.30a/2008/ND-CP of December 27, 2008, "on the Support Program for Fast and Sustainable Poverty Reduction in 61 Poor Districts". Progress towards the successful implementation of such programs is continually monitored and rated against

targets laid down quartely. These projections are ambitious and MOLISA's evaluation and construction of a poverty line once at the beginning of every five year SEDP represents a potential weakness since it may not adjust accurately for inflation and may not be able to estimate risk over such a long time frame. Nonetheless, the selection of stable indicators can alleviate such concerns.

Table 4.1: Official MOLISA poverty line 1993- 2015 – not adjusted for inflation (Rice equivalence and/or Vietnam Dong/person/month)

Year	1993-1995	1996-1997	1998-2000	2001-2005	2006-2010	2011-2015
Urban	20 kg	25 kg	25 kg or VND 90,000	VND 150,000	VND 260,000	VND 500,000
Rural	15 kg				VND 200,000	VND 400,000
Rural Mountainous and Island		15 kg	15 kg or VND 55,000	VND 80,000		
Rural Plains and Midland		20 kg	20 kg or VND 70,000	VND 100,000		

Sources: Author's compilation adapted from (MOLISA, 2005b; Vietnam, 2005; Vietnam, 2011b)

MOLISA uses income level as a welfare indicator to establish a base line for poverty. The income level below which one is deemed impoverished was originally set according to the cost of rice equivalents. However, use of one factor alone, even a staple, was deemed unreliable. Since 2005 MOLISA has thus been using a cost-of-basic-needs approach which was imported from and has been perpetuated by the GSO. This method calculates the income needed for a basic non-food package (clothes, shelter etc.) and the cost of a standard food basket using a baseline of 2100 kcals per person per day. The official MOLISA poverty threshold is disaggregated by region, as in Table 4.1 above. The observable discrepancy in poverty thresholds between urban and rural areas is attributable to the higher cost of living in urban areas. In this sense the official MOLISA poverty line does consider the relative situation of individuals, but only on a regional scale. After establishing the income based poverty line, MOLISA then publishes its set of income based poverty rates.

Table 4.2 below shows poverty thresholds set according to the GSO-WB approach. There is an observable and significant difference between these two tables. The GSO-WB approach is updated every year (Table 4.2 shows poverty lines for each two year period) unlike the official MOLISA poverty line which is now updated every

five. This is advantageous for users of the GSO-WB poverty line because more frequent updates and allows for more precise estimates of poverty.

Table 4.2: Official GSO approach based on MOLISA poverty line 2004 - 2012– adjusted for inflation every year (Vietnam Dong/person/month)

Year	2004	2006	2008	2010	2012
Urban	220,000	260,000	370,000	500,000	660,000
Rural	170,000	200,000	290,000	400,000	530,000

Sources: GSO, 2004, 2006, 2008, 2010 and 2012
Note: Poverty rates in 2004, 2006 and 2008 are based on the Government's poverty lines for the period 2006-2010; Poverty rates in 2010 and 2012 are measured by the Government's poverty lines for period 2011-2015.

There are also two noteworthy differences between the calibration of the MOLISA and GSO (based on VHLSS) poverty lines. These differences have led to confusion in precisely defining poverty in Vietnam. Nevertheless, while it is acknowledged that the respective poverty lines are only able to define poverty partially, it must be appreciated that each is designed for specific purposes. As noted by Haughton and Khanker (2009), the choice of poverty line, "... depends in large measure on the intended use of the poverty rate. In this sense the poverty rate is indeed a social and policy construct, and appropriately so."(2009, p40). Firstly, as can be seen in Table 4.2, the GSO adjusts the poverty line for inflation every year whilst the MOLISA poverty line does not, preferring to keep the threshold in nominal terms. This creates a 'sawtooth' pattern of poverty recognition. Poverty rates jump sharply at the beginning of each five year period and then erode gradually until the start of the next five year period where the rate will jump sharply again. The sawtooth pattern is depicted graphically in Figure 4.1 in the following sub-section. Secondly, MOLISA poverty lines are constructed using a hybrid method involving subjective and objective components – income levels are established by national averages and through bottom-up consultation at the village level. By contrast, the GSO is less subjective in its construction of the poverty line, preferring to use income statistics garnered from the VHLSS.

The relevant period for the present study is post-2005. Prior to this point, the establishment of the poverty line and subsequent identification of the poor by MOLISA was based on amorphous criteria that reflected contextual factors. In 2005, the Ministry's efforts to gauge poverty were augmented by the implementation of a National Census on Poverty (NCP) which sought to produce a complete set of statistics

on household poverty in Vietnam for the period 2006 – 2010 (MOLISA, 2005). This procedure involved two stages. The first stage involved the identification of those who were 'surely' not poor. This was achieved by analysing data from a simple questionnaire regarding a person's assets. Those people who were 'surely' not poor include individuals and households with a particular type of asset, savings, that allowed them to smooth their consumption in difficult economic times. Those above a given assets threshold were excluded from further analysis. The upshot of this is that the MOLISA income based poverty line placates a concern that advocates of expenditure based poverty lines present – MOLISA poverty line takes account of savings in its assessment of poverty. The second stage involved a questionnaire which was used to collect further information about household income. This procedure was replicated in 2010 for the second NCP which seeks to identify poor for the period 2011 – 2015. In years when there is no NCP, MOLISA will physically go to each village and create an updated list of poor households in consultation with the village leader (MOLISA, 2010). Those deemed poor are also consulted and are involved in the ratification process. The NCP is thus a useful tool for MOLISA who have sought more concrete figures since 2005.

The abstracted 'sawtooth' pattern (refer to Figure 4.1) reflects analytical strengths and weaknesses of the Ministry's method. Firstly, the policy of updating poverty factors every five years means that MOLISA poverty lines lack consistency and therefore may not be useful for monitoring longer term changes in poverty. This lack of consistency is acceptable, however, because it does not preclude the Ministry from assessing the efficacy of macro policy. Furthermore, it does allow for a comparison of the success of each SEDP longitudinally because, as previously noted, each SEDP marries conveniently to each five year update of the MOLISA poverty line. Secondly, the procedure used to construct the MOLISA poverty line has been criticised in certain areas for being overly complex for citizens and communes to follow and not thorough enough in other areas. This has led to vagaries and inconsistencies in the results of surveys thereby causing problems in poverty identification (Cuong & Tran, 2014). Program implementation based on these results will therefore be hampered. These vagaries have been attributed to the questionnaire's lack of depth concerning income appraisal (Cuong & Tran, 2014). Thirdly, specific aspects of the method used to construct the poverty line have created misguided incentive for both poor people and

the officials tasked with administration. Since the Ministry uses NCP results to direct financial support, there is a tendency for households to underreport their income. In contrast, local officials, who are tasked with reducing poverty rates, must demonstrate decreasing numbers of poor people. Asymmetrical dispersal of information existing on both sides pushes and pulls on poverty statistics so that in any one year there may be mistakes in both directions. Whether these average out is moot since program efficacy will be judged not on the amount of funding that is earmarked but on whether the respective programs actually contribute to the way we want the world to be. Despite these three main drawbacks, the MOLISA poverty line retains a methodological advantage over the GSO-WB poverty line in its bottom-up approach to poverty identification. This, it may be argued, allows the Ministry to tailor its programs and target those most in need (MOLISA, 2010). The consistency of the GSO-WB (inconsistency of MOLISA) poverty line alluded to above is also a redundant factor since the method for obtaining the GSO-WB figures changed in 2010. Studies prior to and after this date are now incomparable thus it is no longer an advantage. The timeframe of the current study is 2004 – 2012. This criticism therefore does not apply.

4.2.2 The GSO-WB Consumption Based Poverty Line

The GSO-WB originated the cost-of-basic-needs approach to constructing a poverty line in Vietnam. This approach instils confidence since it is not based on standard or staple measures, such as rice, which may or may not engender societal norms and/or circumstances appropriately. The approach also differs in that it is based on consumption, as opposed to the MOLISA approach that uses income as a proxy for poverty. The General Statistics Office, with help from the World Bank, constructed the first income based poverty line in 1993. The first two estimates calculated in 1993 and 1998 were based on the VLSS while subsequent calculations from 2002 – 2012 have been based on the VHLSS.

Whilst the GSO-WB retained the VHLSS as its data source and have kept figures relatively constant in terms of real purchasing power since 1993, the GSO-WB applied significant change to its methodology in 2010. This change is reflected in Figure 4.2 where a sharp upward revision (denoted with a dotted line) in GSO-WB poverty rates is observed from 2008 – 2010. Consequentially, poverty estimates prior to 2008 are not comparable with estimates after 2010. The surveys and resultant

calculations diverge in three important aspects. Firstly, the population from which survey data was obtained was expanded significantly to include new communal areas. Similarly, existing areas were disaggregated thus increasing the sample size and tightening the analytical lens. Secondly, the surveys were shortenedand revised in certain areas, including the consumption module. Thirdly, the algorithm used to generate a poverty profile was altered[15] to account for the first two changes, thus creating an updated and more comprehensive picture of poverty in Vietnam.

The trend points to positive signs for the welfare of Vietnamese people. Welfare aggregates direct our attention to the changing nature of poverty. Today, Vietnam has progressed to become a middle income country (Kozel, 2014). Therefore, under the cost-of-basic-needs approach, the GSO-WB pressed new indicators into its constitution of a 'typical' basket of goods. This methodological imperative is reflected in the changes made to the consumption module.

These changes, coupled with the use of two different poverty lines in Vietnam, have fuelled the belief that comparisons are difficult. As can be seen in Table 4.3, updates to the GSO-WB poverty line occurred inconsistently to begin with (five and four years respectively) and change rates fluctuated intensely. The most salient point to note is that the relative changes in 2010 and 2012 (233per cent and 133per cent) are incomparable because 2010 represents the baseline year prior to which figures were based on a different methodology.

Table 4.3: GSO-WB expenditure poverty lines, 1993-2010

(in **1000 VND/person/year)**

Year	**1993**	**1998**	**2002**	**2004**	**2006**	**2008**	**2010**	**2012**
Poverty lines	1,160	1,790	1,917	2,077	2,556	3,360	7,836	10,455
Time frame (years)	-	5	4	2	2	2	2	2
Relative change (per cent)	-	54	7	8	23	31	233	133
Nominal change (per cent, base year 1993)	-	54	65	79	220	290	676	901

Source: Adapted from GSO, 2008, 2010 and 2012

Notes: GSO-WB poverty line has only one level for urban and rural areas. Prior to 1998 GSO-WB used the VLSS. After 1998 it used the VHLSS.

[15] The recognition of an incompatibility between results prior to 2008 and after 2010 suffices the need of the present study thus no further algorithmic detail is provided on this alteration.

4.2.3 Comparisons Between the MOLISA Income Based Poverty Line and The GSO-WB Consumption Based Poverty Line

How does the MOLISA Income Based Poverty Line compare with the GSO-WB Consumption Based Poverty Line? Figure 4.1 plots the poverty rates in Vietnam using various poverty measures from 1993 to 2013. Overall, there has been a convergence in poverty rates (measured using different poverty lines) over time. The GSO-WB poverty line

Which is a better measure of poverty? As noted earlier, each has different advantages and limitations.[16] For example, poverty lines based on household consumption such as the GSO-WB has an advantage over income-based one such as the MOLISA because consumption can fluctuate less over time due the ability of the households to smooth their consumptions via disaving when there is a sudden decline in income. In such cases, some households cannot be classified as poor since they have enough saving for smoothing their consumption during difficult time. This will critically impact the assessment of poverty dynamics, in particular in the difficult period of Vietnam during 2008-2012.

Furthermore, the GSO-WB poverty line has an advantage over either the MOLISA because it was kept relatively constant during 1993-2010 and was not dependent on the financial capacity of the Vietnamese government in fighting poverty. In this aspect, the GSO-WB may be more appropriate to examine the progress of poverty reduction overtime. Unfortunately, this particular advantage no longer exists as the GSO-WB poverty line was changed in 2010. This makes the comparison on poverty status pre and after 2010 difficult.

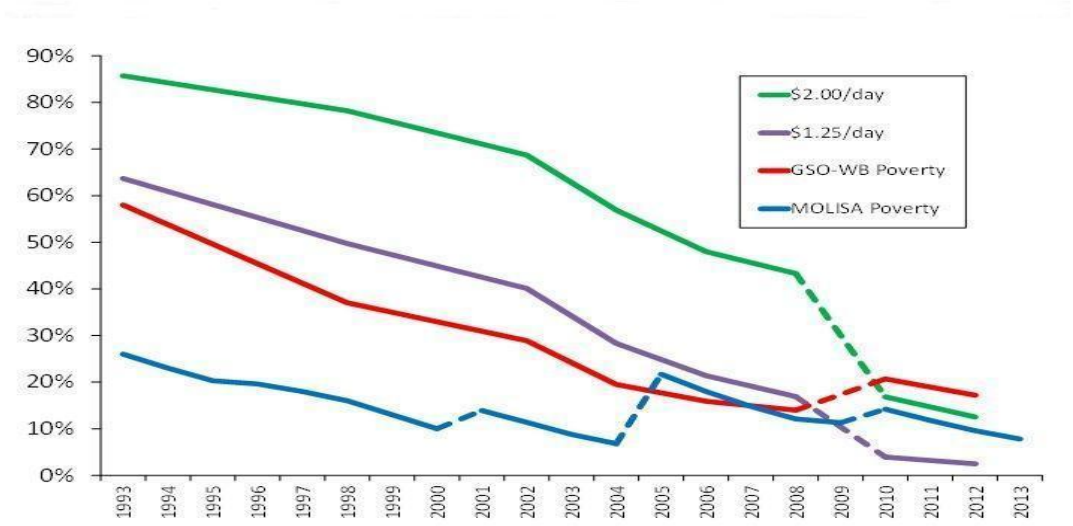
Finally, while a correlation in poverty trends using different poverty measures does not point to accuracy in any one derivation, it does demonstrate methodological robustness through consensus. Moreover, the need to regularly update what constitutes 'relative deprivation' lends evidence to macroeconomic improvement in Vietnam and allows researchers to ascertain the current status of poverty there.

This study seeks to investigate the potential benefits of industrialisation in the continued reduction of poverty levels in Vietnam. This section has shown the relative worth of poverty lines constructed nationally, internationally and absolutely and has

[16] The following discussions benefited from the comments from one of the examiner of this thesis.

demonstrated that the merit of each must be judged contextually. Overall, information derived from the poverty lines demonstrates economic progression and this has allowed policy to be directed toward poverty reduction in Vietnam.

Figure 4.1: Poverty Rates in Vietnam Based on Differing Criteria



Source: Adapted from Kozel, 2014

This study utilises the MOLISA poverty line, but applies the GSO approach and data from VHLSSs to appraise poverty status by the whole country, by residence, by ethnic group and by regions.

This study uses data from VHLSSs in 2004, 2006, 2008, 2010 and 2012 conducted every two year by the GSO to determine the poverty rate, decreases in poverty and inequality rates annually. The analysis is based on the GSO approach. As shown above (the 4.2 section), the MOLISA poverty line is approved by the government. In addition, the GSO poverty line is similar to the MOLSA poverty line, but the estimate is adjusted for inflation year-to-year and poverty factors are updated more regularly than the MOLISA poverty line. Poverty rates constructed by the GSO are calculated based on income statistics obtained from the VHLSSs.

Income is the main poverty indicator in this study based on the practical views of GSO. GSO considers income to be the most appropriate indicator for poverty status analysis in Vietnam for the following reasons (GSO 2006, p173):

- Only income can reflect a real living standard of a household;
- Income level is a sustainable indicator for poverty measurement.

- Poor households tend to show inflated levels of expenditure for confounding reasons such as serious illness or the desire to pursue education.

So the use of income as an indicator of poverty is purposeful and the reasons can be surmised as follows: whilst consistency in trends does not translate to accuracy in any one poverty line, the robustness of the GSO method, coupled with its continuing reappraisal of poverty indicators and inflation rates, allows researchers to direct microeconomic questions more precisely and this makes the GSO poverty line more suited to the examination of incremental change over time. The use of income is also beneficial since it is reflective of key microeconomic and social factors with which this study is concerned. As will be seen, Vietnam, just as it has done economically (see Chapter 3), has outperformed many countries with regard to social imperatives.

4.3 Overview of Poverty Reduction Programs Implemented in Vietnam

The national targeted program for poverty reduction is one of the key social security policies in the socioeconomic development strategy of the Vietnamese Government and has received much attention. The program has been implemented to help keep a balance between economic growth, equity and social progress and subsequently to contribute to maintain social stability, sustainable development and fulfill Vietnam's international commitments.

Since the time of *Doi Moi*, and especially after the 5th Plenum of the 7th Party Central Committee in 1992, hunger eradication and poverty reduction were identified as one of the key tasks of the socio-economic development plans in Vietnam. The Party's orientation has been concretized by the system of legal documents on mechanisms and policies, programs and projects for the implementation of hunger eradication and poverty alleviation. The formation and development of the system's policies and poverty reduction in Vietnam can be divided into the following stages: the period 1998-2000, 2001-2005, 2006-2010 and from 2011-2015

The year of 1998 marked a new step towards the alleviation of poverty in Vietnam with the issuance of "National Target Program on Hunger Eradication and Poverty Reduction in the 1998-2000 period". This program focussed on farming, settlement and support for ethinicities within Vietnam who were suffering most or were most at risk of falling into poverty (Thu tuong Chinh phu, 1998). The aim was to

create favorable conditions to assist poor people in developing production capabilities, to increase incomes, to eradicate hunger and to reduce poverty overall. This policy can be seen as directly related to poverty reduction. The Programs for Socio-Economic Development in the mountainous and ethnic minority regions implemented under Decision No. 135/1998/QĐ-TTg of the Vietnamese Government (denoted as Program 135: phases I, II and III) in the 5-year plans were also implemented and were significant.

In 2001-2005, the Government enacted the National Target Program on Hunger Eradication, Poverty Reduction and Employment and policies and projects were catalysed. These policies included health support; education support; social welfare and subsidies for vulnerable groups; support for the poor's housing; support for tools and production land for the poor. Projects under the programs included: Project for Poor Credit Loans to develop production and business; project guidelines for the poor to explain how to do business, agriculture, forestry and fishery; projects modeling hunger eradication and poverty reduction in particular regions such as ethnic minority's region, coastal areas, upland areas, border, island; construction projects of infrastructure in poor communes; projects supporting the production and trade development in poor communes; project training and retraining of cadres working in hunger eradication and poverty reduction and officials of poor communes; project migration stability to build new economic zones in poor communes (stable for free migrants; immigrants to the new economic zones, the population distribution according to plan; and projects on sedentarization in poor communes (Thu tuong Chinh phu, 2001).

In addition to "The National Target Program on Hunger Eradication, Poverty Reduction and Employment, for the period 2001- 2006", there were projects enacted to augment national employment. These projects sought, directly or indirectly, to contribute to the social imperatives described earlier. The projects and additional resources included funds for job creation through the National Fund to support employment; the project to improve the capacity and modernize employment service centers; project surveys, augmentation of the labor market statistics and labor market information system; and the project to train and foster personnel working in jobs. The educational and training focus is noted as an important aspect of this set of policies.

From 2006-2010, the "National Target Program on Hunger Eradication, Poverty Reduction and Employment in 2001-2005" was edited and supplemented for that period. The program 135 (phase II) continued to be implemented. Also, the Government implemented the sustainable poverty reduction program for 61 poor districts in 20 provinces with over 50 pecent of poor households under the Resolution 30a, dated 27/12/2008 (Thu tuong Chinh phu, 2007).

From 2011-2015, the "National Taget Program on Sustainable Poverty Reduction in 2012-2015" continued to supplement for that period. Program 135 (phase III) continued to be implemented. Priority in this phase was placed on poor ethnic minorities; poor people living in poor districts, border communes, and difficult villages particularly, coastal and island areas (Thu tuong Chinh phu, 2012). These policies were specifically designed to target poverty reduction. Besides, based on Resolution No. 80/NQ-CP, dated 05/19/2011 of the Prime Minister on sustainable poverty reduction orientation period 2011-2020, the poverty reduction policies to support general well being were implemented: production support, training, job creation, income generation for the poor; support for education and training; assistance in health, nutrition; housing assistance; helping the poor access to legal aid services; poor's support cultural enjoyment and information support were targeted.

However, the impact of the programs on poverty reduction has been rather ambiguous and produced less than convincing results (World Bank 2001; Fritzen, 2002; Quynh, 2004; Fan et al. 2004; Huong & Vinh, 2004; Klump & Prüfer, 2006; Cuong 2008). The underwhelming performance of Vietnam's poverty programs will be discussed further in the next section.

Poverty rates depict this dilemma. The rate of poor households was still high, especially in the mountainous, remote areas and the income of the poor has not met the demand for a minimum living standard. Policy approach in the early stages was often that used to address the material poor, so the poverty reduction support policies were in favor of direct assistance in cash or in kind rather than creating opportunities and conditions for the poor to sustainably escape poverty by themselves. Vietnam's policies over this period must be development to income generation and sustainable poverty reduction. The guaranteed minimum income and poverty reduction must be done in two ways: first, support for the poor have jobs with increasing income to escape poverty, achieve a minimum income and increasing income; secondly,cash

assistance to ensure a minimum income, sufficient conditions for children's education, medical care (Thu tuong Chinh phu, 2011).

There are main causes of the limitations and weaknesses of such policies on poverty reduction. Firstly, the implementation of policies and poverty reduction programs has some shortcomings due to various agencies and organizations conducting work simultaneously. This has led to overlapping objectives, and a vast dispersion of resources the upshot being that planning for poverty reduction remains weak. Coordination between agencies was also weak. This slowed progress of the policies and did not promote the role of stakeholders in the implemention of policy making the process seemingly perfunctory. Secondly, transparency of information on policies and mechanisms was limited. Many households did not know about policies and projects, thereby reducing the effectiveness of the program. The monitoring, supervision and evaluation of poverty reduction remained quite ineffectiveness. Whilst the role of monitoring and evaluation is very important, the processes have been neglected somewhat in Vietnam. Previous efforts of monitoring and evaluation were done, but these were mostly intermittent, anonymous and of poor quality (Thu tuong Chinh phu, 2011).

4.4 Poverty Status

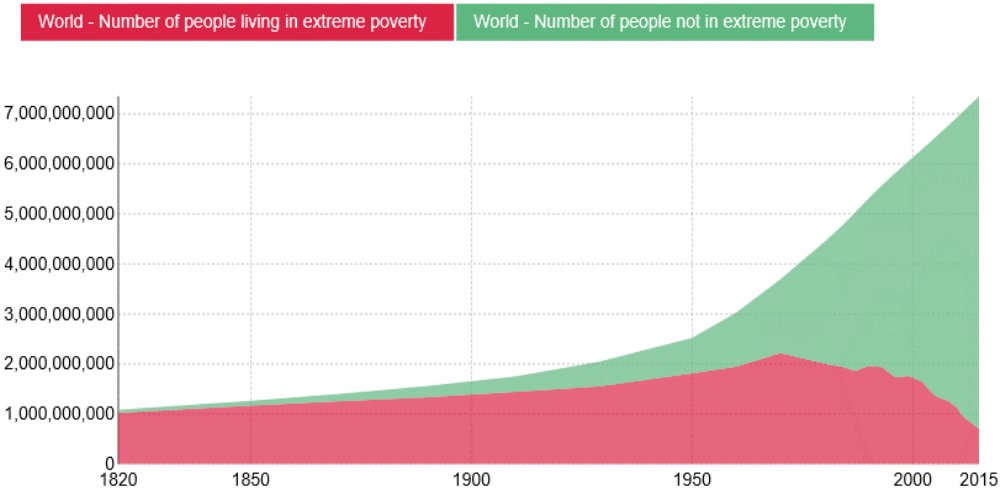
Overcoming the shortfalls of targeted poverty programs such as those above is essential for continued progress. For many countries industrialisation has proven to be a useful lever in maximising the effectiveness of such programs. However, appraisals of recent data show that poverty rates in many developing countries are still high. As demonstrated in Chapter 3, Vietnam has economically outperformed many developing countries but it can certainly improve its current standing with regard to poverty rates. Sub-section 4.4.1 discusses global poverty. This will provide a contrast with the status of poverty in Vietnam which will be investigated in sub-sections 4.4.2 and 4.4.3.

4.4.1 Global poverty trends

Extreme poverty has plagued civilisation for centuries, at least up until the industrial revolution when the cycle began to reverse. But even then, extreme poverty was rampant for many decades and it seemed that only an elite few were able to reap the benefits of industrialisation. Bourguignon and Morrison (2002) demonstrated this by estimating the well-being of people through the 19^{th} and 20^{th} centuries. Their

findings imply two key points. Firstly, the benefits of industrialisation were not evenly distributed thus inequality was more prevalent in the earlier stages of the industrial era. Secondly, and perhaps as a result of two World Wars, productivity slowly increased, the imperative of social justice was recognised, or at least served to an extent, and the trend in inequality began to reverse. Findings of their study, coupled with more recent data, are presented graphically in Figure 4.2. Despite the sevenfold increase in world population, the graph indicates that there are now less people living in extreme poverty than there were in 1820, the initial year of their study. The graph is also interesting because it shows the effect of modern financial crises on rates of poverty. These crises, occurring in 1990, 1999 and 2008 can be seen as salients protruding from the 'Number of People Living in Extreme Poverty' line.

Figure 4.2: Extreme Poverty in the World, 1820 – 2015



Source: Adapted from Roser, 2016

The downward trend in extreme poverty worldwide is an encouraging observation and extreme poverty has been almost entirely eradicated in most advanced countries, yet there are many disturbing statistics that remain. Table 4.4 at the bottom of this sub-section provides data for the graphics presented in Figures 4.3 and 4.4. These figures display regional charateristics of poverty over recent decades. In contrast to Figure 4.2, these figures are based on the upper range of $3.10 (2011 PPP) which is the comparable equivalent of the $2 per day poverty line prior to 2015. Four noteworthy insights are observed from Table 4.4 and Figures 4.2, 4.3 and 4.4. These insights have shaped the literature on poverty in recent times.

Firstly, despite advances in recent decades, the aggregate number of people living in extreme poverty remains significant. This can be illustrated with reference to Figure 4.2 above. The total number of people living in extreme poverty, represented today by the $1.90 (2005 PPP) poverty line, was 44 per cent of the world's population in 1981 - a total of 1.99 billion people. This ratio declined to 37 per cent (2005 PPP) in 1990 – a total of 1.95 billion people. In 2012 this figure stood at 12.7per cent (2005 PPP). There has been demonstrable progress. Nonetheless, this most recent figure translates to a total of 896 million people living in extreme poverty just three years ago. This is still an extremely high figure and reflects the fact that achievements have not been significant enough to free humanity from the issue of poverty; on the contrary, more effort is needed. Those living in such conditions are often isolated from the eyes of the world so their plight is largely ignored. Children are most vulnerable. Around the world, one billion minors must manage without services that are deemed essential for survival. 7.6 million of these children will die before their fifth birthday every year (UNICEF, 2009). Reaching out to those still living in extreme poverty therefore remains a social and political imperative.

Secondly, as demonstrated in Figures 4.3 and 4.4, progress towards poverty reduction has differed immensely from region to region. Regions that experienced the greatest results include the Pacific & East Asian and Latin America & Carribean. Major industrial advancements in China over recent years have contributed most to poverty reduction in the former of those two regions mentioned. The experience of the South Asian and Sub-Saharan regions has contrasted markedly. Progress in South Asia has dropped off considerably and progress in Sub-Saharan Africa has reached a standstill. The percentage of people living at or below $3.10 has declined in this latter region however significant population increases have meant that the aggregate numer of people living in poverty has increased. The differences alluded to here suggest that contextual differences, whether they be spatial, temporal, geographic, demographic etc, are important considerations for the researcher who seeks to isolate factors which contribute most to poverty reduction.

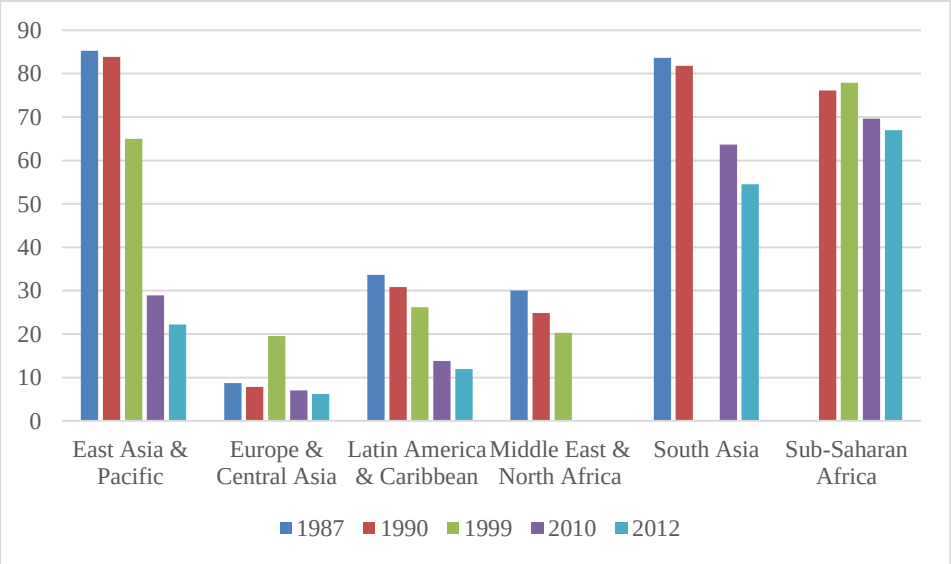
Thirdly, successes and failures in poverty reduction across depicted regions have been somewhat irregular. Furthermore, as Figure 4.4 demonstrates, reductions in poverty have levelled off in all regions and have even reversed in Sub-Saharan Africa. This implies that poverty reduction has been unsustained. Ideally, economic

advancements, such as that witnessed in China, would provide people with the best opportunities to improve their circumstances. But development does not occur evenly. Thus it is apparent that reaching out to the remaining people living in poverty becomes more and more difficult. Finding appropriate ways to sustain poverty reduction is a complex and interesting issue and will likely become an area of future research.

Fourthly, there is conflicting evidence regarding the idea that economic growth reduces poverty. In East Asia, reductions in poverty have largely mimicked GDP growth there. This may be attributable to the mass urban migrations experienced in China; those who were previously poor but had the opportunity to migrate have benefited easily. But again, this raises concerns about the sustainability of poverty reduction, particularly for those who are isolated, unwilling or unable to migrate. Latin America & Carribean presents as an interesting case. This region experienced relatively modest GDP growth but maintained solid rates of poverty reduction. The experience of South Asia is notably different and conflicts with the above examples. Table 4.4 demonstrates that this region had strong GDP growth of around 6per cent annually but, as seen in Figure 4.4, experienced very modest reductions in poverty. Resolving this complex issue will require empirical and theoretical contributions. However, it will suffice the needs of the present study to conclude that the poor must be acutely targeted for poverty reduction strategies to be effective.

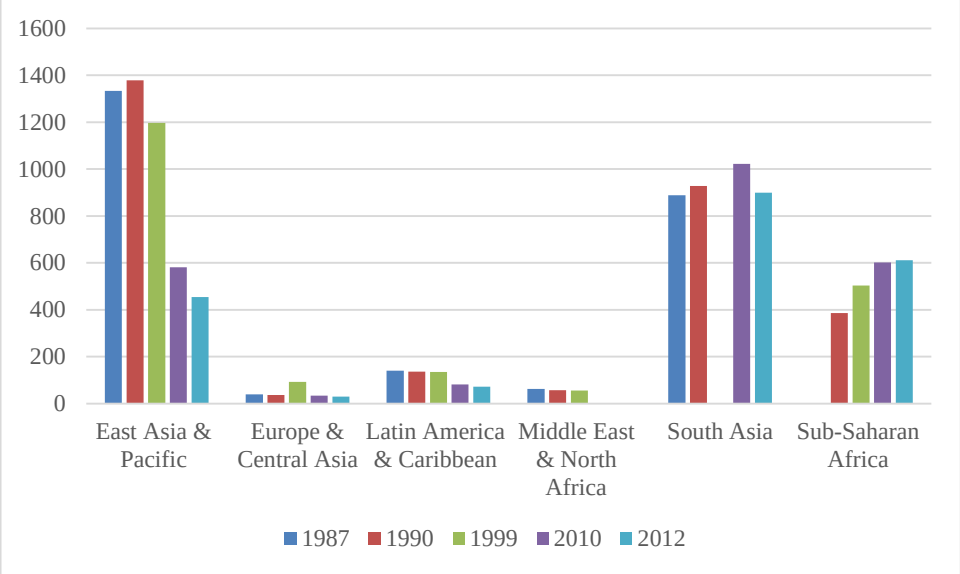
Finally, the relationship between economic growth and poverty is not as simple as the idea that growth reduces poverty, although it was apparent that East Asian and Pacific countries, with their outstanding economic performance in recent decades, also experienced the most rapid poverty reduction. One puzzle is that South Asia grew considerably, by an annual average rate of over 6 percent, but their progress in poverty alleviation was much farther behind East Asia and the Pacific. The above observation suggests a complex relationship between growth and poverty. To accelerate poverty reduction in the world, for each country, it is vital to know who are the poor, where the do they live, and where poverty is the greastest.

Figure 4.3: Share of People Living at $3.10 per day (2011 PPP) (per cent of population)



Source: Adapted from World Bank (2015)

Figure 4.4: Number of People Living at $3.10 per day (2011 PPP) (millions)



Source: Adapted from World Bank (2015)

Table 4.4: Statistics on Poverty and Growth in the World, 1987-2012

	1987	1990	1999	2010	2012
Share of people living at $3.10 a day (2011 PPP) (per cent of population)					
East Asia & Pacific	85.26	83.86	65	28.9	22.23
Europe & Central Asia	8.69	7.85	19.56	7.05	6.24
Latin America & Caribbean	33.63	30.83	26.2	13.8	11.96
Middle East & North Africa	30.05	24.9	20.27		
South Asia	83.6	81.76		63.62	54.5
Sub-Saharan Africa		76.11	77.87	69.64	66.97
Number of people living at $3.10 a day (2011 PPP) (millions)					
East Asia & Pacific	1333.7	1378.57	1196.46	581.74	453.84
Europe & Central Asia	39.48	36.46	92.1	33.57	30
Latin America & Caribbean	139.69	135.59	134.32	81.42	72.19
Middle East & North Africa	62.32	56.33	55.07		
South Asia	887.92	927.96		1022.27	898.84
Sub-Saharan Africa		385.77	503.27	601.61	610.44
GDP growth (per cent)	**1980-1989**	**1990-1999**		**2010- 2012**	
East Asia & Pacific	9.8	11.2		8.6	
Europe & Central Asia		-2.4		5.0	
Latin America & Caribbean	1.3	3.3		3.3	
Middle East & North Africa	2.8	3.6		2.3	
South Asia	6.4	6.1		6.8	
Sub-Saharan Africa	2.0	2.0		1.7	

Soure: World Bank (2015); data on economic growth from 1980-1999 was taken from Dang (2011)
Note: Economic growth was PPP Gross Domestic Product growth rate as an annual average of the respective period.

There are both perks and flaws which can be noticed from the insights above. Poverty reduction is clearly an issue on the world agenda and this will continue. But the issue remains complex and there may be many hurdles to overcome in the future. Vietnam's specific case is no less interesting than the regional and world characteristics described here. In order to understand poverty status in Vietnam, this study not only analyses poverty status through trends in poverty rates in the country, the regions, in the areas and the ethnicity, but also through a per capita income because the government identifies a poor household based on this metric. This analysis draws on the VHLSSs in 2004, 2006, 2008, 2010 and 2012 to build a picture of poverty in Vietnam.

4.4.2 Vietnamese poverty trends

The world poverty rates above can be contrasted with Vietnam's specific case using the international poverty line. According to the $1.90 international poverty line which measures extreme poverty rates, Vietnam has been doing reasonably well compared to most of its regional neighbours. Cambodia, for example, had similar rates of poverty in 2004. In this year, Vietnam's rate was 27 percent and Cambodia's was 32 percent (World Bank, 2016) (adjusted rate based on the $1.90 poverty line PPP). Vietnam's rate decreased, dropping a remarkable 22 percentage points to 4.8 percent by 2010 and to 3.2 percent by 2012. By contrast, Cambodia's extreme poverty rate fell by 21 percentage points to 10 percent by 2010 and to 6.15 percent by 2012. These figures represent a proportional reduction in extreme poverty of 88 percent in Vietnam and 80 percent in Cambodia. Figures based on the more moderate $3.10 poverty line are also quite impressive in Vietnam dropping from around 70 percent in 1998 to 14 percent in 2012.

International comparisons, such as that above, using the international poverty line are useful for looking at economic factors on a large scale. The biggest international institutions such as the World Bank receive great rhetorical and practical use out of analysing such numbers. However the international poverty lines do not necessarily account for contextual influences within a country. As with most countries around the world, Vietnam has been developing its own poverty lines and these account for contextual factors more precisely than the generalised USD poverty lines. These local poverty lines are therefore deemed more appropriate for the current investigation because the study is concerned with a unique set of variables pertaining to Vietnamese manufacturing. The international poverty lines are more appropriately used for very broad studies on a global, comparitive scale. Vietnam has performed quite well according to both the international and local thresholds.

Based on VHLSSs in 2004, 2006, 2008, 2010 and 2012, it can be seen that there have been great achievements in poverty reduction and contributions to social justice in the past decade. According to the Government's poverty line for 2006-2010 and 2011-2015, the national poverty rate decreased from 18.1 percent (14,374,579 people) in 2004 to 11.8 percent (9,852,988 people) in 2012. Generally, poverty reduction was achieved in both urban and rural areas and across all ethnic groups. However, it must be noted that poor households were mainly focused in mountainous

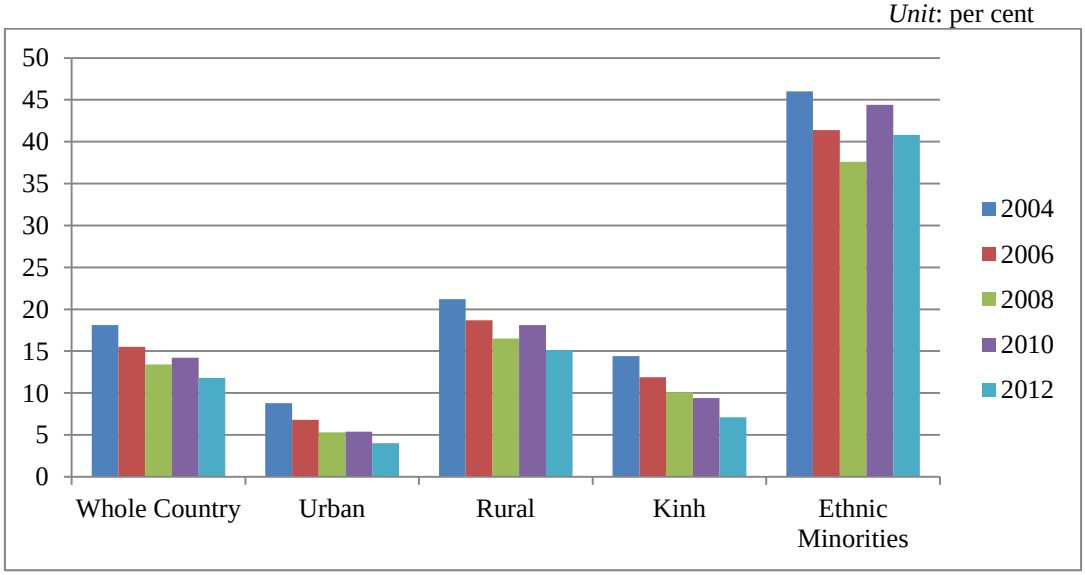
and remote rural areas – the proportion of poor households was 15.1 per cent in rural areas, a figure almost four times higher than urban areas. Furthermore, poverty rates observed for ethnic minorities were higher than the national average figures. Although ethnic minorities only made up 15 per cent of the total population, they accounted for almost 40.8 per cent of the poor in Vietnam. This disparity is significant. In 2012, over 40 per cent of households were ethnic minorities living below the poverty line. The poverty rate in the Midland and Northern Mountainous region was 28.5 percent (3,464,212 people), and was 16.3 percent (836,079 people) in the Central Highlands Poverty rates in the North and Coastal central areas was 15.6 per cent (see Figure 4.2 and Table 4.5)

Poverty reduction had taken place across economic regions, but occurred unevenly. Poor households were still concentrated in the Midlands and Northern Mountainous region with 28.5 per cent and in the Northern and Coastal Central region with 15.6 per cent in 2012.

However, the above poverty rates did not reflect the income gap of the poor compared with the poverty line, or insufficient levels of income in poor households compared with the poverty line (referred to as depth of poverty). Therefore, this study also uses the FGT index (Foster, Greer & Thorbecke 1984), as discussed in the Chapter 2, to measure the depth of poverty. A higher index reflects a larger gap between the poverty line and the income of those identified as poor people.

Figure 4.5: : Poverty Rate (2004-2012)

Unit: per cent



Source: The author's calculation

Table 4.6 below shows that the two indices of poverty in Vietnam decreased in the period 2004- 2012 thus the living standards of the poor were improved.

Severe poverty still takes place in rural areas, ethnic minority households, and in the northern mountains. According to the survey, the poverty gap in rural areas was four times higher than urban areas in 2012; the comparative poverty gap for ethnic minority households was nearly ten times higher.

Table 4.5: The poor by Residence, by Ethnic Group and by Region

Unit: Person

	2004	2006	2008	2010	2012
Whole Country	14,374,579	13,056,309	11,875,392	12,382,142	9,852,988
By Residence					
Urban	1,715,447	1,610,598	1,352,525	1,362,952	1,015,227
Rural	12,659,132	11,445,711	10,522,866	11,019,190	8,837,761
Ethnicity					
Kinh	9,398,753	8,107,456	7,363,233	6,177,086	4,407,344
Ethnic Minorities	4,975,826	4,948,853	4,512,158	6,205,056	5,445,644
Region					
Red River Delta	2,326,805	1,959,666	1,717,222	1,226,077	911,297
Midlands and Northern Mountains Areas	3,219,269	2,953,635	2,849,236	3,960,056	3,464,212
Northern Central and Central Coastal Areas	4,930,104	4,868,075	4,031,674	3,913,602	2,785,490
Central Highlands	1,218,652	1,226,075	1,226,656	1,048,605	836,079
South East	362,801	222,412	182,649	291,740	260,106
Mekong River Delta	2,316,948	1,826,447	1,867,956	1,942,063	1,595,805

Source: The author's calculation

The situation in the two most populous regions, the Red River Delta and the South East (containing the two major cities, the nation's capital, Hanoi and Ho Chi Minh City respectively), contrasts with the above regional problems. As mentioned above, in these more urbanised zones, poverty rates (attained using respectively lower poverty lines) were much lower. This is predictable, particularly as bias towards urban priorities continues (Lipton, 1977; Muggah, 2012; ADB, 2014). It may also be argued that such bias is warranted since there is a "largely unacknowledged" problem of increasing urban poverty across Asia (ADB, 2014, p. 1) and there are many more attributable problems related to urban poverty. Muggah (2012), for example, notes that crime, violence and potentially war become threats as urban poverty increases.

Nonetheless, this researcher notes the *extent* of disparity between regional and ethnic poverty rates in Vietnam. This brief analytic overview demonstrates that more can be done to alleviate the burden of ethnic Vietnamese people and those living in rural areas.

Table 4.6: Poverty index in Vietnam (2004-2012)

	Poverty gap index				Change between **2004-2012**	Squared poverty gap index				Change between **2004-2012**
	2004	**2008**	**2010**	**2012**		**2004**	**2008**	**2010**	**2012**	
Whole Country	0.047	0.035	0.04	0.03	0.017	0.137	0.118	0.128	0.105	0.032
Residence										
Urban	0.023	0.018	0.012	0.01	0.013	0.101	0.1	0.066	0.059	0.043
Rural	0.055	0.042	0.052	0.039	0.016	0.147	0.125	0.147	0.119	0.028
Ethnicity										
Kinh	0.035	0.026	0.022	0.017	0.018	0.117	0.103	0.091	0.078	0.039
Ethnic	0.138	0.104	0.15	0.111	0.027	0.239	0.2	0.26	0.202	0.037
Regions										
Red River Delta	0.034	0.02	0.018	0.016	0.018	0.109	0.089	0.08	0.075	0.034
Midlands and Northern Mountains	0.079	0.064	0.106	0.079	0	0.171	0.154	0.215	0.172	-0.001
Northern and Coast Central	0.074	0.053	0.059	0.038	0.036	0.173	0.139	0.158	0.118	0.055
Central Highlands	0.074	0.062	0.053	0.041	0.033	0.178	0.152	0.145	0.118	0.06
South East	0.006	0.007	0.005	0.005	0.001	0.044	0.093	0.045	0.041	0.003
Mekong River Delta	0.032	0.027	0.031	0.024	0.007	0.124	0.106	0.107	0.093	0.031

Source: The author's calculation

Some general conclusions can now be drawn before drilling down more deeply into the status of inequality and geographical differences between poverty rates. The dramatic level of poverty reduction in Vietnam is shown explicitly. The absolute number of poor people living in Vietnam has fallen sharply and the accompanying reduction in the depth and severity of poverty incidence per capita is remarkable. Rapid reduction in poverty during the past could be due to both redistribution and pro-poor growth in the economy. In terms of redistribution, many government schemes, such as investment in rural infrastructure, education and health, and credit or transfer programs, have been implemented to assist and support the poor as discussed in Section 4.2. In addition, as discussed in Chapter 3, it is explained that high and sustainable growth rates have been key factors to the successful reduction of poverty.

In 2012, per capita GNI was more than US$3,000 (PPP). This growth has been accompanied by pronounced structural changes at the aggregate level. Twenty years ago, Vietnam was primarily rural, with nearly 80 percent of the population living in the countryside and only 20 percent residing in cities and towns. In terms of GDP, slightly more than 40 percent of the economy was generated by agriculture, followed by services and then industry. Growth in the agricultural sector (cropping and farm sidelines) has played an important role in Vietnam's development success. Nonetheless, its share of GDP has fallen to half of what it was in the early 1990s, and in 2012 contributed 20 percent of GDP. Industry, which includes manufacturing, construction, and utilities, has been the most rapidly growing and dynamic sector and currently makes up 38 percent of GDP, especially the manufacturing sector contributed significantly 20 percent in changing in the economic structure with 20.37 percent (from 2000-2007), 20.22 percent (from 2008-2009) and 18.88 percent (from 2010-2013). Services contribute 42 percent, modestly higher than the level in 1992. These changes in the structure of the economy are largely mirrored in the composition of employment in Vietnam. In 1992, three-quarters of the labor force identified agriculture as their primary source of employment, with only 10 and 15 percent, respectively, in industry and services. Rapid productivity growth in the farm sector has contributed to rising incomes in the countryside; equally important, it has enabled the reallocation of a growing share of labor into even higher-value activities in industry and services. Today, the share of the labor force working in agriculture has fallen below 50 percent, while the share in both industry and services has doubled. Therefore, it is speculated that the growth of manufacturing sector was one of the main drivers of poverty reduction in the past, but why and how is it so have not been thoroughly investigated in Vietnamese studies. It may be due to the increase in the productivity of agriculture after the land reforms (Ravallion & Van de Walle, 2008), or the development of non-farming activities (Hung et al. 2010) or the creation of employment outside agriculture (Huong et al. 2003; Justino et al. 2008), especially in sub-sectors of the industrial sector (Dang, 2011). Present literature on Vietnam provides some insights but not an overall picture of the contribution of growth pattern to poverty alleviation, this thesis will fill this gap.

However, similar to the general trends in poverty reduction in the the world, this improvement in poverty reduction in Vietnam is not uniform between regions and ethnic groups, and the speed of improvement is slowing due to macroeconomic instability. In fact, from 2007, Vietnam has faced economic uncertainty and inflation with strong and lasting increase in the price of many basic commodities. Many workers have lost their jobs; many people must accept lower wages and reduced work hours because of falling demand during the global economic crisis in late 2008 and early 2009. Similarly, 2010 witnessed rising food, electricity and fuel prices creating more pressure on household budgets. Households in urban and suburban areas were affected particularly badly by high inflation. Furthermore, the incentive of employment and higher wages prompted migration from rural to urban areas. These migrants send money to their families in rural areas but higher prices have reduced remittances. Hence, rising prices in urban areas have indirectly impacted rural prosperity.

The poor in Vietnam live mainly in rural areas and are concentrated in high mountainous regions whilst national household poverty rates for ethnic minorities have decreased slightly from 46 percent in 2004 to 40.8 percent in 2012. The poverty rate in mountainous areas is still high, 1.2 to 2 times more than the poverty rate of the country's average. This concentration is attributable to many unfavourable circumstances including harsh natural conditions, poor infrastructure and low literacy levels. These problems are compounded by fragmented production units and facilities. Additionally, rural emigrants tend to encounter difficulties when they arrive in urban areas and often must accept low-skilled jobs with decreased pay. These factors have adversely affected poverty rates and have generated the observable uneven pace of poverty reduction across regions. It is noteworthy that the majority of poor people living in Vietnam still face isolated geographical, ethnic, linguistic, social and economic circumstances. In this respect, the Northern Mountainous region, Central Vietnam and the Central Highlands experienced the fastest pace of poverty reduction, but these are also the areas that still experience the highest poverty rates.

Poverty is defined not simply as low income levels or lack of cash but also the deprivation of access to services which can improve social welfare such as education, culture and medicine. Historically, the absence of effective land, capital and labour markets has hindered efforts to augment these services in developing economies,

particularly in underdeveloped and rural areas. These absences have been experienced but commercial prospects have been improved in Vietnam due to reforms in state accountability and the creation of a transparent legal framework.

While urban areas have benefited most from economic growth and from these policies of reform, overall rates are tentatively average whilst rural poverty and poverty in ethnic minorities remains persistently high. Addressing the issue of social welfare is essential for the continued development of Vietnam's economy since poverty not only impacts financially but also threatens valuable human qualities such as confidence and self-esteem. The following sections will examine poverty in the context of average income geographical differences in Vietnam. This will illustrate where economic stimuli can be most worthily applied.

4.4.3 General assessment of average income in Vietnam

Figures calculated from VHLSSs 2004 - 2012 show that per capita income tended to rise while the gap between the richest income groups and the poorest grew ever bigger. Specifically, the average income of the first quintile was 7.4 times higher than the fifth quintile in 2004 and this factor increased to 8.6 times in 2012.

The calculations for Table 4.7 show that per capita income is improving steadily and strongly every year across all quintiles. In 2012, income per person per month for the whole of the country at current prices reached 2,082 thousand Vietnam Dollars (VND), an increase of 19.35 percent a year on average during 2004-2012. In 2004, the average income per month of the poorest quintile (quintile 1) reached VND 166 thousand and reached VND 560 thousand in 2012.Averageincome per person per month for the wealthiest quintile (quintile 5) was VND 1,299 thousand in 2004 and reached VND 4,821 thousand in 2012.

Average annual growth rate was 19.35 percent with the poorest quintile having an average increase of about 17.22 percent per year while income of the richest group of households grew at about 20 percent per year. However, after offsetting for inflation, growth rate of average real income was only 11.2 percent. The poorest quintile averaged 9.4 percent growth and the wealthiest quintile averaged 11.2 percent after accounting for inflation.

Table 4.7: Average Income per person/per month (Household)

Unit: 1000 VND

Whole Country	Total	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Gap between Quintile 5 and 1
2004	527	166	278	394	570	1,229	7.4
2006	707	219	364	521	762	1,675	7.6
2008	1,027	289	491	713	1,078	2,567	8.9
2010	1,521	395	736	1,103	1,664	3,713	9.4
2012	2,082	560	1,068	1,617	2,344	4,821	8.6
Growth (per cent)	19.35	17.22	18.99	19.92	20.04	19.19	

Source: The author's calculation

Although these statistics indicate that the living conditions of households are improving year by year, with per capita income steadily rising across all quintiles, it must be noted that the poorest experienced a growth rate of about 2 percentage points less than the richest quintile thus showing an increase in the income gap in society. If this trend is allowed to continue it will become more difficult to narrow the income gap between the poorest and the remaining groups. These statistics reflect a common economic reality– that the rich are getting richer faster than the poor. This issue must be addressed if Vietnam intends to align its economic goals with the imperative if social justice.

The increasing gap between relative and absolute average incomes of different groups within Vietnamese society is a challenge for the continuing development of Vietnam's economy since fairness and equality are fundamental to the operation of efficient markets and subsequently for attracting FDI. Examination of trends in poverty has shown increasing disparity between the average incomes of the poorest and richest households. Our examination of poverty can also be disaggregated geographically by area and by region.

Table 4.8 shows incomes in urban and rural areas increased in the period 2004-2012. In 2012, income per person per month in urban areas reached VND 3,005 thousand approximately 1.7 times higher than income in rural areas which reached VND 1,709 thousand. However, growth rate of income per capita in the period 2004-2012 in rural areas was 18.6 percent whereas the equivalent growth in urban areas was 17 percent. This pattern mirrors the findings of the ADB (2014) which shows that slowdowns in urban poverty reduction are a common to Asian countries. If this trend

continues the difference in average incomes between urban and rural areas will shrink but this statistical development would not necessarily indicate overall progress. Moreover, it would demonstrate the problematic nature of poverty reduction and modern urbanisation.

For urban areas, average incomes of those in group 1 outstripped average incomes of those in group 5 by a factor of 7.7. This factor difference has not changed much over the period 2004-2012. The productivity of workers in group 1 has not improved, so growth rate of income per capita will not sufficiently be able to close the gap in income between the poorest and richest households in urban areas. This has policy implications for those concerned with addressing poverty reduction in Vietnam.

Similarly, the income gap in rural areas tended to increase. The gap in average income between households in group 1 and 5 was 6.8 times in 2004 and this rose to 8.3 times in 2012. This gap will tend to increase without government intervention. Progress can be made by focussing on specific support measures to create jobs and by improving labour productivity of individuals in group 1.

Moreover, analysis of regional differences in average income will illustrate in which geographic region Vietnamese people suffer most. The disparity between average incomes per person per month, adjusted for regional price differences, is increasing within and between regions. Overall, the South East region had the highest per capita income, 2.2 times that of the lowest average in the Northern Midlands.

Table 4.8: Average Income per person/per month (Urban/Rural and Household Group)

Unit: 1000 VND

	Total	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Difference between group 5 andgroup 1
Urban							
2004	827	172	281	402	581	1317	7.7
2006	1106	234	368	528	777	1759	7.5
2008	1607	278	511	744	1095	2681	9.6
2010	2257	431	748	1125	1682	3796	8.8
2012	3005	615	1090	1639	2370	4985	8.1
Rural							
2004	430	166	278	392	565	1126	6.8
2006	574	218	364	519	754	1573	7.2
2008	827	290	487	707	1069	2432	8.4
2010	1233	392	734	1096	1653	3607	9.2
2012	1709	555	1064	1608	2328	4619	8.3

Source: The author's calculation

Table 4.9 below shows that the Central Highlands and the South East had the highest difference between incomes of the richest and poorest. Coefficients of the regions in 2012 were 9.0 and 9.5 respectively. The income gap trend has been increasing across all regions since 2004 but the gap itself was slightly reduced from 2010 – 2012 in Highland and South East regions. The Northern and Central Coast region experienced the lowest change to and rate of inequality. The coefficient is currently 7.8 and, despite fluctuations, has remained fairly constant since 2006.

The Red River Delta and South East regions are the two most populous regions in Vietnam as they constitute the two major industrial hubs, Hanoi and Ho Chi Minh City. The summarised quintile analysis in Table 4.5 shows that these two regions experienced the recent drop in inequality alluded to above whereas inequality in the other, less industrialised regions steadily increased. When combined with income data which shows that the wealthiest Vietnamese reside in the two most industrialised regions, it may be concluded that investment by wealthy industrialists has slowed or been slowed. This economic hesitation, whether a result of the GFC or otherwise, means that Vietnam has potentially drifted from its potent path of economic development. If that is allowed to continue then the nation and the people and its economic indicators, such as GINI, may also suffer.

The income gap between rich and poor populations can be identified through the GINI coefficient or standard "40 percent ". The GINI coefficient is valued from 0 to 1. A GINI coefficient of 0 means there is no difference. Disparity increases as the GINI coefficient approaches 1, where 1 represents absolute inequality.

In Vietnam, the Gini coefficient is based on per capita income for the 2002-2010 periods. Vietnam’s GINI index is quite low compared to respectively developed countries. The GINI index has hovered around 0.42 to 0.43; the Gini coefficient was 0.42 in 2002 and this figure rose to 0.43 in 2010. In comparable countries such as Argentina, Bolivia, Brazil, Colombia and Paraguay the Gini coefficient is high but is trending downwards.

Vietnam's current standing is average on the Gini index however this suggests a model of economic growth that is relatively fair to good for developing nations. Moreover, the government and the people have continued to apply a capitalist model that is supported theoretically and empirically. The result is that after more than a

decade of innovation and dedication, Vietnam has successfully transformed from a centrally planned to a market economy. Whilst Vietnam's economic success may not be shared evenly in the country, the state's continued support should ensure that inequality in Vietnam is further reduced.

Table 4.9: Average Income per person/per month (1000 VND)

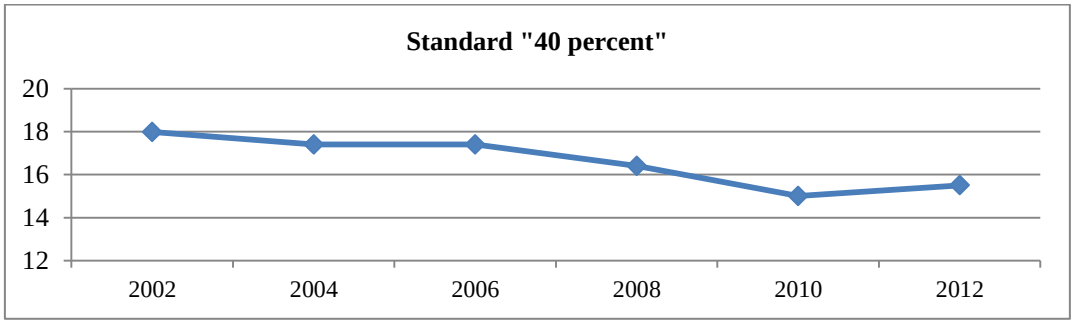
Six Regions	Total	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Difference (#of times)
Red River Delta							
2004	570	172	280	395	568	1235	7.2
2006	747	229	368	523	763	1620	7.1
2008	1086	306	497	712	1087	2554	8.3
2010	1755	426	749	1109	1665	3652	8.6
2012	2394	580	1066	1627	2355	4687	8.1
Midlands and Northern Mountains							
2004	386	162	277	394	569	1108	6.8
2006	517	209	358	518	753	1458	7.0
2008	727	283	479	710	1060	2185	7.7
2010	1021	362	717	1107	1679	3075	8.5
2012	1476	526	1053	1607	2376	4482	8.5
Northern and Coast Central							
2004	435	162	277	392	569	1119	6.9
2006	595	216	365	520	757	1660	7.7
2008	814	288	491	710	1070	2104	7.3
2010	1233	407	735	1097	1645	3296	8.1
2012	1800	580	1070	1600	2298	4538	7.8
Central Highlands							
2004	445	161	270	395	559	1129	7.0
2006	621	211	360	513	771	1440	6.8
2008	894	273	489	713	1056	2261	8.3
2010	1346	401	738	1084	1655	3311	8.3
2012	2039	537	1039	1633	2342	4854	9.0
South East							
2004	878	190	285	397	586	1339	7.0
2006	1194	244	371	524	789	1905	7.8
2008	1855	274	515	724	1109	3062	11.2
2010	2632	438	746	1111	1685	4717	10.8
2012	3163	552	1103	1627	2373	5225	9.5
Mekong River Delta							
2004	548	176	279	395	567	1243	7.1
2006	728	233	363	524	751	1660	7.1
2008	1069	296	492	714	1070	2645	8.9
2010	1433	420	738	1101	1656	3320	7.9
2012	1966	601	1075	1617	2336	4917	8.2

Source: The author's calculation

These positives derived from Gini indications can be contrasted with the current state of inequality in Vietnam. If we consider absolute inequality, the gap between the top 20 percent and lowest 20 percent in Vietnam has been continually widening. When compared with other countries, in the 2005-2008 period, the difference between incomes of the richest and poorest in Vietnam was rated better than only one other country in Asia – the Philippines. The level of 8.9 times was higher than China, Thailand, Indonesia, Malaysia, India, South Korea and its regional neighbour Cambodia. Remarkably, Vietnam's Gini coefficient is equal to or higher than the Gini coefficient of many countries whose GDP per capita is higher than that of Vietnam, while the Gini coefficient of some countries in the region (like Thailand and Malaysia) decreased compared to Vietnam's continual rise.

Dissonance between results of Gini and absolute comparisons may be attributable to the methodology employed by Gini to calculate inequality (Figure 4.3). Gini uses the World Bank "40 percent" method to denote low income. The proportion of income earned by the lowest 40 percent of the population is compared to the entire population. This facilitates quantification of welfare differences and allows for both longitudinal and horizontal comparisons however the results can be misleading since the index aggregates a larger portion of the population and the cumulative share of income contributes to a higher index. This indexation technique is particularly problematic in countries such as Vietnam where there is high disparity between poverty rates from lower to higher income earners. As previously mentioned, this disparity is attributable to very low productivity in the lowest quintile of incomes earners in Vietnam.

Figure 4.6: Income attributable to the lowest 40 percent of income earners in Vietnam



Source: GSO 2004, 2006, 2008, 2010 and 2012.

The World Bank standard reckons that a proportional figure of 12 percent represents high inequality. That is, if the bottom 40 percent of people earns less than 12 percent of all income then society is deemed relatively inequitable. A rate between 12 and 17 percent represents medium inequality. A rate higher than 17 percent denotes relative equality. According to the 40 percent standard, Vietnam's income distribution in the population is relatively equal. The share of income of 40 percent of the population with the lowest income was 17.98 percent in 2002.This ratio reached 15 percent by 2010. The increasing trend in inequality represented by this figure is noteworthy because it parallels comparison of absolute inequality in Vietnam. The increasing trend is important since it reflects Vietnam's potential path in the future instead of merely regarding its current state.

The relationship between poverty and income growth

The estimation of growth elasticicy and the evaluation of whether a country is pro-poor or not is very useful for setting economic development targets since poverty reduction is one of the leading development targets, especially in developing countries. As discussed earlier, high economic growth and profoundly structural change helped Vietnam to halve the poverty rate in the 1990s. Therefore, a thorough understanding of the growth elasticity of poverty over the last two decades of development is crucial to the poverty reduction strategy in Vietnam.

The estimations from VHLSSs data in Vietnam during 2004-2012 (Table 4.10) showed a close relationship between poverty and per capita income. Elasticities between poverty rates and income growth in absolute value decreased during the period 2004-2012 (coefficient is -2.289 and -2.013 in 2004 to 2012). This reflection is to reduce poverty with the same level of income should be increased more than before. In 2012, when income increased by 1 percent, the poverty rate would decreased by 2.01 percent.

Income among households groups are ethnic minorities, in the mountains of northern, central and Mekong Delta tended to be improved, so elasticities poverty rate of income growth was likely increased over the period 2004-2012, or income growth was a positive factor for poverty reduction of the region.

Elasticities between poverty rates and income growth in rural areas; households are ethnic minorities; Central; Northern Mountains. This reflects the growth in incomes in these areas; the poverty rate would decrease rapidly.

Table 4.10: Elasticity of total poverty with respect to average income growth

	2004	2006	2008	2010	2012	Changes between 2004-2012
Total	**-2.289**	**-2.401**	**-2.474**	**-2.044**	**-2.013**	**-0.275**
Residence						
Urban	-0.945	-1.025	-1.100	-0.819	-0.759	-0.186
Rural	-2.853	-3.068	-3.252	-2.789	-2.700	-0.153
Ethnicity						
Kinh	-2.121	-2.195	-2.177	-1.735	-1.589	-0.532
Ehtnic Minorities	-3.976	-4.164	-5.948	-4.581	-5.762	1.786
Regions						
Red River Delta	-2.062	-2.204	-2.420	-1.501	-1.274	-0.788
Midlands and Northern Mountains	-3.516	-3.570	-4.629	-3.818	-4.074	0.558
Northern and Coast Central	-3.299	-3.840	-3.848	-3.705	-3.574	0.275
Central Highlands	-2.985	-2.885	-3.204	-3.205	-2.851	-0.134
South East	-0.431	-0.477	-0.431	-0.491	-0.399	-0.032
Mekong River Delta	-2.540	-2.330	-2.631	-2.553	-2.783	0.243

Source: The author's calculation

4.5 Discussion and Summary

This Chapter has contributed to a contextual understanding of the concept of poverty, has analysed the status of poverty in Vietnam. Firstly, it presented more detailed investigation of two different approaches to measuring poverty and monitoring progress in Vietnam. Both were initiated in the early 1990s and have evolved over time. The first approach was developed and led by MOLISA. MOLISA is tasked with proposing official urban and rural poverty lines at the beginning of Vietnam's SEDP and with setting the beginning-period poverty rate. MOLISA is also responsible for assessing changes in poverty and updating its list of poor households on an annual basis, using a "bottom-up" mix of local surveys and village-level consultations to count the number of poor at the local (commune) level. The MOLISA lines were initially based on rice equivalents, but since 2005 they have been calculated,

with technical support from the GSO, using a cost-of-basic-needs methodology similar to the approach led by the GSO. Official lines are not adjusted annually for inflation, but they are revised in real terms every five years. MOLISA's primary objective is to determine budget allocations and define eligibility for several targeted poverty reduction programs. The second approach, which is led by the GSO, measures poverty and monitors progress on the basis of nationally representative household surveys. GSO uses two different methods to measure poverty—one based on official poverty lines (adjusted for infl ation) applied to per capita incomes and one using an approach developed by a joint GSO and WB team in the late 1990s. The GSO-WB poverty line is constructed using a standard CBN methodology, based on a reference food basket for poor households anchored in nutritional norms plus an additional allocation for essential nonfood needs. Unlike Vietnam's official poverty lines, the GSO-WB lines have been kept roughly constant in real purchasing power since the late 1990s and been applied to per capita consumer expenditures measured in successive rounds of the VLSS and the VHLSS to calculate poverty at the national, urban-rural, and regional levels. VHLSSs data and the GSO's approach are deemed more reliable for the purposes of the present study because it adjusts for inflation regularly, maintains an objective methodology and frequently updates its basis of poverty measurement. This allows the researcher to observe fluctuations more acutely and more precisely analyse change over time. However, despite differences in approach as well as the differences in use, the trends in poverty reduction of these two measurements are similar. Consistency in trends, such as that alluded to, does not necessarily demonstrate reliability. However, as was noted earlier, each poverty line serves a different purpose.

Secondly, the Government of Vietnam's poverty reduction policies, relevant programs and the results of implementation of objectives and tasks of poverty alleviation are reviewd. The formation and development of the system's policies and poverty reduction in Vietnam can be divided into the following stages: the period 1998-2000, 2001-2005, 2006-2010 and from 2011 until now. Since the year 1998 to present, poverty reduction has been considered as the national targeted program and always included in the every 5-year-plan. A number of resolutions, directives, strategies and decisions on poverty reduction including national target program on poverty reduction, socio-economic development programs (SEDP), and special program as No.135, Resolution No.30A and Decision No.80 have been promulgated.

These programs have created significant positive outcomes such as economic growth, social equity performance, social security not only for the poor, but also for people extremely remote and difficulty areas. The poor has better accessed to economic resources including finance, land, technology, infrastructure and markets. Their accessibility to basic social services such as education, health, clean water and legal aid has been remarkably improved. The aforementioned achievements are attributed to the country's comprehensive strategies on economic growth and poverty reduction, in line with global trends. However, there are a number of issues related to Vietnam's poverty reduction and elimination of poverty which need to be resolved such as poverty reduction results are not often sustainable, the rate of poor households are still high, especially in the mountainous, remote areas and the income of the poor has not met the demand for a minimum living standard.

Based on VHLSSs in 2004, 2006, 2008, 2010 and 2012, this study confirms that there has been a dramatic level of poverty reduction in Vietnam. The result of poverty dominance analysis shows that this progress has held, regardless of the poverty line. High and sustainable growth rates and profound structural changes have been key factors to the successful reduction of poverty. However, the VHLSSs has also reveal that elasticities between poverty rates and income growth in absolute value decreased during the period 2004-2012 2012 (coefficient is -2.289 and -2.013 in 2004 to 2012), meaning more income growth is needed for a percentage point of poverty reduction over time. Moreover, this improvement in poverty reduction is not uniform between regions and ethnic groups and the speed of improvement is slowing. Apart from macroeconomic instability such as inflation and global economic crisis that occurred in late 2008 and early 2009, it is the failing of policy implementation of as well as national targeted programs that have contributed to adverse effects (Thu Tuong Chinh phu, 2011). Indeed, the impact of the programs on poverty reduction has been rather ambiguous and produced less than convincing results (Klump and Pruffer, 2006; Fritzen, 2002).

An academically informed appraisal of the situation further illustrates the contrasting status of poverty in Vietnam. Cuong (2008) noted that the impact of the government's micro-credit program was effective but it aided the non-poor far more than impoverished people. Opportunities of benefiting from such programs may need

to be more evenly distributed. Quynh (2004) asserted that the safety net intended to protect poor people failed to assist the most vulnerable in Vietnam because it was not sufficiently guided. Few people escaped poverty based on this safetly net system. The foibles are not limited to specific programs either. Fan et al. (2004) and the World Bank (2001) noted that public investment in agriculture, education and infrastructure all contributed to poverty reduction. Unfortunately, Huong and Vinh (2004) present a drawback in that that these types of investments generally increased inequality since they tended to favour capital intensive industries instead of labour oriented ones.

No less than the redistribution policies, the growth pattern also played a significant role in Vietnam's poverty-related achievements. In parallel with the international emergence of the pro-poor growth concept, poverty reduction was well integrated into the national social and economic development plan for the period 2006-2010[17]. However, Vietnam's growth pattern seems to have been pro-poor well before that period, but why and how is it so have not been thoroughly investigated in Vietnamse studies. In fact, the economic growth has been accompanied by pronounced structural changes at the aggregate level in Vietnam, especially the manufacturing sector contributed significantly in the economic structure from 2000-2013 as discussed in Chapter 3. It may be due to the increase in the productivity of agriculture after the land reforms (Ravallion and Van de Walle, 2008), or the development of non-farming activities (Hung et al. 2010) or the creation of employment outside agriculture (Huong et al. 2003; Justino et al. 2008), especially in sub-sectors of the industrial sector (Dang, 2011). Present literature on Vietnam provides some insights but not an overall picture of the contribution of growth pattern to poverty alleviation, this thesis will fill this gap. To understand the role of manufacturing sector in poverty reduction in Vietnam, the next chapter will make use of household surveys to find out the relationship between the manufacturing sector and poverty reduction through per capita income, per capita expenditure and household poverty status.

[17] See the World Bank (2006) for more details on the process of integrating poverty reduction into the socio-economic development plan. Conventionally, the Vietnamese government manages the economy with annual and five-year socio-economic development plans, and a ten year socio-economic development strategy.

CHAPTER 5 POVERTY AND MANUFACTURING EMPLOYMENT - HOUSEHOLD-LEVEL EVIDENCE

5.1 Introduction

The purpose of this chapter is to analyse factors that affect Vietnamese poverty at the household level based on cross-sectional data and panel data. Two important questions are posed:

- What is the relationship between poverty and the manufacturing sector for the country as a whole?
- What is the relationship between poverty and the manufacturing sector in rural and urban areas?

Chapter 2 discussed the literature on the relationship between poverty and industrialisation. In particular, manufacturing represents an aspect of industry that can be leveraged to yield great benefits. Similarly, Chapter 3 showed that industrialisation and augmentation of the manufacturing sector in Vietnam have contributed remarkably to Vietnam's GDP growth and this has allowed the country to focus on improving its citizens' well-being. Chapter 3 also demonstrated that economic growth, and growth of the manufacturing sector specifically, has slowed and this must be addressed as Vietnam progresses towards full industrialisation. A review of literature exhibited various methods used to measure poverty. However, despite their rich contribution, few quantitative researchers have been interested in developing further investigations into the relationship between poverty at household level and the manufacturing sector. Unlike other studies, this study engages a sound analytical framework and uses a manufacturing-related variable to fill this research gap.

In order to analyse and identify the correlates of poverty at the household level, this study employs the estimation framework extensively discussed in the literature review in Chapter 2. Firstly, this study investigates the effect of the manufacturing sector on a household's per capita income and a household's per capita expenditure. Secondly, this study examines the effect of the manufacturing sector on a household's poverty status. These approaches base on cross-sectional data and panel data from the years 2004, 2006, 2008, 2010 and 2012.

Chapter 4 of this thesis discussed poverty measurement and provided a poverty profile in Vietnam. This is immensely useful, but not principally concerned with

explaining the important factors affecting poverty. Thus, it is necessary to conduct an empirical analysis related to the determinants of poverty.

This chapter will present detailed findings about the main factors in the manufacturing sector that affect poverty status at the household level. This will enable policy-makers and the Vietnamese government to devise appropriate poverty reduction policies.

The rest of this chapter is structured as follows. Section 5.3 discusses the data and methodology. Section 5.3 evaluates emprical results and discusses possible reasons for the results. Section 5.4 summarises the chapter.

5.2 Methodology and Data

This study analyzes the relationship between poverty and manufacturing activity using econometric analyses. The poverty-related measures used include:

(i) Household s' per capita income;

(ii) Households' per capita expenditure; and

(iii) Household's poverty status.

Manufacturing activity is proxied by the fraction of household members working in the manufacturing sector at household level.

This study uses both cross-section analyses (OLS, probit) and panel data analyses (random/fixed effects, MLE) with the aim of comparing the results since complementary insights from these models may be obtained (cf. Appleton, 2001; Brück et al. 2010; Gounder, 2013).

Furthermore, in modelling the determinants of income, expenditure and poverty status, this study estimates separate models for urban and rural areas. This study argues that the rural and urban sectors of Vietnam are sufficiently different from each other so as to warrant different models. This study uses the same independent variables for all models[18].

5.2.1 Household Expenditure Model

The expenditure linear regression model for cross-section analysis can be specified as follows:

[18] One interactive variable will also be used but in supplementary regressions and not in the main regressions.

$$lnC_i = \alpha + \beta X + \Upsilon Y + \delta S + \eta Z + \varepsilon_i \quad (5.2)$$

where C is the per capita expenditure; X is a vector of a group of household demographics and human capital variables; Y is a vector of a group of household employment variables; S is a vector of a group of physical assets variables and Z is a vector of a group of regional characteristics variables. All the group of variables will be discussed in greater detail in sub-section 5.2.4 (page 121). The results are presented in Appendix to Chapter 5; α is the constant, and β, Υ, δ and η are the corresponding vectors of coefficients, and ε is a normally distributed random error term.

The dependent variable is real per capita expenditure measured in natural logarithm. Household Expenditure in Vietnam is defined as the total expenditure in the year of household divided by number of household members and by 12 months. Household expenditure is all amount of money and value of kinds (including those produced by households) that households and household members spent on consumption for living in a given duration of time, usually a year.

Items of expenditure include food, food stuff, drinks and tobacco; clothes and footwear; housing, electricity, gas, water and other fuel; furniture, and normal maintenance; health; transportation; communication; restaurants and hotels; other spending on consumption. Household consumption expenditure in the period does not include production cost, business/production tax, savings, loan, debt repayment, reimbursement.

The expenditure regression model for panel data can be specified as follows:

$$lnC_{it} = \alpha_i + \beta X + \Upsilon Y + \delta S + \eta Z + \varepsilon_{it} \quad (5.3)$$

where C is the per capita consumption expenditure; X, Y, S and Z includes vectors of variables will be discussed below; α is the constant, and β, Y, δ and η are the corresponding vectors of coefficients, and ε is a normally distributed random error term.

5.2.2 Household Income Model

The income linear regression model for cross-section analysis can be specified as follows:

$$lnI_i = \alpha + \beta X + \Upsilon Y + \delta S + \eta Z + \varepsilon_i \quad (5.4)$$

where I is the real per capita income; X is a vector of a group of household demographics and human capital variables; Y is a vector of a group of household

employment variables; S is a vector of a group of physical assets variables and Z is a vector of a group of regional characteristics variables. All the group of variables will be discussed in greater detail in sub-section 5.2.4 (page 121). The results are presented in Appendix to Chapter 5; α is the constant, and β, Υ, δ and η are the corresponding vectors of coefficients, and ε is a normally distributed random error term.

The dependent variable is real per capita income measured in natural logarithm. Household income in Vietnam is defined as all amount of money and value of kinds converted into money less production costs household and household members receive in a given duration of time, usually a year. Household income includes: Revenue from wage/salary; revenue from agriculture, forestry and fishery production (after deducting production expenses and taxes); revenues from non-agriculture, forestry and fishery production (after deducting cost and production tax); other revenues which are included in income consists of gifts, offerings, and interest; other revenues which excluded from income include saving withdrawal, debt collection, asset sale, loan, advancement and capital transfer due to joint-venture in business.

The income model for panel data can be specified as follows

$$lnI_{it} = \alpha_i + \beta X + \Upsilon Y + \delta S + \eta Z + \varepsilon_{it} \qquad (5.5)$$

where I is the per capita income; X is a vector of a group of household demographics and human capital variables; Y is a vector of a group of household employment variables; S is a vector of a group of physical assets variables and Z is a vector of a group of regional characteristics variables. All the group of variables will be discussed in greater detail in sub-section 5.2.4 (page 121). The results are presented in Appendix to Chapter 5; α is the constant, and β, Υ, δ and η are the corresponding vectors of coefficients, and ε is a normally distributed random error term.

5.2.3 Household Poverty Status Models

The model by Brück et al. (2010) can be used to analyse the determinants of poverty:

$$\text{Prob}\ (p_i = 1) = F\ (L_i\beta + A_i\gamma + (\text{labor market shock})_i\mu + V_i\delta + \varepsilon_i \quad (5.6)$$

where: p_i is a household i considered to be poor ($p_i = 1$) if its total consumption or income is below poverty line. Otherwise, it is considered to be non-poor ($p_i = 0$); L_i

is household characteristics; A_i human capital; V_i geographic controls; and ε_i an error term.

It is expected that these poverty functions yield similar results as the income and expenditure functions. A household is considered to be poor if its total income is below the absolute poverty lines of two organisations in Vietnam (the Ministry of Labour Invalids and Social Affair (MOLISA) and GSO as discussed in Chapter 4.

The income discrete regression model with cross-section data can be specified as follows:

$$Prob(poor_i = 1) = F(\beta_1 + \beta_2 X_i) \qquad (5.7)$$

where *poor* is the income poor dependent variable, β is a set of parameters reflecting the impact of changes in X, and X is a matrix of explanatory variables will be mentioned in greater detail in sub-section 5.2.4 (page 121). The results are presented in Appendix to Chapter 5.

Household's income poverty in Vietnam is estimated on the basis of various poverty lines. The poverty lines used in this study are the MOLISA's income poverty lines[19] and the GSO's income poverty lines[20]. A household is considered to be poor if its total income is below the absolute poverty lines of two organisations in Vietnam (MOLISA and GSO).

These poverty lines are chosen as MOLISA poverty lines are used officially by the government while the GSO poverty lines are very closely related to the official poverty lines of the government. It is important to analyse sensitivity of shifts in a poverty line to see whether the findings are robust enough to endure changes in economic circumstances and shifts in those poverty line in Vietnam.

[19] The MOLISA's poverty lines kept the same value for years in each five-year Socio-Economic Development Plan (SEDP).The government poverty line for the period 2006-2010: In urban: 260 thousand VND/person/month; in rural: 200 thousand VND/person/month. For the period 2011-2015: In urban: 500 thousand VND/person/month; in rural: 400 thousand VND/person/month.

[20] The GSO's poverty lines are updated by annual average the Consumer Price Index (the CPI) for years in each five-year SEDP. For 2004, 2006 and 2008, it is based on the government poverty line for the period 2006-2008, but it is adjusted an increase in price: For urban, in 2004: 220 thousand VND, in 2006: 260 thousand VND and in 2008: 370 thousand VND/person/month; for rural, in 2004: 170 thousand VND, in 2006: 200 thousand and in 2008: 290 thousand VND/person/month. For 2010 and 2012, it is based on the government poverty line for the period 2011-2015, but it is adjusted an increase in price: For urban, in 2010: 500 thousand VND and in 2012: 660 thousand VND/person/month; for rural, in 2010: 400 thousand VND, in 2012: 530 thousand VND/person/month.

It is noted that there are two methods of measuring the probability of household poverty in this study:

(i) *Household's ability to fall into poverty:*

The dependent variable is 0 or 1 depending on whether the hosehold is below or above the poverty lines of GSO and MOLISA. It is 1 if the household was not poor last year and the year after falling into poverty. It is 0 if the household was not poor in the year before and the year after.

(ii) *Household's ability to escape income poverty*: The ability to transfer the status of the household, and is measured as follows:

The dependent variable is 0 or 1 or 3 depending on whether the household is below or above the poverty lines of GSO and MOLISA. It is 0 if the household was not poor last year and was poor the year after. It is 1 if the household was poor in both the years before and the year after. It is 2 if the household was poor last year and the hosehold was not poor the year after.

The model specification for the panel data is as follows:

$$Prob(poor_{it} = 1) = F(\beta_1 + \beta_2 X_i) \quad (5.8)$$

where *poor* is the income poor dependent variable taking 0 and 1 (an observation received value is 1 if the household is poor, whereas the value is 0), β is a set of parameters reflecting the impact of changes in X, and X is a matrix of explanatory variables will be mentioned in greater detail in sub-section 5.2.4 (page 121). The results are presented in Appendix to Chapter 5. These variables are measured at the household level.

5.2.4 Further Discussions on the Independent Variables

As discussed in Chapter 2, this study chooses the independent variables that are likely to correlate household income, household expenditure and poverty probability of household. Another criterion for selecting the potential determinants is exogeneity. In order to avoid the problem of endogeneity and simultaneously to meet the requirement of the models' specification, this study uses various independent variables that are exogenous or are selectively confined to be pre-determined and that are likely to be

exogenous (Glewwe, 1991, Glewwe & Hall, 1998, Mukkerjee & Benson, 2003, Vu & Baulch, 2011)

The independent variables in this study (Table 5.1) are split into 5 groups[21] as follows: (1) household demographics; (2) human capital; (3) household employment; (4) physical assets; (5) regional characteristics (Haughton & Khandker, 2009, pp145-156; Glewwe, 1991, p. 311). These independent variables are used for both approaches.

X is a vector of the first and the second groups of variables in the above models. The first group inludes these variables: household demographics, include: household size; household composition; household head ethnicity[22]; household head gender; household head marital status; household head age; and household head age squared.

The second group, human capital, is used to measure the impact of the proportion of household skilled members' completed educational levels over short-term technical worker level and over[23].

Y is a vector of variables in the third group including household employment, applies various sub-categories including: the number of household members working in manufacturing compared to those generally employed, expressed as a fraction; household labours working far from home; household head working in rural, non-farm sector; household head working in salary sector only; and household head occupation. This last variable comprises ten further categories: high-level professional, mid-level professional, staff, skilled worker, skilled agriculture worker, skilled handicraftsmen, assembler and machine operator, unskilled worker, working in the army, not working.

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[21]As discussed in the 2.4.1 section, Haughton and Khandker (2009, pp145-156) divides the main determinants of poverty into four general groups: Regional, community, household and individual characteristics, and Glewwe (1991, p.311) groups explanatory variables into five categories: Household composition, regional dummy variables, physical assets, human capital and community characteristics, but this study does not use community-level characteristics, it can be used in the future research.

[22]Ethnic minorities are defined as all ethnic groups except for Kinh (ethnic Vietnamese) and Hoa (ethnic Chinese), following the classification commonly used in Vietnam.

[23] Skilled labours are defined as household members who graduated educational levels such as short-term technical worker, long-term technical worker, professional high school, vocational college, and from college to Doctor of Philosophy (PhD), following the national system of Vietnam (Lim, 2014, p.128). The "skilled ratio" variable is calculated by based on the question "What is the highest diploma you (a person) obtained? (no diploma, primary school, lower secondary school, upper secondary school, short-term technical worker, long-term technical worker, professional high school, vocational college, and from college to Doctor of Philosophy (PhD). This variable is calculated by dividing of the total of household member who completed short-term technical worker and over by the total of household member.

S is a vector of variables in the fourth group including physical assets, includes: whether the household has savings (the amount is not relevant)[24]; whether the household has household remittances[25]; whether the household has land for agricultural production; and whether the household maintains fixed capital.

Z is a vector of variables in the fifth group including regional characteristics, considers whether households are located in urban or rural areas. This category is divided into six economic regions: Red River Delta; Midlands and Northern Mountains; Northern and Coastal Central; Central Highlands; South East; and Mekong River Delta.

In the first group, the household size variable, that is the number of people residing in a household, is expected to have a negative relationship between per capita income, expenditure and poverty. There is considerable evidence of strong negative correlation between household size and consumption (or income) per person in developing countries. It is often concluded that people living in larger family are typically poorer (Lanjouw & Ravallion, 1995, Sakuhuni et al. 2011). The household composition is another important factor. Households with a larger proportion of elderly, child or female members is said to have a higher dependency ratio. This ratio compares the number of family members in a household who are not engaged in the labour force to those who are. Higher dependency ratios are often associated with lower income and/or income and poverty (Minot & Baulch, 2005; Minot et al. 2006; Onyeiwu & Liu, 2013). It is widely believed that the gender of household head significantly correlates to household poverty. Specially, female-headed households are poorer than those headed by men because they can lack extensive social networks, have unequal access to education and must often endure discrimination in labour (Chant, 2003; Haughton & Khandker, 2009). However, female-headed households can achieve higher incomes than their male-headed counterparts despite social inequality and discrimination. The marital status of household heads tends to be related to the dependency ratio of children thus creating more financial pressure on household expenditure. This leads to lower expenditure and poverty. By contrast, financial

[24]Calculated based on the answer "yes, interest of saving, shares, bonds, loans" to the question "for the past 12 months, has anyone in your household received money or goods from the following sources?"
[25]Calculated based on the answer "yes, domestic remittance and value of in-kind presents from people who are not household members" to the question "for the past 12 months, has anyone in your household received money or goods from the following sources?"

pressures are eased in households with married heads due to economies of scale. The age of the household head can represent experiences of the household. Hence, the older the head, the more experience he or she tends to have and this widens the range of investment opportunities for the household. This argument is supportetd by Becker's (1975) "Human capital" theory. His theory maintains that the patterns of individual's earnings were such that they started out low (when the individual was young) and increase with age, although earnings tend to fall somewhat as individuals near retirement.

Consequently, households with more experience are more likely to succeed and escape poverty. However, age squared of household head, the last in this group of variables, can be connected with negative income (Datt & Jolliffe, 2005; Sakuhuni et al. 2011; Onyeiwu & Jialu, 2013; Gounder, 2013).

Vocationally and in terms of education, there is some evidence that attainment of higher levels of education may enhance the welfare of households (Minot & Baulch, 2005; Minot et al. 2006; Sakuhuni et al. 2011; Gounder, 2013). Hence it may be expected that this variable will have a positive correlation between welfare and poverty for those employed in high and mid-level professional roles and for those working in the army. Those who do not or cannot access educational facilities have less chance and are not expected to lift themselves out of poverty. In addition, there is considerable evidence of strong positive correlation between households with highly educated members and consumption or income. Educated individuals often can adjust more easily to changing economic circumstance, use assets more efficiently, obtain better credit arrangements and exploit new income opportunities faster (Schultz, 1975; Mu, 2006).

In terms of economic sectors and poverty reduction, it is often thought that having a household head employed in the agricultural or salary sector would be most beneficial for the household. However, these sectors rely heavily on uncontrolled factors. This is particularly so for the agricultural sector which is seasonal and subject to uncontrolled weather conditions and natural phenomenon. Nevertheless, this expectation is not misguided. As was discussed previously, countries in the early stages of economic development can achieve accelerated growth and reduction in poverty by investing in the agricultural sector. Vietnam is currently emerging from this early stage of development and it is expected that the proportion of household

members employed in manufacturing will have a more significant positive impact on household welfare and poverty reduction (Mukherjee & Benson, 2003; Nadvi & Thoburn, 2004; Thoburn et al. 2007). Expectations for those household labourers who travel and seek work around the country are positive.

In the fouth group, assets held at the household level include tangible goods such as land as well as other financial assets such as savings. These households maintain a higher amount of wealth and inventory and therefore positively affect that household's (potential) income flow. Furthermore, these households can be poor in income, but wealthy when their property is taken into consideration and this is a consideration which mustn't be overlooked (Haughton & Khandker, 2009; Mckay & Lawson, 2003).

In the fifth group, households in urban areas and the South East region in particular are expected to have a positive relationship with per capita income, expenditure and poverty; the remaining locations are expected to maintain a negative correlation. The South East consists of the majority Kinh people. This region is the most economically developed and is also the most urbanized region in Vietnam, with the economic hub of Ho Chi Minh City. Other provinces of the region such as Binh Duong, Dong Nai, and Ba Ria-Vung Tau are similarly industrialized and contribute significantly to the region's economic development thus contributing to the positive expected correlation to per capita income. The expected signs for the models' variables are shown in table 5.1.

Table 5.1: A summary of expected signs of independent variables for income and expenditure models

Variable	Variable descriptions	Unit	Expected signs
hhland	Having lands for agricultural production	1= yes; 0 = no	- +
labour	Household member working away from home	person	+
lfixedca	Ln of fixed capital	thousand VND	+
skilled ratio	The ratio of household's skilled members who have completed education level of short-term worker and over.	percent	+
occuphd_2	High-level professionals at all fields	1= high-level professionals; 0 = otherwise	+
occuphd_3	Mid- level professionals at all fields	1= mid-level professionals; 0 = otherwise	+
occuphd_4	Staff	1= staff; 0= otherwise	-
occuphd_5	Skilled workers	1= Skilled workers; 0 = otherwise	-
occuphd_6	Skilled agriculture workers	1= Skilled agriculture workers; 0 = otherwise	-
occuphd_7	Skilled handicraftsmen	1= Skilled handicraftsmen	-
occuphd_8	Assemblers and machine operators	1= Assemblers and machine operators; 0 = otherwise	-
occuphd_9	Unskilled workers	1= Unskilled workers; 0 = otherwise	-
occuphd_10	Armed forces	1= Working in the army; 0 = otherwise	+
occuphd_11	Not working	1= Not working; 0 = otherwise	-
hhsize	Household size	person	-
gender	Household head gender	1= male; 2 =female	- +
marital	Household head marital status	1= married; 0= no	- +
agehead	Age of household head	age	+
agehead^2	Head's age squared	age^2	-
pelderly	per cent of household members aged 60+	percent	-

Variable	Variable descriptions	Unit	Expected signs
pchild	per cent of household members aged <15	percent	-
pfemale	per cent of household members who are female	percent	-
ethnic	Ethnicity of household	1= Kinh ethnicity; 0 = otherwise	+
saving	Interest of savings, shares, bonds, loans	percent	+
headruraln	Household head rural non-farm employment	1= yes; 0= no	- +
headsalary	Household head working in salary sector only	1= yes; 0= no	- +
remittance	Having domestic remittance and value of in-kind presents from people who are not household members	1= yes; 0= no	- +
manufactu	Fraction of manufacturing members to working members	percent	+
reg61	Household is in the Red River Delta		
reg62	Household is in the Midlands and Northern Mountains region	1= yes; 0= no	-
reg63	Household is in the Northern and Coastal Central region	1= yes; 0= no	-
reg64	Household is in the Central Highlands region	1= yes; 0= no	-
reg65	Household is in the South East region	1= yes; 0= no	+
reg66	Household is in the Mekong River delta region	1= yes; 0= no	-
urban	Household is in the urban	1 = yes; 0 = no	+

Source: The author's summary

5.2.5 Data

This study uses the Vietnam Household Living Standard Surveys (VHLSSs) for the years 2004, 2006, 2008, 2010 and 2012. VHLSSs provide the raw data from which assessments of living standards can be made. The datasets can be used to undertake an objective evaluation of poverty and wealth disparity. VHLSSs are collected by the GSO under the technical auspices of the World Bank. Based on VHLSSs, the government prepares policies and plans to improve the living standards across the country, and in regions and localities but the range of methods used to analyse VHLSSs is restricted due to finite resources. Studies, such as the present one, seek to compliment existing research thereby filling in caveats of knowledge. Subjects examined in the VHLSS forum include residential households, household members and communes in provinces and cities.

VHLSSs primarily collect information about the income and expenditure of households. Household income includes revenue from wages/salaries; revenue from agriculture, forestry and fishery production (after deducting production expenses and taxes); revenues from non-agriculture, forestry and fishery production (after deducting cost and production tax); other revenues which are included in income consisting of gifts, offerings, and interest; other revenues which are excluded from income including saving withdrawal, debt collection, asset sale, loan, advancement and capital transfer due to joint-venture in business.

Household consumption expenditure consists of all amounts of money (including those produced by households) that households and household members spend on consumption for living for a defined length of time, usually one year. Items of expenditure include food, food stuff, drinks and tobacco; clothes and footwear; housing, electricity, gas, water and other fuel; furniture, and normal maintenance; health; transportation; communication; restaurants and hotels; other spending on consumption. Household consumption expenditure in the period does not include production cost, business/production tax, savings, loan, debt repayment or reimbursements. Other information about households and household members is also collected to analyse the determinants of and the differences in standards of living, including the main demographic characteristics (age, gender, ethnicity, marital status);

academic level; sickness, disease, and use of health services; job; electricity, water and sanitation; participation in the program of poverty reduction; and the impact of migration on household living standards. The sample for the selected surveys included 9188 households in 2004; 9189 households in 2006; 9189 households in 2008; 9399 households in 2010; and 9399 households in 2012.

5.3 Empirical Results

This section will discuss the results of all econometric models outlined in Section 5.2[26]. These results will be discussed in three sequential stages. The first discussion focuses on the estimation results of the correlation between the manufacturing sector and household per capita income/household per capita expenditure; and household poverty status based on cross-section data for the years 2004, 2006, 2008, 2010 and 2012 for the whole country; and urban and rural areas. The second discussion cover results based on panel data in the short term in 2004-2006, 2006-2008 and 2010-2012. The third discussion examines results based on panel data in the long term from 2004-2008.

5.3.1 Cross-Section Analysis

The cross-section regression results for household income and expenditure are summarized in Table 5.2. The results of the probit regressions for poverty propensity are presented in Table 5.3.

Overall, most of the explanatory variables in the regression results are statistically significant and of expected signs (see Appendix to Chapter 5). Moreover, the fit of the models are estimated with R^2 around 0.47 to 0.58 for the income model and around 0.47 to 0.55 for the expenditure model. This indicates that the income model explains from 47 percent to 58 percent of the change in the dependent variable and the expenditure model explains from 47 percent to 55 percent of the change in the dependent variable.

Looking at the results, it can be seen that the household's poverty, measured in per capita income, is strongly and positively associated with the fraction of household members working in the manufacturing sector in all years. For example,

[26] For the test results, supplementary regressions were not statistically significant for one interactive variable (manufactu * skilled ratio) (More detail is presented in the Appendix to Chapter 5).

when this rate increased by 1per cent, the average income of households increased by 0.1 percent in 2012 (other factors were not changed). Also, manufacturing employment is strongly and positively associated with per capita household expenditure in 2004 and 2006. In 2008-2010, it tended to reduce, but it increased again in 2012. This is completely in line with the economic context of Vietnam – from 2008-2010, Vietnamese economic growth was low due to the impact of high inflation and the Global Economic Crisis. The initial slowdown in economic growth that resulted from price shocks of 2008 was compounded in 2009 by the onset of the GFC in the fourth quarter of 2008 in the USA. There were harsh ramifications on Vietnam's export channels due to the resultant credit crunch and shrinking demand from the west. Local markets reeled from these shocks. Labour-intensive manufacturing was particularly vulnerable in the areas of wood processing, electronics assembly and handicrafts. Textile and garment industries also suffered. Many workers saw their working hours eroded and in some cases workers had to be retrenched. This forced many workers to move from the industrial to the lower paid informal sector (VASS, 2011). However in 2012 the economy began to recover, so the industrial sector flourished again. This helped households and people to regain the impetus that may have been lost in 2008. Subsequently, income and expenditure increased for this latter period.

When examining the propensity for a household to be in poverty positive correlations are found. Results indicate that the household's probability of being in poverty is strongly related to the fraction of that household's members working in the manufacturing sector. This assessment is based on both MOLISA and GSO approaches and these approaches yield positive results, similar to those in the above paragraph. Whilst this is true, the trends are different to those mentioned above for the period 2004- 2012. For the MOLISA approach, the coefficients of marginal effects are negative in the period 2004-2008, but are positive for the 2010-2012 period. This shows that households with a higher percentage of members working in the manufacturing sector, in general, have a lower chance of falling into poverty in the 2004-2008 periods. However, it increases from 2010-2012. Similarly, for GSO approach, opposite trends are found in the period 2004-2012. The coefficients of marginal effects are negative in the period 2004-2008 and 2012 and positive for 2010. This shows that the households with a higher percentage of members working in the manufacturing sector have a lower poverty propensity in the 2004-2008 periods and in

2012. However, it increases in 2010. Again, this aligns with the economic context of Vietnam – from 2008-2010, in the early stages of the year 2010, the economy was still facing many difficulties Vietnam because of the global economic crisis, price shocks and inflation. The slow economic recovery led to a negative impact on the industrial sector and the manufacturing sector specifically. However in 2012 the economy began to recover, as did the industrial sector . Many workers who previously benefited from employment in labour intensive manufacturing regained their old positions and new employment opportunities were created. A more robust marketplace allowed businesses to expand. Subsequently, income and expenditure increased for this latter period and poverty propensity was reduced based largely on the aforementioned employment opportunities.

These observations are complimented from a theoretical viewpoint. Much of the theory discussed in sub section 2.4.3 pointed to the positive nexus between economic growth and industrialisation in developing economies. Vietnam's current circumstances depict an economy that is poised for "take-off", stage three of Rostow's (1960) model. Ohno (2009) pinpoints Vietnam specifically and describes this stage as a movement from agglomeration to technology absorption. The observed detrimental effects on well-being in the above statistics are not regarded by the researcher as contrary findings which may obfuscate Vietnam's true path to prosperity. Rather they reinforce the notion that a sound understanding of context is required before adaptation can occur. Mitigating factors, such as the GFC, are regarded as confounding instances which do not necessarily detract from the overall findings of this study. Indeed, confounding contextual circumstances, which may be regarded as short term shocks to a long term industrialisation strategy, only serve to demonstrate the potential of manufacturing by highlighting findings in a more stable context. Reconciliation between contextual circumstances, economic growth and welfare enhancement has been demonstrated as a task of strong and willing government, at least in the South and South East Asian theatres (Saleem and Donaldson, 2016). Given the above findings and sound understanding of Vietnam's comparative advantages, it is apparent where advances in policy prescriptions can be made and these are discussed in Chapter 7.

The next phase of analysis moves to investigate two specific geographical contexts thereby offering a deeper insight into the issue. Table 5.2 below shows the regression results of the separate income model and expenditure model for rural and

urban areas, respectively. Similarly, Table 5.3 below presents the results of the probit regression using both MOLISA and GSO poverty lines for urban and rural areas.

The results of income models for rural and urban geographically disaggregated areas generally demonstrate that explanatory variables in the regression results are statistically significant and of expected signs. Moreover, the fit of the models in rural is estimated with R^2 around 0.37 to 0.49 for income model and around 0.37 to 0.48 for expenditure model. This indicates that for the income model, it explains from 37 percent to 49 percent of the change in the dependent variable; for expenditure model, it explains from 37 percent to 48 percent of the change in the dependent variable.

Similarly, the fit of the models in urban is estimated with R^2 around 0.41 to 0.55 for income model and around 0.41 to 0.53 for expenditure model. This indicates that for the income model, it explains from 41 percent to 55 percent of the change in the dependent variable; for expenditure model, it explains from 41 percent to 53 percent of the change in the dependent variable.

The estimation results show that household's poverty in rural area, measured in per capita income, is strongly and positively associated with the fraction of household members working in the manufacturing sector in all years. Also, this indicates that that there is strong and positive correlation between the manufacturing sector and the household per capita income in the urban area in 2006, 2010 and 20012, but there is strong and negative correlation in the years 2004 and 2008.

Looking at results for the period 2004 - 2012, it can be seen that correlations between the fraction of household members working in the manufacturing sector andhousehold poverty, measured in per capitta expenditure, vary for both rural and urban areas. Manufacturing employment is strongly and positively associated with per capita household expenditure in 2004, 2006 and 2008 in rural areas but in 2010 and 2012 this positive correlation tended to reduce. In contrast, in urban areas, manufacturing employment is negatively associated with per capita household expenditure in 2004, 2006 and 2008, but in 2010-2012, it tended to increase.

Divorced from context, these results may seem ambiguous. However, a brief examination of structure and circumstances existing around the years of this study can help to clarify some of these ambiguities and lend weight to the argument that manufacturing employment can benfit poor people, at least in more stable economic times. Firstly, the effect of some policies of *Doi Moi* must be appreciated. This broad

economic program refocussed some of Vietnam's industrial capabilities to rural areas where agriculture contributed most. In many of these areas, agricultural output still remains the greatest contributor to GDP and Vietnam has historically excelled in this competitive environment. Policies directed at this rich source were able to leverage manufacturing capabilities, particularly in the area of agro-processing, and attract FDI. Such facts are attested to in Chapter 3. Initial set up of these manufacturing zones may have progressed slowly but two decades hence some positive results have been witnessed. The positive correlations between manufacturing employment and income and expenditure for the years 2004, 2006 and 2008 are an example of such a result. The timeframe of this study, 2004 – 2012, is relevant as it shows how these benefits manifest in industrialised rural areas in a stable economic environment.

The second contextual circumstance demonstrates how these specific benefits recede in a less prosperous global environment. In 2007 Vietnam became a member of the WTO and thus became susceptible to the benfits and wiles of world trade. The association was clearly a positive step meaning Vietnam would be exposed to new markets. However, price shocks that came in early 2008 affected Vietnamese trade and inflation ensued. Further detriment to Vietnam's economy was experienced with the onset of the GFC in late 2008 and early 2009. These drawbacks meant that many jobs in rural agro-processing zones were lost. Income and expenditure were negatively affected, as demonstrated by the results above for 2010 and 2012. The implication is manifest. If there is optimism about the global economic environment then Vietnam should continue to drive industrial strategies aimed at manufacturing in rural areas. Such a policy marries neatly with studies reviewed in Chapter 2 including Rostow's (1960) theory of staged economic development and UNIDO's (2006) implication regarding the benefit's of agro-based manufacturing in less developed countries. The opposite, that Vietnam should aim policy away from rural industrialisation in less prosperous times, does not necessarily hold true as the prescriptions in the current research context are long-term and based on the quintessential economic assumption that growth is possible and necessary.

The third contextual consideration regards the structural composition in Vietnamese urban areas where manufacturing plays a less significant role. In urban areas the services sector is much larger. So for the years 2004, 2006 and 2008 there was a negative correlation between manufacturing employment and poverty reduction

because people in these areas typically were employed in a sector which has the potential to contribute more to poverty reduction. Furthermore, those employed in manufacturing in urban areas typically were not transitioned from the agricultural sector where poverty manifests more acutely. They also faced a tougher and more competitive environment which potentially drove down salaries therefore contributing less to poverty reduction. Again, this implies that an industrial strategy focussing on manufacturing in rural areas has the potential to contribute to a far greater extent. Whilst this is true, the positive correlation between manufacturing employment in urban areas and income and expenditure for the years 2010 and 2012 is somewhat peculiar. It is possible that the service sector suffered to a greater extent than manufacturing in these urban areas and that there was movement towards manufacturing, but arguing the reciprocal like this is speculative. A deeper investigation, one that involves both quantitative and qualitative data, into causes for this finding may be necessary and represent intriguing possibilities for future research.

Furthermore, results from this study are stronger than those from Mukherjee & Benson (2003) who found that employment in secondary industries (manufacturing) in Malawi has positive-but-statistically-insignificant impact on household's welfare in both rural and urban areas. Hence policy directives offered in the current research may be deemed more reliable.

Moving on to the next phase of investigation, it is interesting that, the skilled ratio variable is correlated with poverty positively and significantly in the whole country, rural or urban areas in all years (from 2004 to 2012). For instance, in the country, when the ratio of a household's skilled labourers increased by 1 percent, the average income of the household grew by 0.78 percent in 2004, 0.8 percent in 2006, 0.9 percent in 2008, 0.55 percent in 2010 and 0.55 in 2012. In rural areas, a one percent increase in the number of skilled labours in a household led to increasing income in that household over time (2004: 0.85 percent; 2006: 0.87 percent; 2008: 0.92 percent; 2010: 0.62 percent and 2012: 0.64 percent). There are several possible explanations for this result. Primarily, skilled workers have much better job opportunities that could lead to higher salaries or wages. Consequently, as indicated in the probit regressions, it may decrease significantly the probability of becoming income poor based on MOLISA and GSO approaches. Therefore, the skilled ratio variable is considered as a more meaningful variable than the educational level of the

household head. This result might also be explained by the fact that a Vietnamese household often has many generations living together. Many families consist of a household head aged 65 or over and have many other members of working age living there. In this scenario, the skill of the household head does not influence results much more remarkably than the skill composition of the household members. The results are consistent with other similar studies (Minot & Baulch, 2005; Minot et al. 2006; Sakuhuni et al. 2011; Gounder, 2013) suggesting that education is the key to alleviating poverty. Theoretically, years of schooling has an impact on the income of the labourers (Mincer, 1974).

All variables relating to the occupation of the household head are significant. The models are estimated taking turns as head of household in unskilled occupations as reference variables. The result shows that household heads working in other occupations, even the head of the household did not work, the average income of these households is higher than the head of household employment in unskilled occupations.

This result is consistent with the theory that unskilled labourers possess no technical expertise and so their income (or expenditure) is lower than workers in other occupations requiring technical expertise. This is in line with the findings in Minot (2000) and Minot and Baulch (2005) and is supported by results of probit regressions.

Table 5.2: A summary of the results of the relationship between the manufacturing sector and household per capita income, expenditure with the years 2004, 2006, 2008, 2010 and 2012

Variable	Expected signs	2004			2006			2008			2010			2012		
		Country	Urban	Rural	Country	Urban	Rural	Country	Urban	Rural	Country	Urban	Rural	Country	Urban	Rural
Household Per Capita Income																
Fraction of manufacturing members to working members (%)	+	0.118***	-0.007	0.197***	0.167***	0.0694*	0.212***	0.115***	-0.041	0.207***	0.0916***	0.110***	0.0863***	0.0943***	0.108***	0.0933***
Observations		9176	2245	6931	9185	2305	6880	9182	2351	6831	9396	2647	6749	9399	2703	6696
R-squared		0.470	0.432	0.378	0.474	0.408	0.379	0.459	0.387	0.380	0.578	0.547	0.499	0.559	0.544	0.484
Household Per Capita Expenditure																
Fraction of manufacturing members to working members (%)	+	0.0494**	-0.021	0.0974***	0.0536***	-0.0083	0.0811***	0.00919	-0.05*	0.0489**	-0.0235	0.00907	-0.0302	0.00631	0.0439	-0.00790
Observations		9179	2247	6932	9186	2305	6881	9184	2352	6832	9396	2647	6749	9399	2703	6696
R-squared		0.490	0.403	0.383	0.499	0.409	0.392	0.474	0.387	0.382	0.543	0.513	0.480	0.551	0.523	0.494

Notes: *** p<0.01, ** p<0.05, * p<0.1; More detail is presented in the Appendix to Chapter 5.
Source: The author's calculation

Table 5.3: A summary of the results of household poverty status in the year 2004, 2006, 2008, 2010 and 2012

Variable	Expected signs	2004			2006			2008			2010			2012		
		Country	Urban	Rural	Country	Urban	Rural	Country	Urban	Rural	Country	Urban	Rural	Country	Urban	Rural
Household's income poverty propensity (MOLISA approach)																
Fraction of manufacturing members to working members (per cent)	-	-0.16***	-0.22	-0.165	-0.11***	-0.048	-0.099	-0.01***	-0.162	0.048	0.053***	-0.033	0.130*	0.008***	-0.11	0.015
Observations		9017	1627	6782	8980	1881	6832	8772	2028	6685	9093	2184	6680	8844	1972	6463
Household's income poverty propensity (GSO approach)																
Fraction of manufacturing members to working members (per cent)	-	-0.621***	-0.448*	-1.013***	-0.420***	-0.785***	-0.511***	-0.224**	-0.321*	-0.441***	0.116*	-0.09	0.156**	-0.252**	-0.539*	-0.201*
Observations		9017	1704	6893	8891	1852	6786	9184	1984	6832	9093	1962	6680	8941	2397	6375

Notes: *** p<0.01, ** p<0.05, * p<0.1; More detail is presented in the Appendix to Chapter 5.
Source: The author's calculation

5.3.2 Panel Data Analysis

The panel regression results for income and expenditure models are summarized in Table 5.4 (short panels) and Table 5.5 (long panel). Looking at the results from the panel regressions (Table 5.4 and Table 5.5), it can be seen that the relationship between household per capita expenditure and the proportion of household members working in the manufacturing sector is very weak. This could be explained by the fact that Vietnamese living standards are still low and there is no significant change in expenditure in urban areas. In contrast, the correlation between the manufacturing sector employment and the household's per capita income is relatively stable in the years 2004-2006; 2006-2008 and increases for the period from 2004-2008. However, the correlation between the manufacturing sector and the household per capita income is weaker in the urban areas. This could be because most labourers in urban areas work in the service sector (around 75.21 percent as calculated from VHLSS in 2008) and thus an increase or decrease in the manufacturing sector seems not to impact on the average income of the household in urban areas. Morever, 70 percent of the Vietnamese population lives in rural areas, so when looking at the impact level, the impact of the manufacturing sector on the household's per capita income in the whole country is always lower than that of in rural areas. In addition, the coefficients for the period 2004-2008 are larger than the previous two stages (2004-2006 and 2006-2008), partly reflecting the important role of the manufacturing sector in income growth.

Moreover, it should be noted that the use of panel data in each year can only retain about 40 percent of the total households. Thus, the longer the time period is, the fewer the number of observations there are.

Table 5.4: A summary of the results of per capita income and expenditure with panel data in the short term (2004-2006; 2006-2008; 2010-2012)

Variables	Unit	Expected signs	2004-2006			2006-2008			2010-2012		
			Country	Urban	Rural	Country	Urban	Rural	Country	Urban	Rural
The impact of the Manufacturing Sector on the household's per capita expenditure											
labour	person	+	0.153***	-0.105	0.257***	0.154	-0.712	0.392	0.004	-0.186	0.056
lfixed capital	thousand VND	+	0.010***	0.007*	0.012***	-0.001	0.004	-0.005	0.169***	0.205***	0.159***
skilled ratio	percent	+	0.328***	0.443***	0.201***	1.115***	0.729*	1.464***	0.236***	0.301***	0.155*
hhsize	person	-	-0.118***	-0.111***	-0.116***	-0.274***	-0.201**	-0.299***	-0.126***	-0.155***	-0.114***
agehead	age	+	0.049***	0.065***	0.042***	0.422***	0.204**	0.520***	0.028*	0.008	0.037*
agehead^2	age^2	-	-0.000***	-0.001***	-0.000***	-0.003***	-0.001	-0.004***	0.000	0.000	0.000
pchild	percent	-	0.101**	0.235**	0.065	-1.948***	-2.407***	-1.789***	-0.485***	-0.354**	-0.519***
pfemale	percent	-	-0.117*	-0.183	-0.111	0.385	0.28	0.443	-0.075	-0.094	-0.063
manufactur	percent	+	0.097***	0.095	0.105**	0.072	-0.362	0.348	0.006	-0.025	0.014
Observations			7858	1935	5923	8250	2027	6223	7243	1895	5348
R-squared			0.11	0.11	0.11	0.08	0.05	0.1	0.19	0.21	0.18
The impact of the Manufacturing Sector on the household's per capita income											
labour	percent	+	0.224***	0.117	0.283***	0.084	-0.14	0.142*	-0.125	-0.127	-0.112
lfixed capital	thousand VND	+	0.012***	0.008	0.014***	0.013***	0.018***	0.011***	0.141***	0.159***	0.135***
skilled ratio	percent	+	0.509***	0.566***	0.433***	0.484***	0.499***	0.465***	0.350***	0.296***	0.393***
hhsize	person	-	-0.128***	-0.102***	-0.133***	-0.111***	-0.122***	-0.109***	-0.115***	-0.104***	-0.113***
agehead	age	+	0.064***	0.079***	0.055***	0.059***	0.014	0.079***	0.013	-0.046**	0.037
agehead^2	age^2	-	-0.001***	-0.001***	-0.000***	-0.000***	0	-0.001***	0.000	0.001**	0.000
pchild	percent	-	0.232***	0.327***	0.202***	-0.509***	-0.504***	-0.516***	-0.355***	-0.332***	-0.356***
pfemale	percent	-	-0.104	-0.128	-0.118	-0.188**	-0.361*	-0.125	-0.070	0.054	-0.121
manufactu	percent	+	0.207***	0.116	0.258***	0.162***	0.105	0.211***	0.053	0.083	0.023
Observations			7856	1934	5922	8248	2027	6221	7243	1895	5348
R-squared			0.12	0.12	0.12	0.11	0.11	0.11	0.21	0.21	0.22

Notes: *** p<0.01, ** p<0.05, * p<0.1; More detail is presented in the Appendix to Chapter 5
Source: The author's calculation

Table 5.5: A summary of the results of per capita income and expenditure with panel data in the long term (2004- 2008)

Variables	Unit	Expected signs	2004-2008		
			Country	Urban	Rural
The impact of the Manufacturing Sector on the household's per capita expenditure					
labour	person	+	0.596	0.179	0.792*
lfixed capital	thousand VND	+	-0.00144	-0.0453*	0.0126
skilled ratio	percent	+	1.086***	1.004*	1.176***
hhsize	person	-	-0.347***	-0.267***	-0.386***
agehead	age	+	0.260***	0.105	0.303***
agehead^2	age^2	-	-0.00183***	-0.000533	-0.00219***
pfemale	percent	-	0.443	-0.830	0.777*
manufactu	percent	+	0.247	-0.245	0.519*
Observations			3307	719	2588
R-squared			0.093	0.073	0.109
The impact of the Manufacturing Sector on the household's per capita income					
labour	person	+	0.126	0.0690	0.149
lfixed capital	thousand VND	+	0.0183***	0.00905	0.0213***
skilled ratio	percent	+	0.677***	0.805***	0.604***
hhsize	person	-	-0.151***	-0.108***	-0.166***
agehead	age	+	0.0767***	0.0432	0.0837***
age^2	age^2	-	-0.000602***	-0.000322	-0.000653***
manufactu	percent	+	0.219***	0.0345	0.323***
Observations			3305	719	2586
R-squared			0.139	0.126	0.153

Notes: *** p<0.01, ** p<0.05, * p<0.1; More detail is presented in the Appendix to Chapter 5
Source: The author's calculation

The panel results for the propensity of poverty are summarized in Table 5.6. The results indicate that the relationship between the household's poverty status (measured in terms of household's poverty propensity based on both the MOLISA approach and the GSO approach) and the proportion of household members working in the manufacturing sector is very weak. The results indirectly imply that changes in employment in the manufacturing sector do not affect the household's poverty propensity in the country, and in urban areas and rural areas. Employment in the manufacturing sector tends to reduce the household's poverty propensity, but the results are not statistically significant at 10 percent. In fact, the main source of income of the households is from the agricultural sector and the service sector. The share of income from jobs in the manufacturing sector is modest (around 22.3 percent as calculated from VHLSS in 2008), but it is still significant. At the 10 percent significance level, in 2006-2008, the proportion of workers in the manufacturing sector correlates with the household's poverty propensity in rural areas and in the period

2004-2008, the proportion of workers in the manufacturing sector correlates with the household's poverty propensity in urban areas.

Similarly, for the probit models, the propensity of households to escape poverty, in general, is not correlated to the change of labor in the manufacturing sector in the period 2004-2006, 2006-2008 and from 2004 to 2008. At 10 percent significance level, manufacturing employment is related to the propensity of households to escape poverty in the period 2006-2008 and 2004-2008. This is despite the fact that the share of the manufacturing sector in total employment is not large (about 14 percent as calculated from VHLSS in 2008). Further, the average salary in this sector is not as high as the highest average salary in service such as banking, finance and insurance. It is 88 percent of the average salary in the country- 16.8 million VND/person/year) and it is 48 percent of the sectors with the highest average salary such as banking, finance and insurance (30.7 million VND/person/year).

For the proportion of skilled labourers in a household, there is positive correlation with rising average expenditure and income in the country, as well as in both urban and rural in the periods of 2004- 2006, 2006-2008, 2010-2012. Similarly, the probit regressions indicate that the variable has a positive correlation with poverty reduction in all periods.

Table 5.6: A summary of the results of household poverty status with panel data (Probit Model) in the short term (2004- 2006; 2006- 2008; 2010-2012) and in the long term (2004-2008); and the cross-section data (Order Probit Model)

Variables	2004-2006			2006-2008			2010-2012			2004-2008		
	Country	Rural	Urban	Country	Rural	Urban	Country	Rural	Urban	Country	Urban	Rural
The impact of the manufacturing sector on household's income poverty propensity (MOLISA approach)- Probit Model with panel data												
lfixed capital	-0.064	-0.098	-0.039	-0.011	-0.035	0.009	-0.198**	-0.11	-0.776*			
skilled ratio	-124.956	-143.303	-636.961	-4.376*	-15.401**	-3.015	-2.325**	-1.687	-4.003			
hhsize	0.250*	0.431	0.195	-0.019	-0.019	-0.579	0.183	0.250*	0.247			
(max) gender	0.097	14.621	-1.000	-0.237	-2.720**	1.496	-0.905*	-0.898	-3.098			
pelderly	0.711	3.48	-0.335	1.987*	2.164	2.461	0.264	1.196	-3.678			
manufactu	-0.859	-0.654	-2.075	-2.087	-3.414*	-1.716	-0.03	-0.263	0.644	-0.338	-7.540*	-0.0212
The impact of the manufacturing sector on household's income poverty propensity (GSO approach)- Probit Model with panel data												
skilled ratio	-126.476	-4,529.48	-415.326	-125.432	-117.933	-10137.79	-3.615**	-2.505	-110.858			
hhsize	0.082	0.031	0.443	0.204	0.22	209.509	0.224*	0.208	-0.814			
hhsize	0.082	0.031	0.443	0.204	0.22	209.509	0.224*	0.208	-0.814			
(max) gender	-0.161	-0.892	0.548	3.684**	2.788	644.229	0.216	0.225	-1.711	-0.890***	-1.879	-0.945**
(max) agehead	-0.001	-0.015	0.284	-0.002	-0.075	64.614	-0.046	-0.015	-2.325***			
pelderly	1.39	1.027	5.117*	1.863	0.681	2,475.38	0.118	0.283	-276.331	-1.026*	-0.359	-1.602***
pfemale	-0.469	-1.072	-0.231	3.183*	2.126	921.132	0.961	0.988	3.975			
manufactu	-2.105	-3.058	-1.42	-1.846	-72.41	1,525.27	-0.685	-0.536	-42.191	0.598	0.0326	0.509
The impact of the manufacturing sector on household's ability to escape income (MOLISA approach)- Order Probit Model with cross-section data												
manufactu	-0.20417	-0.412	-0.129	-0.33969	-0.182	-0.356**	-0.01961	-0.029	-0.056	-0.0421	-1.002*	0.117
The impact of the manufacturing sector on household's ability to escape income (GSO approach)- Order Probit Model with cross-section data												
manufactu	0.104594	0.934	-0.221	-0.22637	-1.248*	-0.189	0.015313	0.007	0.319	0.173	0.628	-0.179

Source: The author's calculation

Notes: *** p<0.01, ** p<0.05, * p<0.1; More detail is presented in the Appendix to Chapter 5.

5.4 Conclusion

This analysis performed in this Chapter has sought to improve our understanding of the determinants of poverty in Vietnam. More specifically, it sought to investigate the role of the manufacturing sector in poverty alleviation. The main findings of this chapter can be summarized as follows:

Firstly, overall, this study found that manufacturing sector employment has a positive correlation with per capita income, expenditure and poverty propensity for the whole country, in the urban areas and rural areas as well using cross-section data. Similarly, with the use of panel data, the relationship between manufacturing employment and the household's per capita income is found to be relatively stable in the years 2004-2006; 2001- 2008 and increase for the period from 2004-2008. In contrast, the correlation between manufacturing sector employment and the propensity to be poor is very weak. Thus, the Vietnamese government should re-assess their industrial policies with the aim of generating manufacturing sector employment in a way that can better reduce poverty. It must be noted that the quality of the panel may be one of the explanations for these results. The rotating feature of the survey data can make the panel data become less representative.

Secondly, this study also found that household's skill is significantly and positively related to poverty alleviation. It is confirmed that education and investment in education are the fundamental solution for poverty alleviation since it helps to meet the requirement for market demands. Therefore, the Vietnamese government should enhance policies for the human capital of the poor through the vocational education.

CHAPTER 6 POVERTY AND MANUFACTURING EMPLOYMENT-PROVINCIAL-LEVEL EVIDENCE

6.1 Introduction

Spatial dimensions are important in studying poverty. The purpose of this chapter is to analyse the determinants of poverty from a spatial perspective by using provincial level data. Two important questions are considered:

- What is the relationshipbetween the manufacturing sector and poverty at the provincial level?
- Are there any indirect or induced effects from the neighbouring provinces on poverty?

This chapter employs the estimation framework broadly discussed in Chapter 2. Both panel and spatial regressions are employed using the data from 63 provinces or cities from 2004 to 2012.

The chapter will also provide an overview of poverty and the manufacturing sector's growth in Vietnam by using a spatial dispersion of poverty and manufacturing in Vietnam. This will complement the discussions in Chapters 2 and 3. The inclusion of a poverty map in this chapter will expand that understanding. Poverty maps show the extent of poverty in a country graphically and are useful, particularly when disaggregated to the required extent. When tailored correctly they may be used by policy makers and other interested parties to help monitor and examine changes in poverty rates by region and province.

This chapter is structured as follows. Section 6.2 reviews a spatial dispersion of poverty and manufacturing in Vietnam. Section 6.3 discusses methodology. Section 6.4 discusses data. Section 6.5 presents this study's final results for the determinants of Vietnamese poverty at the provincial level. Section 6.6 summarises the chapter.

6.2 Spatial dispersion of poverty and the manufacturing sector in Vietnam

This section provides a review of the spatial dispersion of poverty and manufacturing in Vietnam in 2010 and 2012 through the changes in poverty rates between the years and the changes in the percentage of labourers in the manufacturing sector in recent years. This is a motivation for econometric analyses using province-level data.

The ArcGIS software is used to spatially map poverty rates and the distribution of labourers in the manufacturing sector in 63 provinces in 2010 and 2012. This will show the change in the poverty rates spatially from 2010 to 2012 and provide a graphical analysis of the relationship between manufacturing employment and poverty.

The responsiveness of changes in poverty rates to changes in manufacturing employment can be measured by computing the ratio of the change in poverty rates to the change the percentage share of manufacturing employment for each province:

$$E = \frac{\Delta \mathrm{P}}{\Delta \mathrm{L}} \qquad (6.1)$$

Where : $\Delta \mathrm{P}, \Delta \mathrm{L}$ are the percentage change in the poverty rate and percentage change in the the share of manufacturing employment between 2012 and 2010, respectively. E reflects a change in the poverty rate (percent) when the labourer rate in the manufacturing sector increases or decreases by one percentage point.

Classification of the provinces on the map is based on the "Natural Breaks" method[27]. The map of Vietnam on the left in Figure 6.1 gives the provincial level poverty rates, while the map on the right in Figure 6.1 shows the percentage of workers in the manufacturing sector in each province. The red and orange areas in each of the maps indicate the provinces with both a high poverty rate and a high percentage of workers in the manufacturing sector compared to other provinces in the same year (see the lists of provinces with the poverty rates and the percentage of workers in the manufacturing sector for the years in the Appendix to Chapter 6)

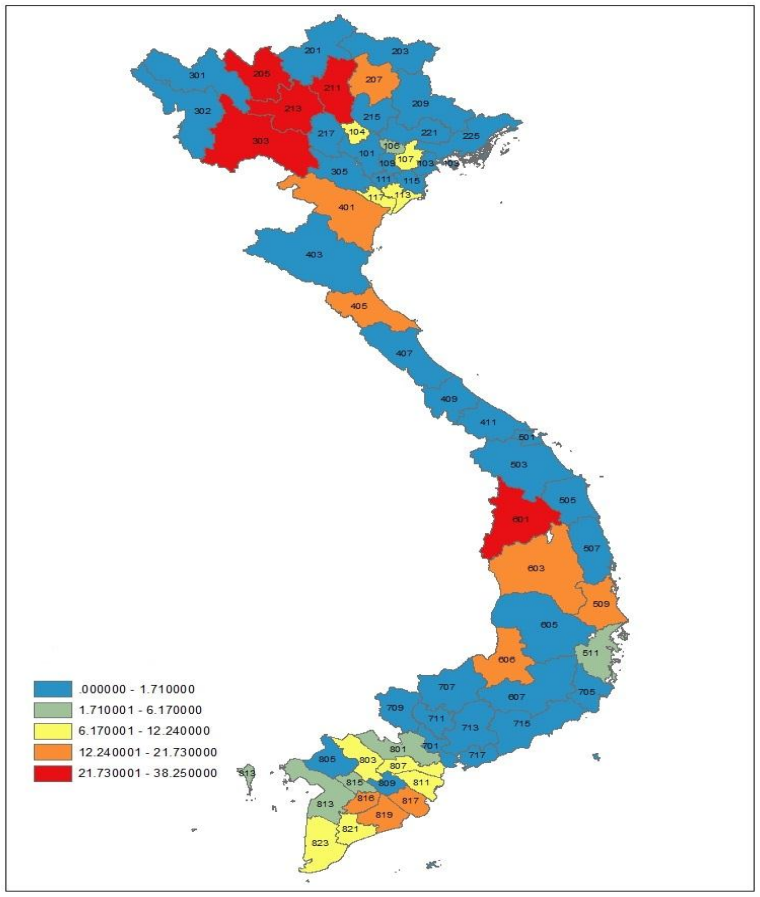
From the maps in Figure 6.1, it can be seen that the provinces with high poverty rates are mainly concentrated in the northern mountainous region, and have a lower percentage of workers in the manufacturing sector. However, in this region, although some provinces have low poverty rates, the percentage of workers in the manufacturing sector is still low. This seems to suggest that there is no clear evidence on the relationship between manufacturing employment and poverty in this region. This can be explained by this region having high mountains which make communications and transport of goods difficult, so appears not to have investment in

[27] Natural Breaks classes are based on natural groupings inherent in the data. Class breaks are identified by groups with similar values and that maximize the differences between classes. The features are divided into classes whose boundaries are set where there are relatively big differences in the data values. Natural breaks are data-specific classifications and not useful for comparing multiple maps built from different underlying information

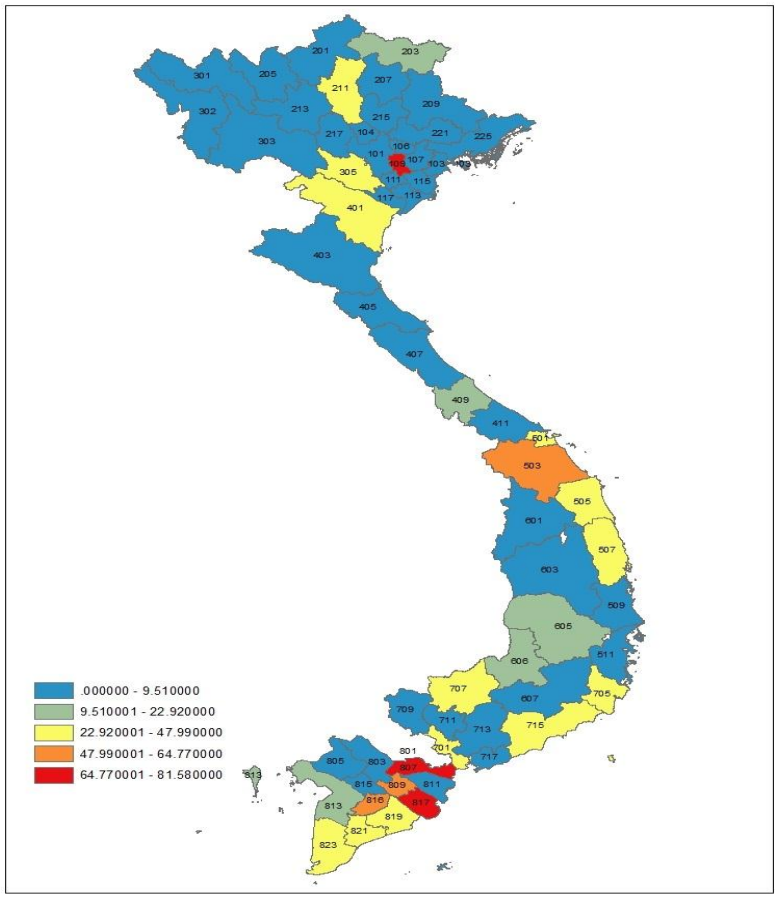
the development of industrial parks. The region's economy is instead based on agriculture and services.

The map also shows that in the provinces located in the central region and the southern region, there is a relationship between the growth of the manufacturing sector and poverty reduction. For instance, the provinces with the higher percentage of workers in the manufacturing sector have lower poverty rates. It can be explained that these regions have the advantage of transport, thus they have good conditions for economic development, particularly in the manufacturing sector.

Figure 6.1: Maps of the incidence of poverty and share of manufacturing employment by province in 2012

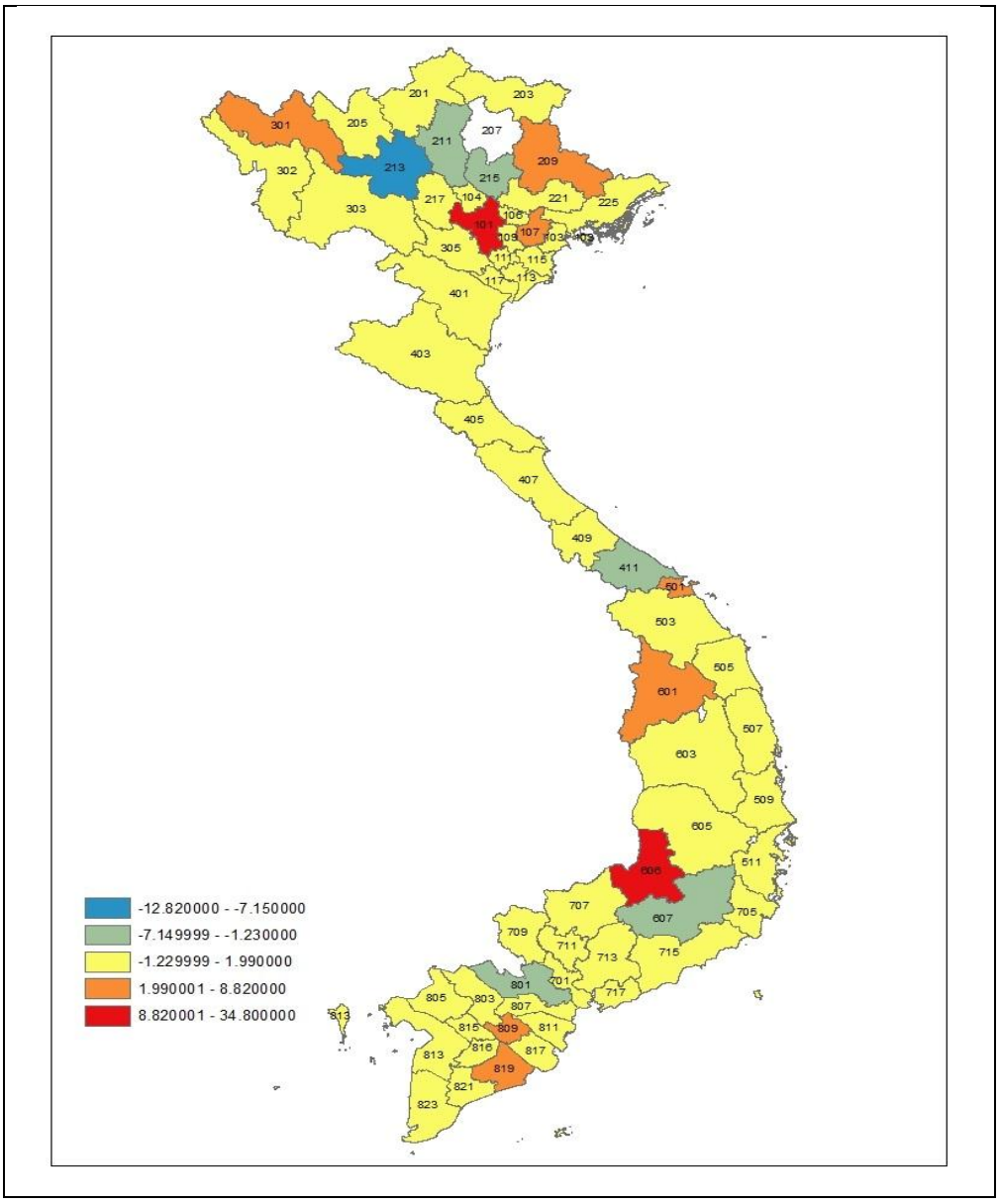


(a) Incidence of Poverty



(b) Manufacturing Employment

Figure 6.2: Distribution of the E – the ratio of changes in poverty rates and changes in the share of manufacturing employment, 2010-2012



In addition, in Figure 6.2 the provinces shaded blue or grey indicate that the rapid reduction in the poverty rate of these provinces was accompanied by a high proportion of workers in the manufacturing sector. In contrast, the provinces shaded red or orange indicate that the increasing poverty rates of these provinces, although these provinces had an increasing change in the proportion of workers in the manufacturing sector. It can be explained that in some provinces, the manufacturing

sector may create major employment for the localities, but in other provinces, the manufacturing sector's development is limited and not enough to be able to create many local jobs or could not create spillover effects on the other. Therefore, in some provinces, there is no clear effect on poverty reduction.

6.3 Methodology

Two models are estimated to analyze the effect of the manufacturing sector's growth on poverty reduction at the provincial level. The first model examines the relationship between the manufacturing sector's growth and employment generation in the manufacturing sector at firm level. The second model examines the relationship between employment in the manufacturing sector and poverty reduction.

6.3.1 Employment Model

The employment model is used to estimate the factors relating to employment in the manufacturing sector at a firm level with the aim of discovering the role of manufacturing sector in the employment generation.

One of the most widely used production functions in both theoretical and empirical study is the Cobb-Douglas production function. The Cobb-Douglas production function is mathematically specified as:

$$Y = A\, L^{\alpha} K^{\beta} \qquad (6.2)$$

where Y is the real output, and L and K are respectively labour input and capital input. A, α and β are the positive parameters. α, β are the elasticities of ouputs according to the correlative inputs.

While the above equation is nonlinear in form, in order to make it linear, the study considers the natural logarithms and has the economic growth's estimation. Parameters A, α and β can be estimated by the ordinary least squares (OLS) method:

$$LnY = lnA + \alpha lnL + \beta lnK \qquad (6.3)$$

We can begin from the Cobb-Douglas function and deal with it with labour as the equation of the capital and the output:

$$L = A\text{-}1/\alpha\ K\text{-}\beta/\alpha y 1/\alpha, \qquad (6.4)$$

Therefore, taking logarithms of the Cobb-Douglas function, we have:

$$\ln L = a_0 - \frac{\beta}{\alpha}\ln K + \frac{1}{\alpha}\ln y \qquad (6.5)$$

where: a_0 = -1/ a*lnA

According to another approach, we can also estimate labor demand functions from the primary condition for profit maximisation using Cobb-Douglas functions.

The profit function: P = F (K, L) – rK –wL; Where r, and w respectively are the capital cost and labour cost.

A condition for the first level of a maximum profit requires:

$$\frac{\partial Y}{\partial L} = \alpha A L^{\alpha-1} K^{\beta} = \frac{\alpha Y}{L} = \frac{w}{p} \quad (6.6)$$

$$\frac{\partial Y}{\partial K} = \beta A L^{\alpha} K^{\beta-1} = \frac{\beta Y}{K} = \frac{r}{p} \quad (6.7)$$

Where: w is wages for workers; r is rents, and p is output prices. From (6.6) and (6.7), we have:

$$\frac{K}{L} = \frac{\beta}{\alpha}\frac{w}{r} \quad (6.8)$$

From (6.8), we have:

$$K = \frac{\beta}{\alpha}\frac{w}{r}L \quad (6.9)$$

And replacing the result (8) with (4), we have the labour demand:

$$\ln L = a_0 - \frac{\beta}{\alpha}\ln L - \frac{\beta}{\alpha} Ln(\frac{\beta}{\alpha}) - \frac{\beta}{\alpha} Ln\frac{w}{r} + \frac{1}{\alpha}\ln y \quad (6.10)$$

From (6.10), we have:

$$\ln L = a' - \frac{\beta}{\alpha+\beta}\ln\frac{w}{r} + \frac{1}{\alpha+\beta}\ln y. \quad (6.11)$$

However, in empirical research, the labour demand equation will have other elements such as the average salary, the rates on labour capital equipment, and total factor productivity:

$$\ln L_i = \beta_0 + \beta_1 \ln VA_i + \beta_2 \ln K_i + \beta_3 * \frac{K_i}{L_i} + \beta_4 \ln wage_i + \beta_5 \ln TFP_i + \mu_i \quad (6.12)$$

This study uses the empirical model (6.12) to investigate whether the manufacturing sector's growth is related to the creation of employment. Employment is defined as the number of employees surveyed through the annual enterprise survey in Vietnam.

This model includes the dependent variable and the independent variables as follows:

The dependent variable:

Labour (L): The average number of employees in the manufacturing sector's enterprises is calculated by adding the number of employees at the beginning of the year to the number of employees at the end of the year and dividing the total by 2.

The independent variables:

1. Investment capital is defined as the average fixed assets during the year (the total average assets at the beginning and at the end of the year). Assets include receivable accounts, inventories, fixed assets (tangible fixed assets, fixed assets for rent finance, intangible fixed assets, and unfinished based building cost). This variable indicates how to influence labour demand in the enterprise through the extent of expanding or narrowing of the manufacturing business.

2. VA of businesses is not usually collected through surveys, so the value added is calculated as businesses VA = Value of production – value of intermediate goods. However, information on average cost is collected through a sample survey from the GSO, this study will calculate the ratio of average costs of the total of productive value of each sector based on a sample survey. Therefore, the VA of businesses in the sectors is calculated on the ratio of average costs of the total of productive value of each sector. VA reflects the results of operations and business of enterprises, and the growth of the sector of the economy.

3. The level of capital equipment on labour is calculated as the ratio between capital and labour in the total number of enterprises. This variable reflects the substitutability between capital and labour, as well as factors that reflect the level of technology of the business.

4. Average wage of labour is calculated as the total wage fund divided by total labour force. This variable reflects a response of enterprises to the needs for labour force in wage fluctuations.

5. Total factor productivity (TFP) is calculated by the method of Solow residual, reflecting factors such as the skills of business management and technology advances[28].

[28] For more in-depth discussion of TFP refer to Solow (1957). Asian Production Organization (2004)

Table 6.1 provides a summary of expected signs of the independent variables used in the model.

Table 6.1: A summary of expected signs of the independent variables

Variable	Variable description	Unit	Expected signs
K	Investment capital	Million VNĐ	+
VA	Value added	Million VNĐ	+
$\frac{K}{L}$	The ratio of capital equipment to labour	Million VNĐ	+ or -
Wage	Average wage of a labour	Million VNĐ	-
TFP	Total factor productivity	Million VNĐ	-

Source: The author's summary

6.3.2 Poverty Reduction Models

In order to examine whether the manufacturing sector's growth is related to poverty at provincial level without spillover effects from neighbouring provinces, this study uses panel regression approach. The spatial regession approach is used to examine whether there are spillover effects from neighbouring provinces. This is an important task and has policy implications related to employment generation in industrial parks in Vietnam.

- ***Panel Model***

The model in this study used follows from the work of Deaton et al. (2014). The great advantage of Deaton et al. (2014) is that the study examined regional variation in poverty. Studies such as this that go into deeper analyses of regional poverty can provide valuable information about the specific characteristics of poor people, for instance, where they are concentrated and why poverty exists there.

$$Povrate_{it} = \beta_0 + \beta_1 Man_{it} + \beta_2 Econ_{it} + c_i \qquad (6.13)$$

Where: Povrate was poverty rate; Man was the share of employment in the manufacturing sector; Econ was a vector of socio-economic variables such as educational attainment (the skill level of labour), unemployment rate, population density and identify.

The model is further modified to examine regional variation in poverty. Social-economic variables[29] at provincial level are included in the model.

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recognizes the importance of this statistic in determing whether sustained economic development is possible for respective countries.

[29] The importance of these independent variables are discussed at the end of this section.

$$Povrate_{it} = \alpha_0 + \alpha_1 LnK_{it} + \alpha_2 Skillrate_{it} + \alpha_3 Hcarerate_{it} + \alpha_4 TVrate_{it} + \alpha_5 Labourrate_{it} + e_{it} \quad (6.14)$$

Where:

i: the index of provincial level

Povrate: Poverty rate of the province i

LnK_i: logarithmic (investment capital) of the province i

Skillrate: Percentage of trained population;

Hcarerate: Percentage of population that has access to health care services including inpatients and outpatients;

TVrate: Percentage of population that has a television;

Labourrate: Percentage of labourers working in manufacturing sector divided by the total labourers

e_i: the unobserved elements of province i

Thus, the coefficient α_1 presents how the poverty rate changed when capital increased by 1 per cent; the coefficient of Skillrate (α_2), Hcarerate (α_3), TVrate (α_4), and Labourrate (α_5) present the influence of the above variables on the poverty rate (when the rate of the above variables increased by 1 per cent, the percentage of poverty changed α_2,..., $\alpha_5$per cent).

- ***Spatial Regression Model***

The spatial regression approach is used to examine the correlation between observations or between provinces on poverty rate and to obtain reliable estimated results for the variables. It is said that the observations of a province can effect on neighbouring provinces. Hence, if the study cannot detect spatial autocorrelation, the estimated results will be biased.

The study uses spatial econometric technique to study the issue. According to the collection of data, each province is in a position, a point in space. When we study the data that is collected at the provincial level, it should be noted that spatial relations affect the data collected. The spatial dependence of the data collected indicates that a certain observation has a contact with a position in space. In other words, in the position of "i" has reliance on observation at position 'j' ($i \neq j$).

$Y_i = F(Y_j)$, $i=1, 2\ldots n$.

Where: Y: a certain variable; n: observation.

We can see clearly that the closer the observation, the greater the spatial dependence effects than observations that are at greater distances. In short, when we analyse the variables at different locations, we must consider them in terms of spatial data. For this purpose, information on location, the spatial weight matrix W can be created based on distance.

In this study, a simple matrix is used with the value 1 or 0 corresponding to an observation is next to other observation or nearby as follows:

The matrix W = (w_{ij}); components of "w_{ij}" is the line i and the column "j"of the matrix W; w_{ij} = 1 if i and j are the closest provinces (otherwise w_{ij} = 0). For n observations will generate the matrix nxn level; important components of the space (spatial weight) are standardized by line, or the following formula:

$w_{ij} = \frac{wij}{\sum wij}$, Hence, with each line i, $\sum wij = 1$

Based on the similar models used in the work of Higazi et al. (2013); Joshi & Gebremedhin (2010); Sameti & Farahmand (2009) as discussed in Chapter 2, the model can be modified for use in Vietnam as follows:

$$Povrate_{it} = \alpha_0 + \alpha_1 LnK_{it} + \alpha_2 Skillrate_{it} + \alpha_3 Laborrate_{it} + \alpha_4 TVrate_{it} + \alpha_5 Hcarerate_{it} + \varepsilon_{it} \quad (6.15)$$

Where:

i: the index of provincial level

Povrate: Poverty rate of the province i

LnK_i: logarithmic (investment capital) of the province i

Skillrate: Percentage of trained population;

Hcarerate: Percentage of population that has access to health care services including inpatients and outpatients;

TVrate: Percentage of population that has a television;

Labourrate: Percentage of labourers working in the manufacturing sector divided by the total labourers

e_i: the unobserved elements of province i

The Moran's I test can be used to discover whether observations have the autocorrelation or not.

H_0: Do not have self-correlation dimension

H_1: Rejected H_0

This study uses the provincial level's database created by VHLSSs and ESs in 2004, 2006, 2008, 2010 and 2012 as discussed above to estimate the impacts of the manufacturing sector on poverty reduction in Vietnam with variables in both panel regression and spatial regression as follows:

The Dependent variable:

Based on the income poverty lines of MOLISA, Vietnamese government identifies the number of poor households in each province. The poverty rate (Povrate) province level is defined as the ratio of the total number of poor households against the total number of households in the province.

The Independent variables:

1. Investment capital (K) is one of the key factors for social economic development. The effective utilization of investment capital will boost production, create jobs, raise incomes and reduce poverty. This variable is defined as the average fixed assets during the year (the total average assets at the beginning and at the end of the year). This variable is calculated from ESs. Assets include receivable accounts, inventories and fixed assets (tangible fixed assets, fixed assets for rent finance, intangible fixed assets, and unfinished based building cost). This variable is important because of its potential for positive results in the public arena – the practice of public investment in infrastructure such as roads, schools, clinics and markets can help people in remote, disadvantaged areas. It can provide better access to services social services, increase trade opportunities and augment the chances of individuals to improve their learning and wellness. This will create the foundation for improving the quality of human resources, thereby promoting growth and sustainable poverty reduction (Hung, 2005). Government programs can compliment this process although government investments do not constitute the independent variable in this thesis. Examples of such government programs include the National Targeted Program for Poverty Reduction 2006-2010 and Program 135. These area-based programs are intended to harmonise various strategies to prop up disadvantaged households whilst contributing to the economic development of communities more broadly. Infrastructure is of paramount importance to these programs and is similarly important in the sphere of private

investment. Investment capital thus serves as a tangible and relevant independent variable particularly as there is parity between the goals of the private and public sectors.

2. For the proportion of skilled people (Skillrate), it is calculated based on the definition of the GSO, the number of trained people with qualifications divided by the total population, this ratio reflects the skill level, the quality of human resources of the provincial level. In fact, in Vietnam there is a huge difference between the provinces on this ratio. Especially the differences between regions, the Midlands and Northern Mountains' provinces and the Central Highlands'provinces have quite lower trained population rates than the Red River Delta's provinces and the Mekong River Delta's provinces. This is one of important factors for socio-economic development and sustainable poverty reduction. For example, according to poverty profile in Vietnam from 2004 to 2008 (GSO, 2012), there was very low percentage of household heads or spouse with technical school's education and higher education. In addition, the group of permanent escapers, their considerably higher percentage of household heads having higher education as compared with that of the chronic poor and the transient poor (VASS, 2011). This variable information is determined from the highest level achieved by population through VHLSS and the percentage of trained population is calculated at the provincial level.

3. For the health care rate variable (Hcarerate), Vietnam has been developing a system of comprehensive social protection. The social assistance for the poor, vulnerable people in society has gradually become effective policy in society. Social support for the free health insurance will help people to reduce vulnerable social risks. This variable varies between provinces because the level of development of each province is different. Therefore, this is a good control variable in the analysis model. The variable is regarded as an important analytical inclusion because it reflects the imperatives of the social protection system in place in Vietnam. Perpetuating and strengthening this system will be necessary to mitigate potential hindrances in the future. In particular, a strong social protection system may "diminish impacts of idiosyncratic and systemic risks thanks to a number of components of this system playing the role of automatic stabilizers" (VASS, 2011, p.37). Selection of this variable is therefore considered purposeful and significant. The current protection system in Vietnam is made up of three compartments, namely social security, social

assistance and area-based programs. The health care rate variable used in this thesis is categorised as part of health insurance which comes under the social assistance category. The free health insurance funds or support for the poor, the disadvantaged and children under 6 are included in the area-based and poverty targeted programs (VASS, 2011). This variable is calculated at individual level from VHLSS as the percentage of population that has access to health care services. It is calculated at the provincial level.

4. For the proportion of households owning a television (TVrate) reflects the accessibility of information, culture of households. These factors will help households with additional information, knowledge, skills to improve their lives and works. This is an important factor to help households to escape poverty. In fact, increased availability of media facilities to poor people is noted as one of main changes observed between the 2008 round of Participatory Poverty Assessment (PPA) and the previous two rounds of PPAs conducted in 1999 and 2003 (VASS, 2011). Declines in radio usage coupled with sharp increases in television usage indicate that the poor are moving away from primitive means of recreation and information towards more modern ones (VASS, 2011). For example, the percentage of poor household with a radio in 2004 was 13.9 percent, but it was 5.4 percent in 2008. In contrast, the percentage of poor household with a television in 2004 was 44.9 percent and it increased from 65.4 percent in 2008 to 72.2 percent in 2012 (GSO, 2012). The characterization of the poor, particularly of those from ethnic minorities, thus was gradually shifting from lacking access to information to lacking the ability to absorb and use information to improve their livelihoods and living conditions (VASS, 2011). These variables are determined directly from VHLSS data.

5. Considering the growth of the manufacturing sector, the study uses the percentage of labour rate working in the sector in the total labour (Laborrate). This variable is calculated from Vietnam Enterprise Surveys for the provincial level. With the assumption that if the manufacturing sector development will attract labours from other sectors and create new jobs. These are important factors in order to help households reduce poverty. Table 6.2 provides a summary of expected signs of the independent variables in this study.

Table 6.2: A summary of expected signs of independent variables

Variable	Variable description	Unit	Expected signs
LnK	Logarit (Investment Capital)	Million VND	-
Skillrate	Percentage of trained population	Per cent	-
Hcarerate	Percentage of population has access to health care services	Percent	-
TVrate	Percentage of household has a television	Per cent	-
Labourrate	Percentage of laborers working in manufacturing sector	Per cent	-

Source: The author's summary

6.4 Data

This study uses VHLSS and ES in 2004, 2006, 2008, 2010 and 2012. These two datasets are merged to create a new database (the provincial level's data). The poverty rate is calculated from Vietnam Household Living Standard Surveys (VHLSSs). The percentage of workers in the manufacturing sector is determined through the percentage of workers in the manufacturing sector in the total labour. This ratio was calculated for provincial data from the Enterprise Surveys (ES).

- **Vietnam Household Living Standard Survey (VHLSS)**

The VHLSSs provide information that are used to evaluate poverty and wealth disparities of residents. VHLSSs are collected by GSO under the technical auspices of the World Bank. Subjects examined include residential households, household members and communes in 63 provinces and cities.

These surveys collect information about income, expenditure of the household. Some other information of households and household members to analyse the cause and the difference of standard of living, including the main characteristics of demographic (age, gender, ethnicity, marital status); academic level; sickness, disease, and use of health services; job; electricity, water and sanitation; participation in the program of poverty reduction; the impact of migration on household living standards. The sample includes 9188 households in 2004, 9189 households in 2006, 9189 households in 2008, 9399 households in 2010 and 9399 households in 2012.

- **Enterprise Survey (ES)**

The annual Enterprise Survey is a survey of enterprises in Vietnam. It is collected by GSO. The information collected in this survey is used to assess distribution and production conditions as well as the status and capacity of enterprises in the country

The units of analysis in the ESs are corporations and state-owned companies. The sample includes 91,755 enterprises in 2004, 129,379 enterprises in 2006, 205,689 enterprises in 2008, 286,541 enterprises in 2010 and 358,557 enterprises in 2012.

Table 6.3 below provides a summary of the variables used in this study. This table shows that the mean value of lnlabor variable decreased gradually from 3.0 in 2008 to 2.7 in 2012. This implies that the average number of employees in the manufacturing sector's enterprises decreased from 20 employees in 2008 to 18 persons in 2012; the average value added (VA) variable of an enterprise also declined from from 6.64 in 2008 to 6.57 in 2012 which is equivalent to a decrease of 768.9 million VND in 2008 to 713 million VND in 2012; lncapital variable increased between 2008-2012, from 6.9 in to 7.5 in 2012 which is equivalent to an increase of 1006 million VND in 2008 to 1790 million VND in 2012.

a. Statistical Description: Employment Model

Table 6.3: Statistic Description (2008-2012)

Variable	Obs	Mean	Std. Dev.	Min	Max
2008-2012					
lnL	287695	2.9	1.5	- 0.7	11.3
lnVA	281387	6.6	2.4	- 2.2	18.1
lnK	269190	7.3	2.2	- 0.7	19.5
$\frac{K}{L}$	287695	264.0	5,029.1	- 2,592.1	1,477,689.0
lnWage	286138	3.2	0.7	- 6.0	10.7
lnTFP	256885	- 1.2	13.0	- 88.0	20.2

Source: The author's calculation

b. Statistics Description: Poverty Reduction Models

Table 6.4 below provides a statistic description of the independent variables used in this study including capital investment (K), percentage of trained population (Skillrate), percentage of population with health insurance (Hcarerate), percentage of household with a television (TVrate) and percentage of labors working in manufacturing sector (Labourrate) in 63 provinces in five years (2004, 2006, 2008, 2010 and 2012) with 315 observations. Over this time period, the average value of

Skillrate is 11.19 percent. The province with the maximum value is 36.76 percent and the minimum province is 1.60 percent. The mean of Hcarerate is 56.96 percent. The province with the maximum value is 97.46 percent and the minimum province is 16.30 percent. The mean of TV rate is 85 percent. The province with the maximum value is 99 percent and the minimum province is 45 percent. The mean of Labourerrate is 20.41 percent. The province with the maximum value is 52.21 percent and the minimum province is 4.48 percent.

The table 6.5 below provides the separate correlation between the poverty rate and the Skillrate, TVrate, Hcarerate and Labourerrate variables. The results show that the the correlation coefficients are not equal to 0 (less than 0.05) . The correlation between the poverty rate and skillrate, labourerrate, TVrate has a negative sign (-), while the correlation between the poverty rate and hcarerate is the same direction (+).

Table 6.4: Statistic Description

Variable	Obs	Mean	Std. Dev.	Min	Max
LnK	315	15.68	1.43	12.22	20.39
Skillrate	315	11.19	5.54	1.60	36.74
Hcarerate	315	56.86	17.82	16.30	97.46
TVrate	315	85.00	9.00	45.00	99.00
Labourrate	315	20.41	7.92	4.48	52.21

Source: The author's calculation

Table 6.5: The separate relationship between the poverty rate and some variables

Variables	Poverty	Skillrate	Labourrate	TVrate	Hcarerate
Skillrate	-0.31	1			
	0.00				
Labourrate	-0.17	0.24	1		
	0.00	0.00			
TVrate	-0.35	0.14	0.16	1	
	0.00	0.01	0.01		
Hcarerate	0.50	0.12	0.11	0.19	1
	0.00	0.04	0.05	0.00	

Sources: The author's calculation

Notes: For each variable (in a row), the cell's above values are the correlation coefficient; the lower values are the value P_value, at the 95 per cent confidence level.

6.5 Empirical Results

6.5.1 Employment Model

Table 6.6 shows the estimated results of the employment model in 2008, 2009, 2010, 2011 and 2012; and the period 2008-2012.

For the period 2008-2012, coefficients of the value-added and capital investment have positive signs. This means that the growth creates motivation to boost product demand; capital investment leads to boosting of labor demand. Specifically, if the growth of value added increases by 1 per cent, other factors in the model does not change, the demand for labor increased by 0.449 per cent. The elasticity of growth in labor demand in the manufacturing sector is higher than the coefficient of the whole economy (0.34), which suggests the economy continues to absorb labor in the manufacturing sector. However, the coefficient of VA reached the highest level in 2008 (0.573) and fell to its lowest level in 2010 (0.227). It can be explained that Vietnam's economy was affected by the global financial crisis, thus it affecting its ability to create jobs in the economy and in the manufacturing sector. However, the possibility of job creation from the growth of the manufacturing sector tended to bounce back along with the economic recovery with the coefficient reaching 0.432 in 2012. The coefficient of the year variable reflects the time trend for the period 2008-2012. The coefficient is -0.09 showing a slight downward trend of employment in the manufacturing sector. This is in line with the economic context of Vietnam as discussed earlier in Chapter 3. Manufacturing employment accounted for 13.55 per cent in 2010, 13.81 per cent in 2012 and 13.92 per cent in 2013. More specificially, between 2014 and 2015, the manufacturing sector accounted for 14.05 per cent in 2014 and 15.29 per cent in 2015. This statistic is drawn from a comparison of the 21 economic setors at the first level industry in Vietnam Standard Industry Classification (VSIC) (GSO at https://www.gso.gov.vn).

For capital investment, if capital investment increases by 1 per cent, the demand for labor increases by 0.196 per cent (the other elements in the model do not change). The elasticity of employment based on capital investment in the enterprise for the period 2008-2012 was low with 0.17 in 2008 and 0.233 in 2012.

Coefficient of wages in the model is negative and is consistent with the general pattern of labor demand. It implies that, as average wages in the market increases,

enterprises tend to reduce demand for labor in this sector. This is consistent with many studies which indicate that, as the average salary in the market increases, businesses tend to hire fewer workers and replace them with machines and technology, thus labor demand likely follows a downward trend. When the average wage increased by 1 percent, the demand for labor fell 0.40 percent in the manufacturing sector.

The capital/labour in the equation is positive implying that the high capital/labour will lead to an increase in labor productivity and the ability of those workers to use machinery. These are two complementary factors and have an increasing tendency. However, estimated results show that this factor seems to have weak influence on labor demand (nearly 0). The impact seems negligible. This can be explained by the lack of upgrading by companies which has retarded labor productivity.

Table 6.6: The estimated results of the employment model in the manufacturing sector

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	**2008-2012**	**2008**	**2009**	**2010**	**2011**	**2012**
lnVa	0.449***	0.573***	0.350***	0.227***	0.449***	0.432***
	(0.001)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)
lnK	0.196***	0.170***	0.273***	0.480***	0.162***	0.233***
	(0.001)	(0.003)	(0.003)	(0.005)	(0.003)	(0.003)
$\frac{K}{L}$	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
lnWage	-0.404***	-0.558***	-0.314***	-0.430***	-0.284***	-0.350***
	(0.003)	(0.005)	(0.008)	(0.007)	(0.007)	(0.006)
lnTFP	-0.006***	-0.022***	-0.004***	0.005***	-0.011***	-0.010***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
year	-0.009***					
	(0.001)					
Constant	17.872***	-0.317***	-0.272***	-1.173***	-0.172***	-0.570***
	(2.387)	(0.014)	(0.024)	(0.025)	(0.021)	(0.022)
Observations	256,758	76,842	40,472	43,042	43,229	53,173
R-squared	0.682	0.723	0.672	0.710	0.667	0.728

Source: The author's calculation
Note: Standard errors in parentheses;
*** p<0.01, ** p<0.05, * p<0.1

The coefficient of TFP is negative, implying that innovation could be associated with lower labour utilisation. This could be associated with process innovation resulting in new production process that use less labour.

6.5.2 Poverty Reduction Model

- ***Panel Regression***

The Hausman tests are first used to help determine the appropriate form of panel estimation (Fixed effects (FE) or Random effects (RE)). The test results from the table 6.7 show that chi2(5) = 62.3 with Prob>chi2 = 0.0000, is less than 0.05. FE is the properly specified format. Therefore, the study chooses FE to estimate the impact of the manufacturing sector on poverty rate.

Table 6.7: The Hausman Test

	(b) fixed	(B) .	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
LnK	-1.73	-3.67	1.93	0.37
Skillrate	-0.22	-0.15	-0.07	0.06
Labourrate	-0.12	-0.08	-0.04	0.05
TVrate	-25.89	-30.10	4.22	1.52
Hcarerate	0.07	0.25	-0.18	0.03

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic
chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 62.3
Prob>chi2 = 0.0000

Table 6.8 below shows that the estimated observations are 315 (63 observations are equivalent to 63 provinces and these observations are repeated in the 5 years (2004, 2006, 2008, 2010, 2012).

The result shows that investment is likely to play a positive role in poverty eradication at provincial level. When investment is increased by 1 percent, the poverty rate decreased by 1.7 percent points during the period 2004-2012. This implies that the capital investment promotes economic growth, creates jobs and raises incomes for workers.

Raising the proportion of trained workers is also associated with a lower poverty rate during the 2004-2012 period. It can be seen that if the percentage of trained workers increases by 1 percent point, the poverty rate would decrease by 0.22 percent point. The percentage of trained workers reflects workforce quality. Higher trained workers are more adaptive, innovative and competitive in the market. Higher proportion of trained labourers will improve the labour productivity and income in general. This is consistent with the results in Chapter 5 which show that the proportion

of a household's skilled labourers is correlated with rising average income and poverty reduction. This is also consistent with the socio-economic situation in Vietnam; Ha Noi and Ho Chi Minh are two cities with the highest proportion of the labour force with university or higher qualifications and have the lowest proportion of poverty (Report on Labour Fource Survey and VHLSS in 2010, 2012 (GSO, 2010, 2012).

The results also indicate that an increase in the percentage of manufacturing workers is associated with lower poverty rates. For example, if the percentage of manufacturing workers increases by 1 per cent, the poverty rate will fall on average by 0.115 percentage points. This implies that manufacturing sector's development can create employment opportunities for workers in this sector. This result contrasts with that of Deaton et al. (2014) who found that an expansion in the percentage of labour employed in the manufacturing sector did not lead to reductions in the poverty rate in Canadian districts. As mentioned in Chapter 2, the results of Vietnamese and Canadian studies will not be similar because of contextual differences. This is particularly so given that the latter country is a post-industrial, developed nation whereas the former is not. Based on the theoretical literature, it appears more likely that a developed nation, such as Canada, stands to gain far more from advances in the services sector. A contrast with the work of Ali et al.'s study (2014) demonstrates this. These authors, who conducted their work in a country with similar average income levels found that "Manufacturing sector employment significantly reduces the poverty levels in Pakistan" (2014, p26). The above result, backed by this theoretical insight, implies that development of the manufacturing sector can create pro-poor employment opportunities for workers in Vietnam. Workers have the opportunity to move from low-productivity sectors with lower income to higher productivity sectors such as manufacturing. This is consistent with the results of Chapter 5 which show that the fraction of household members working in the manufacturing sector is strongly and positively associated with household's per capita income and the lower poverty propensity between 2004 and 2012. This is also consistent with the socio-economic situation in Vietnam. In the period 2001-2012, the manufacturing industry had the most important role in increasing labor productivity. It contributed 35.8 per cent to the increase of national labour productivity[30] (Institute of Labour and Social Sciences,

[30] National productivity change is explained by three factors: internal changes in sectoral labour

2013). In addition, manufacturing employment increased from 11.45 per cent in 2004 to 13.81 per cent in 2012 and 13.92 per cent in 2013 (GSO at https://gso.gov.vn).

Table 6.8: Panel data estimation results of equation

Fixed-effects (within) regression	Number of obs	=	315
Group variable: province	Number of groups	=	63
R-sq: within = 0.3730	Obs per group: min	=	5
between = 0.5413	avg	=	5
overall = 0.4864	max	=	5
	F(5,247)	=	29.39
corr(u_i, Xb) = 0.3889	Prob > F	=	0

Variables	**Variable Description**	**Poverty Rate**
LnK	Logarit investment capital	-1.732***
		(0.469)
Skillrate	Percentage of trained population	-0.222**
		(0.096)
Labourrate	Percentage of labourers working in manufacturing sector	-0.115*
		(0.069)
TVrate	Percentage of household has a television	-25.886***
		(3.733)
Hcarerate	Percentage of people has access to health care services	0.066**
		(0.033)
Constant		67.288***
		(5.752)
Observations		315
R-squared		0.372
Number of province		63

Note: Standard errors in parentheses;
*** p<0.01, ** p<0.05, * p<0.1
Source: The author's calculation

The above results indicate that there is a positive correlation between the percentage of people with health care insurance and the poverty rate. This is entirely consistent with Vietnam's social protection systems (labour market policy, social insurance, health insurance, social assistance and area-based and poverty targeted programs). The government provides free health care cards for the poor and the near-poor under social assistance and national poverty targeted programs. Therefore, a province with an increase in poverty rate is synonymous with an increase in free health

productivity; the process of labour restructuring; and the simultaneous impact of restructuring labour and labour productivity change within the sectors.

care cards. In contrast, a province with a decrease in free health care cards is synonymous with an improvement in household living standard (an escape from poverty), but at the same time there is an increasing trend in voluntary health insurance of household (VASS, 2011).

This study is further augmented by the addition of the overall Provincial Competitiveness Index (PCI) variable[31] for the panel regression, which is able to capture whether economic governance qualities and the creation of a favourable business environment of provincial authorities for development of the enterprises could reduce the poverty rate[32] (Le, 2014). However, the results are not statistically significant in the period 2006 to 2012 (see more the detailed results in the Appendix to Chapter 6)

Table 6.9 shows the results of panel regression used with the interactive variables are created form Labourrate, and LnK, Skillrate, TVrate and Hcarerate. The interactive variables are LnKLab (LnK*Labourate), SkillLab (Skillrate*Labourate), TVLab (TVrate*Labourate), HcareLab (Hcare*Labourate). The purpose is to examine whether the relationship between the manufacturing sector and poverty rate is different when provinces have investment capital, percentage of trained population, percentage of household has a television or when a percentage of people have health care cards. The results show that overall, all interactive variables in model 2, model 3, model 4 and model 5 are not statistically significant (except model 4 and model 5). In model 4 and model 5, the coefficients of TVLab are negative and statistically significant with 1.2 percent and 0.99 percent, respectively. In model 5, the coefficient of HcareLab is 0.006 percent.

[31] The PCI was developed in 2005 by the Vietanmese Chamber of Commerce and Industry (VCCI) and the project for Vietnam Competitiveness Initiative (VNCI). For more details about PCI: http://eng.pcivietnam.org/index.php.

[32] Le (2014) found the overall PCI had a positive and significant impact on rural welfare in 2006 in Vietnam.

Table 6.9: Panel data estimation results with the interactive variables

Variables	(1) Poverty	(2) Poverty	(3) Poverty	(4) Poverty	(5) Poverty
LnK	-1.735***	-1.297*	-1.148	-1.852**	-2.198**
	(0.468)	(0.682)	(0.794)	(0.850)	(0.865)
Skillrate	-0.222**	-0.213**	-0.290	-0.215	-0.214
	(0.096)	(0.097)	(0.232)	(0.232)	(0.231)
Labourrate	-0.115*	0.259	0.333	0.883*	0.721
	(0.069)	(0.430)	(0.475)	(0.533)	(0.538)
TVrate	-25.891***	-26.058***	-26.008***	-3.663	-7.706
	(3.728)	(3.735)	(3.744)	(10.768)	(10.930)
Hcarerate	0.066**	0.065**	0.063*	0.073**	0.183***
	(0.033)	(0.033)	(0.033)	(0.033)	(0.067)
LnKLab		-0.023	-0.030	0.004	0.022
		(0.026)	(0.033)	(0.036)	(0.037)
SkillLab			0.004	0.000	0.000
			(0.011)	(0.011)	(0.011)
TVLab				-1.238**	-0.999*
				(0.560)	(0.572)
HcareLab					-0.006*
					(0.003)
Constant	67.318***	60.267***	58.816***	49.594***	52.498***
	(5.741)	(9.849)	(10.622)	(11.334)	(11.384)
Observations	315	315	315	315	315
R-squared	0.373	0.375	0.375	0.388	0.396
Number of province	63	63	63	63	63

Notes: *** p<0.01, ** p<0.05, * p<0.1; Standard errors in parentheses
Source: The author's calculation

- ***Spatial Regression***

The robust Lagrange multiplier (LM) is used to test for spatial autocorrelation. The test result shows that there is spatial autocorrelation (Table 6.10).

Table 6.10: Tests for the Spatial Model

Test	Statistic	df	p-value
Spatial error:			
Moran's I	8.357	1	0.00
Lagrange multiplier	25.306	1	0.00
Robust Lagrange multiplier	3.126	1	0.08
Spatial lag:			
Lagrange multiplier	65.117	1	0.00
Robust Lagrange multiplier	42.938	1	0.00

Table 6.11 shows the estimation results of Spatial Lag Model (SLM), while the Table 6.12 shows the estimation results of Spatial Error Model (SEM).

From Table 6.11, the estimated coefficient of rho is not zero suggesting that there is spatial relationship between the poverty rates among neighbouring provinces. In other words, the poverty rate in each province is likely to be related to the poverty rate in neighbouring provinces. Thus, a significant reduction in poverty in a certain province (city) can have spillover effects on poverty reduction in the neighbouring provinces. This existing relationship suggests that policy prescriptions need not be focussed entirely on those areas where poverty rates most severe. It carries the implication that the development of infrastructure in areas, such as the Northern Mountainous regions, where poverty is highest may not be necessary. This is a mutually beneficial finding for both the government and impoverished citizens: The Vietnamese government can invest more efficiently because development in such areas would require significant outlay of funds due to their remoteness and inaccessibility. And, whilst it may be argued that the same inaccessibility applies to residents as much as investors, an investment in a neighbouring province could alleviate the emotional and financial burden some face in being forced to migrate far away from their homes and families.

Table 6.12 indicates that the coefficient of lamda is statistically significant, reflecting that a given province's proverty rate is affected by the poverty in surrounding provinces.

The results of the SLM and SEM imply that capital investment is positively related to poverty reduction. The result of SLM shows that if the capital investment increased by 1 percent, the poverty rate would decrease by 2.2 percent, while the poverty rate would decrease by 2.6 percent for SEM.

If the proportion of trained workers increased by 1 percent point, the poverty rate will decline by around 0.59 percent based on the SEM estimation and 0.63 percent point in the SLM estimation. This implies that improvement in the quality of human resources is one of the factors promoting economic growth and sustainable poverty reduction. This is consistent with the results from panel regression.

The larger proportion of households with a television is associated with lower poverty rate. This is not surprising as television ownership is associated with higher income levels. Moreover, it implies that television ownership allows access to basic

economic and systematic information that can assist owners in leveraging agricultural, learning and market factors. This result is consistent with the results from panel regression and is also in line with the socio-economic situation in Vietnam. In fact, the ratio of households with a colour television increased from 52.7 per cent to 92.3 per cent between 2002 and 2012 (GSO, 2011, 2014).

The proportion of workers working in the manufacturing sector has no statistical significance in the models at the 5 percent significance level. This indicated that there is no clear impact on the development of the manufacturing sector on poverty from these models. Therefore, the provincial spillover effects from manufacturing employment for poverty reduction could be very limited. This could be as discussed earlier in section 6.2, the provinces with high poverty rates such as Lai Chau, Ha Giang, Lao Cai, Bac Can are mainly concentrated in the northern mountains making communication and transport of goods difficult, so these regions appear not to have investment in the development of industrial parks (Tables A6.1 and table A.6.2 in the Appendix to chapter 6). The region's economy is instead based on agriculture and services (Table A3.1 in the Appendix Chapter 3). The largest sector of employment in Vietnam is agriculture, forestry and fisheries (average annual share of this sector around 50 percent).

Table 6.11: The results of the estimation of SLM

Spatial lag model	Number of obs	=	252
	Variance ratio	=	0.79
	Squared corr.	=	0.808
Log likelihood = -777.2857	Sigma	=	5.23

Poverty	**Coef.**	**Std. Err.**	**z**	**P>z**	**[95per cent Conf.**	**Interval]**
LnK	-2.210	0.354	-6.24	0.00	-2.90	-1.52
Skillrate	-0.633	0.088	-7.18	0.00	-0.81	-0.46
Labourrate	0.008	0.043	0.19	0.85	-0.08	0.09
TVrate	-28.053	4.699	-5.97	0.00	-37.26	-18.84
Hcarerate	0.297	0.027	11.14	0.00	0.24	0.35
Cons	51.734	6.287	8.23	0.00	39.41	64.06
rho	0.853	0.080	10.6	0.00	0.70	1.01

Wald test of rho=0: chi2(1) = 112.318 (0.000)
Likelihood ratio test of rho=0: chi2(1) = 54.340 (0.000)
Lagrange multiplier test of rho=0: chi2(1) = 65.117 (0.000)
Acceptable range for rho: -3.729 < rho < 1.000

Source: The author's calculation

Table 6.12: : The results of SEM

Spatial error model	Number of obs	=	252
	Variance ratio	=	0.57
	Squared corr.	=	0.737
Log likelihood = -792.1377	Sigma	=	5.53

Poverty	Coef.	Std. Err.	z	P>z	[95per cent Conf.	Interval]
LnK	-2.67	0.39	-6.92	0.000	-3.42	-1.91
Skillrate	-0.59	0.10	-5.69	0.000	-0.80	-0.39
Labourrate	0.06	0.05	1.22	0.221	-0.03	0.15
TVrate	-27.59	5.04	-5.47	0.000	-37.48	-17.71
Hcarerate	0.36	0.03	11.42	0.000	0.30	0.42
Cons	68.66	7.48	9.18	0.000	54.00	83.32
lambda	0.89	0.08	11.67	0.000	0.74	1.03

Wald test of lambda=0:
chi2(1) = 136.122 (0.000)
Likelihood ratio test of lambda=0:
chi2(1) = 24.636 (0.000)
Lagrange multiplier test of lambda=0:
chi2(1) = 25.306 (0.000)
Acceptable range for lambda:
-3.729 < lambda < 1.000

Source: The author's calculation

6.6 Conclusion

The aim of this chapter is to investigate the effect of the manufacturing sector on poverty rates at the provincial level and test for spillover effects from neighbouring provinces on Vietnamese poverty rates using data from the VHLSSs and ESs during the period 2004-2012. Results from the panel estimations indicate that the share of employment in the manufacturing sector is positively related to lower poverty. However, results from spatial regressions show that this variable has no statistical significance. The spatial approach indicates that there is no clear impact on the development of the manufacturing sector on poverty. One possible explanation is that the rate of labours employed in the manufacturing sector is quite low. In fact, only around 10 per cent of workers are employed in this sector annually, whereas around 50 per cent of workers remained in the agriculture sector as discussed in Chapter 3. This is also evident from the poverty maps showing the distribution of poverty and manufacturing employment. As a result, manufacturing employment is likely to have limited spillover effects on poverty reduction. However, the low rates of employment

in manufacturing, particularly in those provinces where high poverty rates exist, coupled with results of panel estimations suggests that there is scope for expansion in the future. It was noted that evasion of costs associated with large investments in infrastructure and industrial zones could be possible given that there is some association between poverty rates in remote and neighbouring provinces; high transport and construction costs can be avoided by investing in less remote areas. Policy makers may consider this a fruitful insight particularly in the context of a long term industrialisation strategy with which Vietnam is currently engaged in.

Other variables, such as capital investment, trained labourers, TV ownership and health insurance, are positively correlated to poverty reduction. The positive correlation between capital investment and poverty reduction provides further evidence as to the efficacy of a program that focuses on the build-up of manufacturing in poverty struck but less remote areas. The analysis of the trained labour variable also lends support to this argument. A focus on education and expansion of people's skills base, including those skills necessary for manufacturing, makes intuitive sense and is logically sound given that there is an emphasis in the literature on augmenting the capabilities of the poor so as to allow them to escape poverty. Taking into account the country-wide and provincial spatial aspects, the scale of such an investment will need to be significant if Vietnam seeks to achieve Kuznetsian style industrial/economic growth and poverty reduction. Synergistic coupling of these two economic aspects may not be possible in the short term, given the potential outlays necessary, but the imperative of poverty reduction demands the attention of policy makers. The policy implications, as well as conclusions and limitations of the current study, are discussed in the proceeding chapter.

CHAPTER 7 CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

The main aim of this study is to investigate the role of played by industrialization in poverty alleviation in Vietnam. To this end, a number of specific research questions were posed:

- What is the current status of poverty in Vietnam, both in the country as a whole and across various provinces in the country?
- What is the relationship between manufacturing sector employment and poverty rate in the economy as a whole as well as in rural and urban areas?
- Does the relationship between manufacturing sector employment and poverty rates hold at the provincial level?
- From a spatial perspective at the province-level, are there any spillover effects in terms of manufacturing employment from neighbouring provinces on poverty reduction?

Chapters one to six of this thesis were structured sequentially to provide answers to the above research questions. Chapter 1 provided the primary motivations and objectives for this study as well as an overall roadmap. Chapter 2 reviews the existing literature on poverty – including discussions on the concept of poverty, how it is measured and findings from related empirical works. To provide a background and context for understanding how poverty has evolved in Vietnam, Chapter 3 describes the economic transformation and performance of the Vietnamese economy since the launch of economic reforms in the mid-1980s (*Doi Moi*). Chapter 4 analyses the historical trends in poverty in Vietnam using official definitions of poverty and data from official household surveys. In Chapter 5, an econometric analysis of the determinants of poverty is carried out with the view of estimating the relationship between manufactruing employment and poverty at the household level. As the spatial distribution of poor households and manufacturing do not often match, province-level spatial regressions using manufacturing employment and poverty are carried out and their results reported in Chapter 6.

The major findings from the core chapters two to six are summarized below in Section 7.2 of this chapter.

7.2 Major Research Findings

Chapter 2

Poverty is presented throughout this thesis as a complex issue. Chapter 2 began by defining what is meant by the term and in so doing, some of the associated complexities were unravelled and an intentional foundation from which to proceed was established. The deprivation of basic human needs was recognised as a common condition throughout the proposed definitions and this phrase is explained in relation to the official definitions used in Vietnam. It was also acknowledged in Chapter 2 that definitions of poverty incorporated contextual factors, but the deprivation of basic human needs was elemental throughout. This type of deprivation was reinforced by the introduction of the concept of absolute poverty lines. This ensuing concept is intended to anchor the original concept to an absolute standard from which observations and analyses can be performed. It was shown that both income and expenditure of households or individuals serve this goal. The poverty lines used for econometric analysis in this thesis are based on national poverty lines (refer to section 4.2). They are based on the 'cost-of-basic-needs' approach and use income and expenditure as indicators of poverty.

Academic researchers have utilised survey-based metrics and absolute poverty lines to examine the issue of poverty throughout the world. A literature review conducted in Chapter 2 parsed a relevant cross section of these studies. From an international perspective, the study of Lapova and Szirmai (2012) was most noticeable. These authors disseminated findings across a range of countries and presented a strong case for manufacturing as a vehicle for poverty reduction. Most importantly were the direct impacts that could manifest by expansion of the manufacturing sub-sector. These direct impacts included increased salaries for employees and more stable jobs; a finding which is supported by Harvie (2004). Lapova and Szirmai (2012) conclude that developing nations, particularly those in Asia, stand to gain most from direct benefits associated with manufacturing expansion. Whilst indirect and induced benefits could also be garnered, many of the studies parsed agreed that these direct benefits exist and should be exploited. This thesis focuses on the direct benefits associated with the manufacturing sector.

Chapter 3

The Vietnamese economy underwent a period of central planning between the years 1954 – 1986 before moving swiftly to a market oriented economy. This expedient move was catalysed by a period of economic reform known as *Doi Moi* which began in 1986. Chapter 3 described the context, mechanisms and processes that eased the path towards a market economy.

The structure of the Vietnamese economy changed rapidly since *Doi Moi*. Major economic programs initially focussed on the expansion of heavy industry and infrastructure. Subsequent reform of the investment structure, coupled with significant augmentation of private ownership, further catalysed the shift. Evidence of Vietnam's improving economic performance since *Doi Moi* is compelling. These vast improvements in performance were discussed in Chapter 3. It was noted that Vietnam had progressed from a poor nation, where its citizens contributed less than $100 per capita to GDP in today's value, to a nation where its citizens now contribute $1000 per annum to GDP. Vietnam is now a middle-income country.

Vietnam's rapid growth has been accompanied by significant structural transformation. The agricultural sector's share of GDP fell from 46 per cent in 1988 to 19 per cent in 2005 with the industrial sector making up for the bulk of that fall. The services sector increased only modestly at that time. The manufacturing sector experienced its highest growth during the period 1988 – 1997 but has remained relatively stagnant since 1997. The most recent data shows that growth in the manufacturing sector has been speeding up again. In 2016, it attained a high growth rate of 11.90 per cent which is up from 10.60 per cent in 2015 and 8.45 per cent in 2014. This growth translates to a contribution of 1.83 per cent in overall GDP growth. In contrast, growth in the mining sector has decreased by up to 4.00 per cent, which represents a 0.33 percentage point overall contribution to GDP (GSO, 2014; 2015; 2016). Given these statistical features of the Vietnamese economy, a study such as the present one, which examines manufacturing's contributions to poverty reduction, becomes more relevant. Studies such as Pham and Le (2012), Hoang et al. (2014), Kozel (2014) and UNIDO (2006), which show that industrialization strategies can have a positive effect on poverty, lend further weight to the relevance of this study. Furthermore, as demonstrated by Lapova and Szirmai (2012), the benefits of an industrialization strategy focusing on manufacturing manifest not only in the creation

of jobs within this specific sub-sector but can also contribute by the creation of higher productivity and more well paid jobs in linked sectors. Lavopa and Szirmai (2012) note the importance of manufacturing's strong linkages with the services sector to highlight this point. Thus the focus on manufacturing and its contribution to poverty eradication in recent years is not trivial. Recent migratory patterns also indirectly point to the necessity and significance of the present study.

Chapter 4

Chapter 4 investigates the status of poverty in Vietnam using the two main official poverty lines. These were identified as the MOLISA poverty line and the GSO poverty line. Whilst each is based on a cost-of-basic-needs approach, there are differences in the way each line is established, hence it was concluded that each poverty line has respective uses. The MOLISA poverty line is calibrated based on a bottom-up approach involving a mix of local surveys and village-level consultations to count the number of poor at the communal level. This poverty line is not adjusted for inflation but is updated in real terms every five years. This approach to poverty measurement is thus used primarily by the government to determine eligibility for targeted programs. The GSO poverty line is considered more desirable for the purposes of the present study. The GSO's approach to poverty measurement adjusts for inflation regularly, maintains an objective methodology and frequently updates its basis of poverty measurement. This allows the researcher to observe fluctuations more acutely and analyse change over time more precisely.

Chapter 4 also presented an overview of poverty in Vietnam and reviewed several of the programs implemented by the Vietnamese government that targeted poverty. There have been dramatic improvements in Vietnam regardless of which approach to poverty measurement is used. It was shown that poverty based on the $1.25 per day international poverty line was almost entirely eradicated by 2012 and rates based on the $2 per day poverty line fell from 86 per cent in 1993 to around 18 per cent in 2012. Poverty rates based on the MOLISA approach displayed a 'sawtooth' pattern over the course of this time period where rates would steadily decrease then spike when that organisation reviewed the poverty line every five years. There is an overall downward trend based on the MOLISA calculations however the improvements based on this approach were not as pronounced as with the other

approaches. The GSO approach showed that poverty had reduced from a high of 58 per cent in 1993 to 20 per cent in 2012.

These figures generally depict positive results yet several key features regarding recent performance were noted. In particular, all figures show that Vietnam's performance regarding poverty has levelled off since 2008 and elasticities between poverty rates and income growth in absolute value decreased during the period 2004-2012. At first glance one might attribute this stagnation to the Global Financial Crisis, which occurred in 2008, and to diminishing returns of targeted poverty programs. However, more in depth analysis of these government programs indicated that they may have been misguided or less efficacious than expected in some cases. Quynh (2004), for instance, argued that Vietnam's pro poor policies fail to target the most vulnerable in society. Similarly, Cuong (2008) argued that the government's micro-credit policies were effective but benefited the non-poor more than the poor. Other features of poverty in Vietnam, such as the dispersion of poor people throughout regions and focus on capital rather than labour intensity, have kindled studies such as the present one. This leads to Chapters 4 and 5 which undertake econometric analyses to unveiling relationships between household income, expenditure, poverty status and manufacturing related variables.

Chapter 5

The key focus of Chapter 5 is a set of econometric analyses of the relationship between poverty and manufacturing employment at three levels – for the whole economy, rural and urban areas. Three proxies for poverty are used in the analyses - households' per capita income, households' per capita expenditure; and poverty status. Manufacturing employment is proxied by the fraction of household members working in the manufacturing sector in the whole country. Generally, the role of manufacturing in the ongoing industrialisation of the country is acknowledged as a catalyst for improving the welfare of Vietnamese people.

For the whole of the country, results from the estimation of the household's poverty (measured in per capita income using cross-section data in 2004, 2006, 2008, 2010 and 2012) are consistent for all years under examination. There is a strong, positive association between per capita income and the fraction of household members employed in manufacturing. This aligns with expectations. It was noted, *ceteris*

paribus, that a 1 per cent increase this employment statistic resulted in 0.1 per cent increase in household income for the year 2012. Results for the analysis of per capita expenditure of households maintain similar conclusions. There was a strong, positive association between household expenditure and manufacturing employment for the years 2004, 2006 and 2012. This correlation is less strong for the years 2008 and 2010 however the GFC intervenes as a contextual factor in this period. The GFC took its toll on economies around the world. GDP was adversely affected in Vietnam and many industries, including manufacturing, suffered as a result of this. It is therefore concluded that this contrasting result does not necessarily go against expectations. The industrialisation process was slowed but the Vietnamese economy regained momentum soon thereafter; in 2012 the economy began to recover so the industrial sector flourished again. Manufacturing employment increased as did the incomes and welfare of Vietnamese people. Observing the results of the present study, it can be seen that employment in manufacturing is emphasised as a driver of economic prosperity and social well-being.

The results of Chapter 5 also demonstrated that there is an inverse association between manufacturing employment and a household's likelihood of falling into poverty. This is a positive result and the analysis, based on both MOLISA and GSO approaches, shows that this inverse relationship is strong and is maintained for most years in which the analysis is conducted. However, some slight discrepancies in trends across time periods are noted. Under the MOLISA approach, the coefficients of marginal effects are negative for the 2004-2008 period suggesting that employment in manufacturing may prevent a household from falling into poverty. This is reversed in the 2010-2012 period. The GSO approach yields similar results, except that the negative association between manufacturing employment and poverty propensity also exists in 2012. The GSO approach therefore presents an even stronger case for employment in manufacturing. Again, the analytical results of both MOLISA and GSO approaches aligns with the contextual circumstances existing around the time of the GFC. Furthermore, the GSO approach may be regarded as more up to date showing positive results in this analytical statistic as the country began to recover and productivity in manufacturing accelerated. The increase in income and expenditure post-GFC is regarded more closely by the GSO approach thus demonstrating the inverse relationship between manufacturing employment and propensity for a

household to fall into poverty. The econometric analysis then delved deeper into the topic by disaggregating the whole of the country into rural and urban areas whilst applying the same metrics and variables. Chapter 5 reported that wealth of household's, based on per capita income, is strongly and positively associated with the fraction of household members employed in manufacturing. Cross-sectional analysis demonstrated this result for all years under investigation – 2004, 2006, 2008, 2010 and 2012. Results are maintained for urban areas except for the years 2004 and 2008 where a strong negative correlation was noted.

The observed trends in household poverty based on expenditure for rural and urban areas carry some interesting ambiguities. For rural areas, the results more or less parallel those based on household income; manufacturing employment is strongly and positively associated with per capita household expenditure for the years 2004, 2006 and 2008, however this trend reverses for the years 2010 and 2012. The opposite holds true when examining urban areas; household expenditure is strongly and negatively correlated to manufacturing employment for the years 2004, 2006 and 2008 but tended to increase for the years 2010 and 2012.

Devoid of context, these results are perceived to carry significant ambiguity. However, a closer examination reveals reasons for these variations within and across the disaggregated geographical areas. In brief, for rural areas, the skewed results are primarily the result of industrial policies that were encouraged by *Doi Moi* coupled with Vietnam's inclusion in a global market and economic shocks starting around 2007. A contrasting structural composition may explain why opposite results are experienced in urban areas. These contextual considerations, discussed in Chapter 5, are also expanded on below.

Doi Moi was a landmark achievement in Vietnam's economic history and has been regarded as one of the main reasons for Vietnam's progress since the late 1980s. One of the hallmarks of this reform process was the successful liberalisation of the agricultural and business sectors which incentivised foreign investment and allowed new businesses to be created. Many new businesses emerged in the area of agro-processing, thus Vietnam began to witness a shift of the manufacturing base into rural areas. This was a prosperous endeavour, especially because Vietnam maintained, and still maintains, a competitive edge in agricultural production compared to its immediate neghbours in the region. Though progress was initially slow (Vietnam was

a member of Comecon until 1990) and was somewhat affected by the Asian Economic Crisis, the movement towards rural manufacturing has had positive effects. The correlations between manufacturing employment and income and expenditure for the years 2004, 2006 and 2008 in rural areas, though somewhat lagging, are an example of such a positive result. The results in rural areas from 2004 – 2008 are witnessed in times of economic stability, however this research also demonstrates how economic downturns can adversely affect results.

In 2007 Vietnam became a member of the WTO. This inclusion thrust Vietnam into a global marketplace and allowed the nation to gather momentum in a free trade environment. However, it also exposed the nation to tolerable uncertainties that eventuated the following year. In late 2007 and early 2008, price shocks affected the Vietnamese economy and inflation ensued. This put pressure on agricultural based manufacturing products. Further detriment on a global scale was witnessed with the onset of the GFC in late 2008 and 2009. In the rural context, where manufacturing had gained momentum since *Doi Moi*, employment in agro-processing became hazardous. The negative correlations between manufacturing employment and poverty in rural areas for the years 2010 and 2012 demonstrate this effect.

As mentioned, a contrasting structural composition in urban areas may explain why opposing results are experienced there. In urban areas, manufacturing plays a less significant role and employment in services, a sector that potentially drives down poverty more sharply than manufacturing, is more common. The presence of a stronger services sector in urban areas means that the market for jobs is more competitive and salaries may be affected. It was also mentioned in Chapter 5 that, for urban areas, workers did not move into manufacturing from the agricultural sector where poverty is more prevalent. The structural composition between agriculture, manufacturing and services in urban areas is therefore linked in such a way that manufacturing employment has a waning potential for welfare enhancement. Hence there is an observed negative correlation between manufacturing employment and poverty for the prosperous years 2004, 2006 and 2008 (allowing for some lag in the statistical data) because employees are engaged in a competitive environment. Data derived for both income and expenditure variables demonstrate this result. The reversal of position and positive correlations between manufacturing employment and poverty, measured in income and expenditure for the years 2010 and 2012, are more peculiar. It

is possible that the services sector suffered from the GFC and price shocks more than manufacturing in urban areas simply due to its scale. Manufacturing may have been able to absorb some of these losses, but such reasoning is speculative. Further research is needed to resolve this particular discrepancy.

An appreciation of the above contextual circumstances not only explains why the skewed results exist in and across rural and urban areas but also has implications for policy direction. Certain premises must first be explicated: Vietnam maintains an agricultural edge that can be leveraged by manufacturing, particularly in the area of agro-processing, to target poverty reduction. *Doi Moi* has assisted in making this a viable possibility. The nation also possesses a government that still exerts significant control over all economic activity. Economic theory discussed in Section 2.4.3 of this thesis has highlighted the potential of agro-based manufacturing activities in countries poised for 'take-off' (Rostow, 1960) as a conduit to poverty reduction. Vietnam is currently in such a position. Therefore, an industrial strategy aimed at augmenting manufacturing, particularly in rural areas, is deemed to be a valid conclusion. It may be argued that such policy may only hold true in more stable economic periods however the prototypical economic assumption, that economic growth is possible and necessary, supersedes this argument in the long term. The rural-urban contrast has been subject of other studies such as Mukherjee & Benson (2003) who found that employment in secondary industries (manufacturing) in Malawi has positive-but-statistically-insignificant impact on household's welfare. The present study, whilst not necessarily generalizable across national contexts, presents findings with greater statistical confidence than Mukherjee and Benson (2003) and the policy precriptions, such as those implied above regarding industrial startegies in rural areas, may therefore be considered more robust.

Also, using panel data in the short term (2004-2006; 2006-2008; 2010-2012), Chapter 5 reported that household poverty, as measured in per capita expenditure, does not appear to have any relationship with the proportion of household members working in the manufacturing sector. It shows that change in employment in the manufacturing sector will not affect household expenditure. This could be explained by the fact that Vietnamese living standards are still low and there is no significant change in expenditure in urban areas.

By contrast, the model based on short term panel data shows a negligible correlation between employment in the manufacturing sector and household per capita income. The figures show stability for the years 2004-2006 and 2006-2008. These figures increase slightly for the period 2004-2008 (using panel data in the long term, from 2004 to 2008). The results also indicate that there is no correlation between the manufacturing sector and household per capita income in urban areas in the short term and in the long term. Reasons for this lack of correlation may stem from the VHLSS statistics themselves which show that most labourers in urban areas work in the service sector. Therefore, an increase or decrease in the manufacturing sector has overall negligible impact on average incomes of urban households. Moreover, about 70 percent of the Vietnamese population live in rural areas where a slightly higher proportion of workers are employed in manufacturing. Aggregate statistics will accordingly show some bias towards the impact of manufacturing employment on country wide average incomes as opposed to the disaggregated urban statistics. One final point can be deduced when comparing long and short term panel results. It was noted that the coefficients for the period 2004-2008 are larger than the previous two stages (2004-2006 and 2006-2008). This implies that manufacturing has an important role in maintaining longer term income growth.

The findings on short and long term panel studies are mitigated by the fact that each year only retains about 40 per cent of household participants. Hence, as the timeframe of this particular study extends there will be fewer continuous observations and the findings will be less generalizable. This represents a methodological frailty of such studies and can compromise the researcher's ability to perform statistical inference and make accurate conclusions and predictions.. Nonetheless, the use of the results to consider the trend in the manufacturing sector and household poverty is worthy of the government's consideration when policy making, particularly because this study does not extend too far back and uses a survey set which begins with a large starting sample. This latter point ensures that enough data remains to perform adequate analysis due in large part to the quality of the VHLSS.

Chapter 5 also reported that household poverty status, measured in household's income poverty propensity based on both the MOLISA and GSO approaches, does not have a clear relationship with the proportion of household members working in the manufacturing sector. The results reflect the possibility that structural changes in

employment towards the manufacturing sector do not affect a household's poverty propensity in the country, and in urban areas and rural areas. It was noted that employment in the manufacturing sector had a tendency to reduce the likelihood that a household would fall into poverty , but the results are not statistically significant at 10 percent. This result applies to all three of the examined contexts including the whole of the country as well as rural and urban areas. Though the results are fairly modest, the scale of manufacturing employment makes consideration of this fact worthwhile. Manufacturing contributes around 22.3 per cent of income (VHLSS, 2008) however the main source of income still comes from the agricultural and services sectors.

The probit estimations yield similar results. It was noted that the ability of households to escape poverty is not correlated with the change of labour in the manufacturing sector in the period 2004-2006, 2006-2008 and from 2004 to 2008. For rural areas, there was a positive result for the period 2006-2008 as increased labour in the manufacturing sector was correlated to the ability of households to escape poverty. This result is achieved at the10 percent significance level. For urban areas, also at 10 per cent significance level, increased labour in manufacturing was correlated to a household's ability to escape poverty for the period 2004-2008.

Chapter 6

The purpose of Chapter 6 is to analyse the determinants of poverty reduction from a spatial perspective by using provincial level data. This is motivated by an analysis of the poverty map for Vietnam which shows that provinces with high poverty rates tend to be different from those with high shares of manufacturing employment. This provides further motivation for econometric analyses using provincial level data.

Chapter 6 reported that if the percentage of workers working in the manufacturing sector increased, it may help reduce poverty more rapidly. The statistics demonstrate that a 1 per cent increase in employment in this sector on average resulted in a 0.115 per cent decrease in poverty rates. Results from this study were contrasted with those from Deaton et al. (2014) who found that an expansion in the percentage of labour employed in the manufacturing sector did not lead to reductions in the poverty rate in Canadian districts. This incompatibility may be expected given Canda's advanced stage of economic development. Results of this study are, however, consistsent with

studies in similar contexts. The empirical evidence generated in this study is further reinforced by our understanding that a movement from low-productivity to higher productivity sectors typically yields pro-poor results. These benefits have the potential to cascade to labourers in rural areas and to those poor people employed in non-agricultural sectors where augmentation of manufacturing is possible. Furthermore, the augmentation of manufacturing in the aforementioned areas will lead to the development of other sectors which use inputs from manufacturing or lend support to manufacturing activities. The service sector presents as a prime example because it maintains powerful forward linkages with manufacturing. Indeed, many of the most lucrative manufacturing businesses dedicate tremendous resources to maintaining a strong service oriented business model focussed on aftermarket service and parts management (Deloitte, 2006). This is just the tip of the iceberg. Many support industries such as legal, accounting, finance and banking are necessary to support a burgeoning manufacturing sector. These have the potential to generate further, more highly paid jobs but the key point is that they cannot exist where manufacturing caveats. Rapid improvements in well-being begin with this sector.

Development of manufacturing relies heavily on raising the proportion of the trained workers. Analysis performed in Chapter 6 demonstrated that such a raise impacted positively on poverty rates during the period 2004-2012. It was shown that a 1 per cent increase in trained workers resulted in a 0.22 per cent reduction in poverty rates. Again, this reflects the fact that an increase in the percentage of highly trained workers can influence innovation and the competitiveness in the market. The empirical evidence, backed up by intuitive insight, reinforces the argument that a high rate of trained labourers should improve the labour productivity in general and increase workers' incomes. This will lead to a positive impact of poverty reduction in localities. Furthermore, it can offer workers a chance to apply advanced technologies thus contributing to the human capital base of the country and providing a solid foundation for the future.

The positive role of investment in the continuing fight against poverty at the provincial level is acknowledged in Chapter 6. Specifically, when investments are increased by 1 percent, the poverty rate decreases by 1.7 percent points for the 2004-2012 period. The implication is that capital investment promotes job creation and has the potential to raise the income of workers.

Chapter 6 also examines the indirect or induced effects from the neighbouring provinces on poverty reduction. This is the first study to accomplish such analysis in the Vietnamese context. The chapter reported that there is a relationship between poverty rates among neighbouring provinces. Thus, a significant reduction in poverty in a certain province (city) will have spillover effects on poverty reduction for the neighbouring provinces.

However, the variable representing the proportion of workers working in the manufacturing sector is not statistical significant in the models at the 5 percent significance level. This indicates that there is no clear relationship between development of the manufacturing sector and poverty reduction in a spatial context. It is likely that infrastructural deficiencies have contributed to this phenomenon. Although Vietnam is not a large country, it is quite savage topographically. Section 6.2 showed that high poverty provinces include Lai Chau, Ha Giang, Lao Cai and Bac Can which are mainly concentrated in the northern mountains. This makes communication and transport of goods difficult, so these regions are not the most attractive areas for investment in the development of industrial parks (refer to Tables A6.1 and table A.6.2 in the Appendix to chapter 6). The economies in these regions are based more on agriculture and services (refer to Table A3.1 in the Appendix Chapter 3). Since agriculture, forestry and fisheries make up the bulk of employment in Vietnam (constituting an average annual share of around 50 per cent), there is no tangible base from which spillover effects can manifest. Poverty reduction in this spatial context may therefore be minimal in the mountainous regions. A further point regarding poverty in Vietnamese ethnicities can also be acknowledged since many of the less populous ethnic groups, who reside in these areas, constitute the majority of poor people in the country. The upshot of such understanding is that a more solid investment in infrastructure may be needed to spur industrial investment and development in areas where it is needed most to combat poverty.

The spatial regression analysis in Chapter 6 do offer some concrete findings. The spatial regression estimations show that a 1 per cent increase in trained workers results in a 0.59 per cent decline in poverty using SEM and a 0.63 per cent decline using SLM. It is apparent that improvement in the quality of human resources is a key factor in promoting economic growth and sustainable poverty reduction. Such findings align with the prevailing narrative throughout Chapters 5 and 6.

The larger proportion of households with a television is also positively correlated with the poverty reduction. This makes intuitive sense since the dissemination of information or easy access to basic information through the television system can help households. Communication channels for production in agriculture, learning experience and market understanding are all important to assist people in leveraging their own capabilities.

The results also indicate that the relationship between capital investment and poverty reduction is positively and statistically significant. The result of SLM shows that if the capital investment increases by 1 percent, the poverty rate would decrease by 2.2 percent, while the poverty rate would decrease by 2.6 percent for SEM. This implies that capital investment from private and public sources will help the development in the economy, the economic sectors and the accumulation of wealth in the economy. In addition, capital investment in state-of-the-art equipment and technology for will increase labour productivity.

7.3 Policy Implications

Findings from this study suggest that the manufacturing sector can generate employment and income but its impact on poverty reduction depends on the location of manufacturing activities. From a policy perspective, this study suggests that for industrial development to have greater impact on poverty reduction, industrial zones and industrial clusters should be located near or have good infrastructure linkages to areas with high incidence of poverty. This is consistent with the government's emphasis on development in poor districts. For instance, the Resolution No.30a/2008/NQ-CP, promulgated on 27 December 2008, which provides support for fast and sustainable poverty reduction programmes in 61 poor districts. Such a policy would contribute towards achieving the specific public policy objectives on sustainable poverty reduction outlined in various policies such as the Resolution No.80/NQ-CP (19 May 2011) on sustainable poverty reduction and the National Target Program for Sustainable Poverty Reduction for the period 2016-2020 (supported by the Resolution No.100/2015/QH3 which was approved by the thirteenth National Assembly of Vietnam on 12 November 2015).

In addition to poverty reduction, the development of the manufacturing sector can contribute to a more balanced growth across regions and prevent the increasing

disparity between the income-levels in rural and urban areas. The creation of new manufacturing employment opportunities near districts with high poverty levels can also help reduce immigration to big cities where the problem of urban poverty is becoming increasing more serious (VASS, 2011; Kozel, 2014).

Another policy implication arise from this study's findings on the importance of workers' skills in poverty eradication. In this regard, the Vietnamese government should continue to innovate the education and training system based on the needs of the labour market especially in regions with high incidence of poverty. More specifically, this study also suggests the importance of developing vocational training institutions for industrial workers. Such a strategy should combine job training and economic development plans in regions and sectors. This is consistent with the government's emphasis on the vocational training for for rural workers. For instance, the Decision No.1956/QD-TTg by the Prime Minister, promulgated on 27 November 2009 (Vietnam, 2009),, was aimed at creating jobs and increasing the income of rural workers – thereby achieving sustainable poverty reduction and ensuring social security. In addition, the findings from this study also support specific public policy objectives outlined in more recent policies such as: (i) the Decision No.630/QD-TTg by the Prime Minister (dated 29 May 2012) on the Vocational Training Development Strategy for the period of 2011 – 2020 (Vietnam, 2012a);; and (ii) the Decision No. 761/QD-TTg by the Prime Minister (dated 23 May 2014) on the development of high quality vocational schools by 2020 (Vietnam, 2014).

7.4 Limitations and Further Studies

This study has attempted to provide an analysis of the relationship between the manufacturing sector and poverty alleviation in Vietnam. Despite the empirical merits, this study has limitations which offer possibilities for further research.

Constraints of the current study mean that not all relevant methods of inquiry could be pursued. This study has not conducted any form of original survey to learn about working conditions in the sector. Furthermore, future surveys such as these could be conducted to learn about contributions of household members, particularly those who have been working in the manufacturing sector, to household incomes. This would help to explain mechanisms for poverty reduction within the manufacturing sector.

This study is based on data from the surveys of GSO such as VHLSSs and ESs which was used to analyse the relationship between the manufacturing sector and poverty reduction. Therefore, the quality of the information depends on the quality of the investigation from the GSO's surveys. These surveys are not specifically intended for analysing the impact of the manufacturing sector on poverty reduction. Thus, data used for this study is limited and may not capture the full complexities of poverty at the household level. For example, household income can come from various non-income sources and the informal sector. Such information are not collected in the VHLSSs and ESs. The rate of manufacturing labourer is limited because ESs do not provide information on the small scale household non-agricultural informal sector in Vietnam, while this type of informal household business also plays an important role in poverty reduction in Vietnam.

The panel data used in the study is quite short which may affect the results obtained. For example, around 9000 households are surveyed in each year of the VHLSS. However, only 40 percent of households continue to remain in subsequent two year samples (2004-2006; 2006-2008; 2010-2012) and this figure falls to 20 percent for every four year samples (2004-2008).

Another limitation is that, the problem of endogeneity which makes it difficult to address casual effects. This calls for a more guarded approach to drawing policy implications.

Furthermore, as some of the results obtained indicate that manufacturing employment have limited relationship with poverty reduction, future efforts should be targeted at analysing and policy-targetting selected sub-manufacturing sectors.

It is hoped that future studies on poverty eradication in Vietnam would overcome some of this study's limitations.

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APPENDICES

APPENDIX TO CHAPTER 3

A3.1 Geographical overview of Vietnam

Vietnam is divided into six major economic regions which are further disaggregated into sixty-three provinces. These include the Midlands and Northern Mountains, the Red River Delta, the Northern and Coastal Central, the Central Highlands, the South East, and the Mekong River Delta. The largest ethnicities by population are the Kinh (also known as Viet, 73 million), Tay (1.6 million), Thai (1.5 million), Muong (1.2 million), Khmer (1.2 million) and Hmong (1 million). There are numerous other ethnicities with populations under 1 million people. The O Du is the smallest minority and has a population of just 376 people.

The *Midlands and Northern Mountains* region contains 14 provinces and has a population of around 11.2 million people. The region consists largely of the predominant ethnicities in the country, the Kinh and Thai people, and various other minority groups. The economy of the northeastern provinces in the region is mainly mining and forestry based with some agricultural activities. Tourism also makes up some of this area's economy at places like Ba Be Lake and Ha Long Bay. The economy of the north western provinces is based primarily on agriculture with industrial crops such as tea and corn. There is potential for mining and extraction in this area but so far this activity has not been exploited.

The *Red River Delta* region contains 11 provinces and has a population of around 19.6 million people. Most of the population is Viet. This region is regarded as the political, economic and cultural hub of Vietnam. It contains country's capital and second most populous city, Hanoi, and the country's major port, Haipong. The major economic activities include industrial production, services and agriculture, which consists primarily of rice production.

The *Northern and Coastal Central* region contains 14 provinces and has a population of around 20 million people. The Viet people make up the majority of the population and there are 24 other ethinc groups. Its proximity to the Lao border and long coastal stretch allows for easy access to international trade. Industrial production in Da Nang and Khanh Hoa provinces make bulk of economic acticity in the region and there is potential for marine activities.

The *Central Highlands* region contains 5 provinces and has a population of around 5 million people. It is the poorest region in Vietnam and consists largely of ethnic minorities including the Banam Coh and Giarai people. Infrastructure in the region is severely underdeveloped and the economy has suffered because of this. It is quite a fertile region however and this allows for considerable agricultural activities including the production of cash crops such as coffee and rubber. The region borders Cambodia and Laos so there is potential for some easy trading.

The *South East* region contains 6 provinces and includes the largest city by population, Ho Chi Minh City, which has around 7.4 million people. The Viet people make up the majority of people in this region. It is the most economicaly developed industrialised and urbanised region in Vietnam.

The *Mekong River Delta* region contains 13 provinces and has a population of around 18 million people. Again, the Viet people make up the majority of people in this region. It is the largest rice producing region in Vietnam and has various other economically significant agricultural activities including fish and fruit production.

Table A3.1: A change in economic structure in Vietnam (1986-2013)

	1987- 1991	**1992- 1997**	**1998- 1999**	**2000- 2007**	**2008-2009**	**2010-2013**
A. A change in the economic structure (per cent, current price)						
The national economic structure	100	100	100	100	100	100
1. Agriculture, Forestry and Aquaculture Sector	41.04	28.66	25.61	22.11	21.56	21.05
2. Industry and Construction Sector	25.10	29.27	33.49	39.82	40.57	41.24
Manufacturing Sector	17.22	15.36	17.42	20.37	20.22	18.88
Construction	3.31	6.67	5.61	6.16	6.55	6.30
3. Service Sector	33.86	42.08	40.90	38.07	37.87	37.70
B. Contribution of the economic sector to the economic growth (per cent, the price in 1994)						
GDP Growth	100	100	100	100	100	100
1. Agriculture, Forestry and Aquaculture Sector	15.22	14.51	20.36	11.11	9.67	8.55
2. Industry and Construction Sector	20.37	42.87	50.50	51.79	41.77	41.43
Manufacturing Sector	3.94	20.66	29.42	32.54	25.73	28.53
Construction	2.62	11.31	1.57	11.44	9.01	6.07
3. Service Sector	61.71	42.62	29.14	37.10	48.56	50.02

Source: World Bank, 2015

APPENDIX TO CHAPTER 5

Table A5.1: Overview of Dependent and Independent Variables, 2002-2012 (Cross-sectional Data)

Variable	Variable descriptions	2004				2006			
		Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
lincome	Log of per capita income	5.83	0.63	3.93	8.73	6.07	0.64	3.93	9.33
lexp	Log of per capita expenditure	6.05	0.70	3.91	9.19	6.34	0.72	3.64	10.27
hhland	Having lands for agriculture production	0.65	0.48	0.00	1.00	0.66	0.47	0.00	1.00
labour	Household members working away from home	0.65	0.25	0.00	1.00	0.67	0.26	0.00	1.00
lfixedca	Ln of fixed capital	5.05	4.27	0.00	16.73	4.87	4.40	0.00	15.10
skilled ratio	The ratio of household's skilled members in the household completed education level of short-term worker and over.	0.10	0.20	0.00	1.00	0.11	0.22	0.00	1.00
occuphd_1	Leaders at all level	0.02	0.15	0.00	1.00	0.03	0.16	0.00	1.00
occuphd_2	High-level professionals at all fields	0.02	0.14	0.00	1.00	0.02	0.15	0.00	1.00
occuphd_3	Mid- level professionals at all fields	0.03	0.16	0.00	1.00	0.03	0.16	0.00	1.00
occuphd_4	Staff	0.01	0.11	0.00	1.00	0.01	0.10	0.00	1.00
occuphd_5	Skilled workers	0.03	0.16	0.00	1.00	0.03	0.17	0.00	1.00
occuphd_6	Skilled agriculture workers	0.03	0.16	0.00	1.00	0.04	0.19	0.00	1.00
occuphd_7	Skilled handicraftsmen	0.08	0.27	0.00	1.00	0.09	0.29	0.00	1.00
occuphd_8	Assemblers and machine operators	0.02	0.15	0.00	1.00	0.02	0.15	0.00	1.00
occuphd_9	Unskilled workers	0.60	0.49	0.00	1.00	0.59	0.49	0.00	1.00

Variable	Variable descriptions	2004				2006			
		Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
occuphd_10	Armed forces	0.00	0.05	0.00	1.00	0.00	0.05	0.00	1.00
occuphd_11	Not working	0.15	0.36	0.00	1.00	0.14	0.35	0.00	1.00
hhsize	Household size	4.35	1.70	1.00	20.00	4.20	1.67	1.00	17.00
gender	Household head gender	0.75	0.43	0.00	1.00	0.74	0.44	0.00	1.00
marital	Household head marital status	0.81	0.39	0.00	1.00	0.81	0.39	0.00	1.00
agehead	Age of household head	49.52	14.05	15.00	98.00	49.79	13.55	17.00	97.00
agehead^2	Head's age squared	2649.74	1530.90	225.00	9604.00	2662.25	1469.95	289.00	9409.00
pelderly	Per cent of household members aged 60+	0.13	0.26	0.00	1.00	0.13	0.26	0.00	1.00
pchild	Per cent of household members aged <15	0.21	0.21	0.00	0.80	0.24	0.21	0.00	0.80
pfemale	Per cent of household members who are female	0.52	0.20	0.00	1.00	0.52	0.20	0.00	1.00
ethnic	Ethnicity of household	0.88	0.32	0.00	1.00	0.88	0.33	0.00	1.00
saving	Interest of savings, shares, bonds, loans	0.07	0.26	0.00	1.00	0.07	0.25	0.00	1.00
headruraln	Household head rural non-farm employment	0.10	0.31	0.00	1.00	0.12	0.33	0.00	1.00
headsalary	Household head working in salary sector only	0.12	0.33	0.00	1.00	0.14	0.34	0.00	1.00
remittance	Having domestic remittance and value of in-kind presents from people who are not household members	0.86	0.34	0.00	1.00	0.88	0.32	0.00	1.00
manufactu	Fraction of manufacturing members to working members	0.12	0.25	0.00	1.00	0.12	0.26	0.00	1.00

Variable	Variable descriptions	2004				2006			
		Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
reg61	Household is in Red River Delta region	0.25	0.44	0.00	1.00	0.25	0.43	0.00	1.00
reg62	Household is in Midlands and Northern Mountains region	0.13	0.33	0.00	1.00	0.13	0.33	0.00	1.00
reg63	Household is in Northern and Coastal Central region	0.24	0.42	0.00	1.00	0.23	0.42	0.00	1.00
reg64	Household is in Central Highlands region	0.05	0.21	0.00	1.00	0.05	0.22	0.00	1.00
reg65	Household is in South East region	0.13	0.34	0.00	1.00	0.14	0.34	0.00	1.00
reg66	Household is in Mekong River delta region	0.20	0.40	0.00	1.00	0.20	0.40	0.00	1.00
urban	Household is in urban area	0.25	0.43	0.00	1.00	0.28	0.45	0.00	1.00

Source: Author's calculation

Table A5.1: (continued)

Variable	2008				2010				2012			
	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
lincome	9.00	0.63	6.73	13.22	8.55	0.86	5.08	12.90	8.79	0.80	5.85	13.04
lexp	6.67	0.76	4.13	10.87	7.08	0.78	3.81	12.39	7.41	0.74	4.79	11.61
hhland	0.64	0.48	0.00	1.00	0.59	0.49	0.00	1.00				
labour	0.67	0.26	0.00	1.00	0.67	0.26	0.00	1.00	0.66	0.26	0.00	1.00
lfixedca	4.65	4.56	0.00	16.33	9.23	1.79	0.00	14.74	9.67	1.45	0.00	15.03
skilled ratio	0.12	0.23	0.00	1.00	0.14	0.25	0.00	1.00	0.13	0.24	0.00	1.00
occuphd_1	0.02	0.15	0.00	1.00	0.02	0.13	0.00	1.00	0.02	0.12	0.00	1.00
occuphd_2	0.02	0.15	0.00	1.00	0.04	0.19	0.00	1.00	0.04	0.19	0.00	1.00
occuphd_3	0.02	0.15	0.00	1.00	0.03	0.17	0.00	1.00	0.03	0.16	0.00	1.00
occuphd_4	0.01	0.10	0.00	1.00	0.02	0.12	0.00	1.00	0.02	0.13	0.00	1.00
occuphd_5	0.04	0.19	0.00	1.00	0.10	0.30	0.00	1.00	0.10	0.30	0.00	1.00
occuphd_6	0.05	0.21	0.00	1.00	0.09	0.29	0.00	1.00	0.10	0.30	0.00	1.00
occuphd_7	0.10	0.30	0.00	1.00	0.12	0.33	0.00	1.00	0.13	0.33	0.00	1.00
occuphd_8	0.03	0.17	0.00	1.00	0.05	0.21	0.00	1.00	0.04	0.20	0.00	1.00
occuphd_9	0.55	0.50	0.00	1.00	0.39	0.49	0.00	1.00	0.38	0.49	0.00	1.00
occuphd_10	0.00	0.04	0.00	1.00	0.00	0.03	0.00	1.00	0.00	0.03	0.00	1.00
occuphd_11	0.15	0.36	0.00	1.00	0.15	0.36	0.00	1.00	0.15	0.36	0.00	1.00
hhsize	4.12	1.64	1.00	15.00	3.87	1.55	1.00	15.00	3.84	1.56	1.00	15.00
gender	0.74	0.44	0.00	1.00	0.74	0.44	0.00	1.00	0.74	0.44	0.00	1.00
marital	0.81	0.39	0.00	1.00	0.81	0.39	0.00	1.00	0.80	0.40	0.00	1.00

Variable	2008				2010				2012			
	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
agehead	50.36	13.60	16.00	97.00	48.72	14.28	11.00	99.00	50.17	14.27	13.00	97.00
agehead^2	2721	1484	256	9409	2578	1513	121	9801	2720	1552	169	9409
pelderly	0.14	0.26	0.00	1.00	0.12	0.26	0.00	1.00	0.14	0.28	0.00	1.00
pchild	0.22	0.21	0.00	0.80	0.22	0.21	0.00	1.00	0.21	0.21	0.00	1.00
pfemale	0.52	0.20	0.00	1.00	0.52	0.21	0.00	1.00	0.52	0.21	0.00	1.00
Kinh ethnicity	0.88	0.32	0.00	1.00	0.86	0.34	0.00	1.00	0.86	0.35	0.00	1.00
saving	0.06	0.24	0.00	1.00	0.07	0.26	0.00	1.00	0.09	0.29	0.00	1.00
headruraln	0.12	0.33	0.00	1.00	0.12	0.33	0.00	1.00	0.11	0.32	0.00	1.00
headsalary	0.15	0.35	0.00	1.00	0.19	0.40	0.00	1.00	0.20	0.40	0.00	1.00
remittance	0.86	0.35	0.00	1.00	0.83	0.38	0.00	1.00	0.85	0.36	0.00	1.00
manufactu	0.13	0.27	0.00	1.00	0.17	0.31	0.00	1.00	0.15	0.30	0.00	1.00
reg61	0.25	0.43	0.00	1.00	0.25	0.43	0.00	1.00	0.24	0.43	0.00	1.00
reg62	0.12	0.33	0.00	1.00	0.13	0.33	0.00	1.00	0.13	0.34	0.00	1.00
reg63	0.23	0.42	0.00	1.00	0.22	0.41	0.00	1.00	0.22	0.41	0.00	1.00
reg64	0.05	0.22	0.00	1.00	0.05	0.23	0.00	1.00	0.05	0.23	0.00	1.00
reg65	0.14	0.35	0.00	1.00	0.17	0.37	0.00	1.00	0.17	0.37	0.00	1.00
reg66	0.20	0.40	0.00	1.00	0.19	0.39	0.00	1.00	0.19	0.39	0.00	1.00
urban	0.28	0.45	0.00	1.00	0.31	0.46	0.00	1.00	0.30	0.46	0.00	1.00

Source: Author's calculation

Table A5.2: Overview of Dependent and Independent Variables, 2004-2012 (Panel Data)

Variable	2004-2006					2006-2008					2010-2012				
	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
lincome	7862	6.156	0.708	3.912	9.552	8252	6.457	0.753	3.638	10.874	8462	7.165	0.768	4.419	10.705
lexp	7864	5.909	0.623	3.932	9.258	8254	7.476	1.593	4.007	12.784	8462	8.595	0.843	5.081	12.945
hhland	7864	0.691	0.462	0	1	8254	0.690	0.462	0	1	8462	0.647	0.478	0	1
labour	7864	0.042	0.114	0	1	8254	0.042	0.115	0	1	8462	0.661	0.259	0	1
lfixedca	7858	5.171	4.334	0	16.725	8250	5.016	4.472	0	15.099	8460	9.362	1.685	0	14.408
skilled ratio	7864	0.100	0.207	0	1	8254	0.104	0.213	0	1	8462	0.128	0.235	0	1
occuphd_1	7864	0.026	0.160	0	1	8254	0.024	0.153	0	1	8462	0.017	0.131	0	1
occuphd_2	7864	0.017	0.128	0	1	8254	0.020	0.142	0	1	8462	0.030	0.171	0	1
occuphd_3	7864	0.025	0.156	0	1	8254	0.025	0.155	0	1	8462	0.028	0.164	0	1
occuphd_4	7864	0.010	0.099	0	1	8254	0.010	0.099	0	1	8462	0.016	0.127	0	1
occuphd_5	7864	0.030	0.171	0	1	8254	0.032	0.175	0	1	8462	0.095	0.293	0	1
occuphd_6	7864	0.034	0.181	0	1	8254	0.041	0.199	0	1	8462	0.098	0.298	0	1
occuphd_7	7864	0.087	0.283	0	1	8254	0.095	0.294	0	1	8462	0.113	0.317	0	1
occuphd_8	7864	0.020	0.139	0	1	8254	0.020	0.140	0	1	8462	0.038	0.191	0	1
occuphd_10	7864	0.002	0.049	0	1	8254	0.002	0.045	0	1	8462	0.000	0.022	0	1
occuphd_11	7864	0.134	0.341	0	1	8254	0.132	0.338	0	1	8462	0.143	0.350	0	1
hhsize	7864	4.308	1.708	1	20	8254	4.236	1.669	1	15	8462	3.976	1.584	1	15
gender	7864	0.749	0.434	0	1	8254	0.748	0.434	0	1	8462	0.753	0.431	0	1
marital	7864	0.808	0.394	0	1	8254	0.819	0.385	0	1	8462	0.817	0.387	0	1
agehead	7864	49.565	13.705	15	97	8254	49.712	13.364	16	97	8462	49.479	14.230	11	99
agehead^2	7864	2644.544	1487.010	225	9409	8254	2649.898	1445.754	256	9409	8462	2650.660	1522.928	121	9801

Variable	2004-2006					2006-2008					2010-2012				
	Obs	**Mean**	**Std. Dev.**	**Min**	**Max**	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
pelderly	7864	0.130	0.257	0	1	8254	0.127	0.252	0	1	8462	0.134	0.268	0	1
pchild	7864	0.226	0.211	0	0.8	8254	0.235	0.213	0	0.8	8462	0.226	0.213	0	1
pfemale	7864	0.518	0.198	0	1	8254	0.518	0.198	0	1	8462	0.518	0.202	0	1
ethnic	7864	0.846	0.361	0	1	8254	0.848	0.359	0	1	8462	0.815	0.388	0	1
saving	7864	0.073	0.260	0	1	8254	0.059	0.235	0	1	8462	0.070	0.255	0	1
headruraln	7864	0.108	0.310	0	1	8254	0.114	0.318	0	1	8462	0.109	0.311	0	1
headsalary	7864	0.117	0.322	0	1	8254	0.126	0.332	0	1	8462	0.168	0.374	0	1
remittance	7864	0.870	0.336	0	1	8254	0.862	0.345	0	1	8462	0.841	0.365	0	1
manufactu	7864	0.115	0.249	0	1	8254	0.122	0.257	0	1	8462	0.149	0.295	0	1
reg6	7864	450.433	268.400	101	823	8254	455.780	267.802	101	823	8462	3.301	1.809	1	6
urban	7864	0.246	0.431	0	1	8254	0.246	0.431	0	1	8462	0.268	0.443	0	1

Source: Author's calculation

Table A5.3: Results of Household Income Models for the Whole Country, 2004-2012 (Cross-Sectional Data)

Variables	2004 **lincome**	2006 **lincome**	2008 **lincome**	2010 **lincome**	2012 **lincome**
hhland	-0.144*** (0.0167)	-0.0303* (0.0170)	-0.000802 (0.0186)	-0.0672*** (0.0166)	-0.0216 (0.0166)
labour	0.208*** (0.0487)	0.0941** (0.0465)	-0.0266 (0.0522)	0.0791* (0.0435)	0.0784** (0.0363)
lfixedca	0.0307*** (0.00141)	0.0222*** (0.00139)	0.0261*** (0.00145)	0.143*** (0.00340)	0.185*** (0.00421)
skilled ratio	0.780*** (0.0324)	0.807*** (0.0307)	0.903*** (0.0315)	0.559*** (0.0276)	0.551*** (0.0272)
occuphd_1	0.282*** (0.0352)	0.364*** (0.0353)	0.344*** (0.0390)	0.389*** (0.0412)	0.307*** (0.0434)
occuphd_2	0.352*** (0.0447)	0.402*** (0.0429)	0.386*** (0.0444)	0.369*** (0.0355)	0.274*** (0.0343)
occuphd_3	0.217*** (0.0359)	0.262*** (0.0367)	0.229*** (0.0410)	0.226*** (0.0343)	0.131*** (0.0354)
occuphd_4	0.347*** (0.0518)	0.255*** (0.0557)	0.253*** (0.0586)	0.198*** (0.0461)	0.177*** (0.0436)
occuphd_5	0.146*** (0.0330)	0.111*** (0.0328)	0.180*** (0.0332)	0.182*** (0.0225)	0.165*** (0.0223)
occuphd_6	0.196*** (0.0326)	0.207*** (0.0292)	0.186*** (0.0291)	0.0923*** (0.0196)	0.0971*** (0.0193)
occuphd_7	0.0604*** (0.0224)	0.0502** (0.0214)	0.0665*** (0.0223)	0.111*** (0.0190)	0.132*** (0.0191)
occuphd_8	0.207*** (0.0384)	0.204*** (0.0388)	0.124*** (0.0385)	0.202*** (0.0289)	0.137*** (0.0294)
occuphd_10	0.308*** (0.101)	0.435*** (0.100)	0.438*** (0.122)	0.296** (0.146)	0.231 (0.167)

Variables	2004 **lincome**	2006 **lincome**	2008 **lincome**	2010 **lincome**	2012 **lincome**
occuphd_11	0.0897*** (0.0208)	0.0950*** (0.0214)	0.0715*** (0.0230)	0.0725*** (0.0217)	0.0652*** (0.0214)
hhsize	-0.0782*** (0.00373)	-0.0625*** (0.00401)	-0.0626*** (0.00437)	-0.0891*** (0.00424)	-0.0864*** (0.00430)
gender	-0.0633*** (0.0175)	-0.0316* (0.0174)	-0.0179 (0.0187)	-0.0439*** (0.0164)	-0.00628 (0.0165)
marital	0.147*** (0.0198)	0.0831*** (0.0197)	0.0620*** (0.0211)	0.0640*** (0.0186)	0.00312 (0.0186)
agehead	0.0146*** (0.00272)	0.00962*** (0.00302)	0.00346 (0.00322)	0.00394 (0.00264)	0.00435* (0.00258)
$agehead^2$	-0.000120*** (2.64e-05)	-9.84e-05*** (2.90e-05)	-4.60e-05 (3.07e-05)	-3.20e-05 (2.61e-05)	-3.95e-05 (2.48e-05)
pelderly	-0.189*** (0.0328)	-0.165*** (0.0324)	-0.258*** (0.0340)	-0.0291 (0.0426)	-0.170*** (0.0298)
pchild	-0.311*** (0.0308)	-0.452*** (0.0342)	-0.520*** (0.0371)	-0.375*** (0.0504)	-0.417*** (0.0339)
pfemale	-0.145*** (0.0293)	-0.133*** (0.0293)	-0.152*** (0.0313)	-0.0619** (0.0277)	-0.0966*** (0.0277)
ethnic	0.261*** (0.0181)	0.293*** (0.0181)	0.310*** (0.0198)	0.239*** (0.0173)	0.255*** (0.0175)
saving	0.294*** (0.0212)	0.291*** (0.0229)	0.345*** (0.0255)	0.303*** (0.0220)	0.211*** (0.0199)
headruraln	0.118*** (0.0223)	0.215*** (0.0211)	0.147*** (0.0235)	0.143*** (0.0226)	0.130*** (0.0232)
headsalary	-0.00780 (0.0222)	0.0306 (0.0214)	0.0450** (0.0227)	0.0262 (0.0196)	0.0395** (0.0196)

Variables	2004 **lincome**	2006 **lincome**	2008 **lincome**	2010 **lincome**	2012 **lincome**
remittance	-0.00140	-0.0280*	-0.0448***	-0.0121	0.0171
	(0.0151)	(0.0163)	(0.0164)	(0.0143)	(0.0144)
manufactu	0.118***	0.167***	0.115***	0.0916***	0.0943***
	(0.0240)	(0.0239)	(0.0249)	(0.0186)	(0.0194)
reg62	-0.0707***	-0.0608***	-0.110***	-0.144***	-0.0830***
	(0.0195)	(0.0198)	(0.0214)	(0.0194)	(0.0194)
reg63	-0.103***	-0.0995***	-0.108***	-0.133***	-0.122***
	(0.0161)	(0.0164)	(0.0176)	(0.0165)	(0.0163)
reg64	0.101***	0.0985***	0.0611**	0.0606**	0.0723***
	(0.0248)	(0.0252)	(0.0271)	(0.0239)	(0.0237)
reg65	0.487***	0.458***	0.485***	0.226***	0.210***
	(0.0209)	(0.0211)	(0.0227)	(0.0200)	(0.0199)
reg66	0.160***	0.174***	0.156***	0.0202	-0.0323*
	(0.0172)	(0.0172)	(0.0184)	(0.0170)	(0.0169)
urban	0.240***	0.271***	0.302***	0.156***	0.147***
	(0.0155)	(0.0159)	(0.0171)	(0.0142)	(0.0141)
Constant	5.465***	5.839***	6.331***	5.600***	5.530***
	(0.0794)	(0.0875)	(0.0946)	(0.0798)	(0.0792)
Observations	9,176	9,185	9,182	9,396	9,399
R-squared	0.470	0.474	0.459	0.578	0.559

Source: The author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.4: Results of Household Expenditure Models for the Whole Country, 2004-2012 (Cross-Sectional Data)

Variables	2004 **lexp**	2006 **lexp**	2008 **lexp**	2010 **lexp**	2012 **lexp**
hhland	-0.117*** (0.0145)	-0.0362** (0.0148)	5.77e-05 (0.0150)	-0.0227 (0.0192)	0.00747 (0.0183)
labour	0.326*** (0.0424)	0.180*** (0.0405)	0.290*** (0.0419)	0.116** (0.0502)	0.583*** (0.0400)
lfixedca	0.0195*** (0.00122)	0.0155*** (0.00121)	0.0154*** (0.00117)	0.195*** (0.00393)	0.251*** (0.00464)
skilled ratio	0.700*** (0.0282)	0.686*** (0.0267)	0.624*** (0.0252)	0.432*** (0.0319)	0.305*** (0.0300)
occuphd_1	0.248*** (0.0307)	0.308*** (0.0307)	0.326*** (0.0313)	0.328*** (0.0476)	0.289*** (0.0478)
occuphd_2	0.278*** (0.0389)	0.380*** (0.0373)	0.380*** (0.0357)	0.408*** (0.0410)	0.297*** (0.0378)
occuphd_3	0.186*** (0.0312)	0.259*** (0.0320)	0.183*** (0.0329)	0.263*** (0.0396)	0.191*** (0.0390)
occuphd_4	0.260*** (0.0451)	0.300*** (0.0484)	0.237*** (0.0470)	0.251*** (0.0533)	0.131*** (0.0480)
occuphd_5	0.106*** (0.0287)	0.108*** (0.0285)	0.147*** (0.0266)	0.166*** (0.0260)	0.138*** (0.0246)
occuphd_6	0.118*** (0.0284)	0.265*** (0.0254)	0.128*** (0.0233)	0.0551** (0.0227)	0.0595*** (0.0212)
occuphd_7	0.0457** (0.0195)	0.0594*** (0.0186)	0.0684*** (0.0179)	0.0895*** (0.0220)	0.0578*** (0.0210)
occuphd_8	0.161*** (0.0335)	0.177*** (0.0338)	0.0923*** (0.0309)	0.218*** (0.0334)	0.124*** (0.0324)
occuphd_10	0.234*** (0.0877)	0.383*** (0.0872)	0.397*** (0.0976)	0.552*** (0.168)	0.304* (0.183)

Variables	2004 **lexp**	2006 **lexp**	2008 **lexp**	2010 **lexp**	2012 **lexp**
occuphd_11	0.0985*** (0.0181)	0.117*** (0.0186)	0.0923*** (0.0185)	0.0983*** (0.0251)	0.0914*** (0.0235)
hhsize	-0.0739*** (0.00324)	-0.0645*** (0.00349)	-0.0737*** (0.00351)	-0.115*** (0.00490)	-0.126*** (0.00474)
gender	-0.0284* (0.0153)	0.0156 (0.0151)	-0.00878 (0.0150)	-0.0218 (0.0189)	0.00316 (0.0182)
marital	0.0918*** (0.0172)	0.0263 (0.0171)	0.0313* (0.0169)	0.0308 (0.0216)	-0.0109 (0.0205)
agehead	0.0186*** (0.00237)	0.0117*** (0.00263)	0.00829*** (0.00258)	0.00788*** (0.00305)	0.0131*** (0.00284)
$agehead^2$	-0.000165*** (2.30e-05)	-0.000120*** (2.52e-05)	-9.68e-05*** (2.46e-05)	-8.83e-05*** (3.02e-05)	-0.000137*** (2.73e-05)
pelderly	-0.115*** (0.0285)	-0.177*** (0.0282)	-0.126*** (0.0273)	0.0225 (0.0493)	-0.0735** (0.0328)
pchild	-0.282*** (0.0268)	-0.436*** (0.0298)	-0.386*** (0.0298)	-0.434*** (0.0583)	-0.361*** (0.0374)
pfemale	-0.114*** (0.0255)	-0.0600** (0.0255)	-0.0857*** (0.0251)	0.0218 (0.0320)	-0.0400 (0.0305)
ethnic	0.232*** (0.0158)	0.252*** (0.0158)	0.254*** (0.0159)	0.335*** (0.0200)	0.300*** (0.0193)
saving	0.264*** (0.0184)	0.249*** (0.0199)	0.290*** (0.0204)	0.305*** (0.0255)	0.193*** (0.0220)
headruraln	0.104*** (0.0194)	0.161*** (0.0183)	0.143*** (0.0189)	0.112*** (0.0261)	0.0669*** (0.0256)
headsalary	-0.0141 (0.0194)	0.0454** (0.0186)	0.0230 (0.0182)	-0.0624*** (0.0226)	-0.0393* (0.0215)
remittance	0.0411*** (0.0131)	0.0462*** (0.0142)	0.00182 (0.0132)	-0.00358 (0.0166)	0.0371** (0.0158)

Variables	2004 **lexp**	2006 **lexp**	2008 **lexp**	2010 **lexp**	2012 **lexp**
manufactu	0.0494** (0.0209)	0.0536*** (0.0207)	0.00919 (0.0199)	-0.0235 (0.0215)	0.00631 (0.0214)
reg62	-0.0292* (0.0170)	-0.0240 (0.0173)	-0.0717*** (0.0172)	-0.0607*** (0.0225)	-0.0228 (0.0214)
reg63	-0.0484*** (0.0140)	-0.0576*** (0.0142)	-0.0885*** (0.0141)	-0.120*** (0.0190)	-0.163*** (0.0179)
reg64	0.0922*** (0.0216)	0.0665*** (0.0219)	0.0687*** (0.0218)	-0.0307 (0.0276)	-0.0205 (0.0261)
reg65	0.440*** (0.0182)	0.419*** (0.0183)	0.370*** (0.0182)	0.0428* (0.0231)	0.00221 (0.0219)
reg66	0.133*** (0.0150)	0.149*** (0.0149)	0.0720*** (0.0148)	-0.127*** (0.0197)	-0.189*** (0.0186)
urban	0.273*** (0.0135)	0.287*** (0.0138)	0.287*** (0.0137)	0.164*** (0.0164)	0.191*** (0.0155)
Constant	5.174*** (0.0691)	5.533*** (0.0761)	8.663*** (0.0759)	6.591*** (0.0922)	6.242*** (0.0873)
Observations	9,179	9,186	9,184	9,396	9,399
R-squared	0.490	0.499	0.474	0.543	0.551

Source: Author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets.

Table A5.5: Results of Household Income Models for Urban Area, 2004-2012 (Cross-Sectional Data)

Variables	2004 **lincome**	2006 **lincome**	2008 **lincome**	2010 **lincome**	2012 **lincome**
hhland	-0.268*** (0.0335)	-0.0835** (0.0326)	-0.0991** (0.0388)	-0.0943*** (0.0299)	-0.0665** (0.0291)
labour	0.223** (0.107)	0.0645 (0.0953)	0.136 (0.109)	0.0476 (0.0804)	0.124** (0.0609)
lfixedca	0.0228*** (0.00270)	0.0217*** (0.00271)	0.0237*** (0.00297)	0.154*** (0.00684)	0.215*** (0.00829)
skilled ratio	0.657*** (0.0501)	0.702*** (0.0457)	0.807*** (0.0510)	0.468*** (0.0383)	0.415*** (0.0361)
occuphd_1	0.415*** (0.0650)	0.516*** (0.0615)	0.406*** (0.0687)	0.511*** (0.0611)	0.346*** (0.0660)
occuphd_2	0.351*** (0.0565)	0.417*** (0.0547)	0.365*** (0.0582)	0.386*** (0.0448)	0.258*** (0.0411)
occuphd_3	0.174*** (0.0548)	0.274*** (0.0549)	0.146** (0.0664)	0.172*** (0.0483)	0.105** (0.0465)
occuphd_4	0.230*** (0.0704)	0.307*** (0.0824)	0.217** (0.0905)	0.132* (0.0683)	0.108** (0.0548)
occuphd_5	0.123** (0.0481)	0.0429 (0.0483)	0.155*** (0.0538)	0.127*** (0.0350)	0.0900*** (0.0332)
occuphd_6	0.473*** (0.0961)	0.234*** (0.0837)	0.179** (0.0823)	0.0684 (0.0526)	0.130*** (0.0493)
occuphd_7	-0.0154 (0.0416)	0.0275 (0.0402)	0.0145 (0.0462)	0.0141 (0.0373)	0.0346 (0.0344)
occuphd_8	0.130** (0.0571)	0.123** (0.0570)	0.0535 (0.0613)	0.0974** (0.0435)	0.0619 (0.0430)
occuphd_10	0.331*** (0.121)	0.418*** (0.119)	0.368** (0.164)	0.323* (0.180)	0.187 (0.170)

Variables	2004 **lincome**	2006 **lincome**	2008 **lincome**	2010 **lincome**	2012 **lincome**
occuphd_11	0.159*** (0.0429)	0.169*** (0.0431)	0.170*** (0.0480)	0.0942** (0.0392)	0.103*** (0.0389)
hhsize	-0.0565*** (0.00781)	-0.0694*** (0.00813)	-0.0772*** (0.00936)	-0.0876*** (0.00802)	-0.101*** (0.00739)
gender	-0.0520* (0.0277)	-0.0345 (0.0272)	-0.0153 (0.0302)	-0.0186 (0.0238)	-0.0174 (0.0224)
marital	0.0759** (0.0350)	0.0660** (0.0334)	0.0662* (0.0375)	0.0604** (0.0291)	-0.00478 (0.0269)
agehead	0.00532 (0.00597)	0.00192 (0.00644)	-0.00502 (0.00672)	-0.000974 (0.00466)	-0.00297 (0.00429)
$agehead^2$	-7.20e-05 (5.56e-05)	-3.12e-05 (5.95e-05)	4.38e-05 (6.17e-05)	2.04e-05 (4.58e-05)	3.36e-05 (4.06e-05)
pelderly	-0.0163 (0.0687)	-0.111* (0.0649)	-0.221*** (0.0721)	-0.0379 (0.0774)	-0.0691 (0.0517)
pchild	-0.288*** (0.0654)	-0.251*** (0.0690)	-0.265*** (0.0789)	-0.340*** (0.0926)	-0.325*** (0.0544)
pfemale	-0.119** (0.0572)	-0.123** (0.0563)	-0.135** (0.0624)	-0.0519 (0.0472)	-0.0913** (0.0441)
ethnic	0.109** (0.0487)	0.148*** (0.0469)	0.222*** (0.0549)	0.185*** (0.0374)	0.116*** (0.0355)
saving	0.293*** (0.0332)	0.226*** (0.0344)	0.354*** (0.0406)	0.300*** (0.0302)	0.195*** (0.0254)
headruraln	0.125*** (0.0380)	0.220*** (0.0369)	0.164*** (0.0436)	0.182*** (0.0371)	0.188*** (0.0364)
headsalary	0.0116 (0.0400)	0.0345 (0.0392)	0.0723 (0.0453)	0.0150 (0.0354)	0.0799** (0.0338)
remittance	-0.0649** (0.0302)	-0.0810** (0.0330)	-0.0898*** (0.0319)	-0.0727*** (0.0247)	0.00859 (0.0244)

Variables	2004 **lincome**	2006 **lincome**	2008 **lincome**	2010 **lincome**	2012 **lincome**
manufactu	-0.00720	0.0694*	-0.0416	0.110***	0.108***
	(0.0388)	(0.0389)	(0.0431)	(0.0325)	(0.0303)
reg62	-0.189***	-0.169***	-0.231***	-0.136***	-0.133***
	(0.0405)	(0.0401)	(0.0446)	(0.0351)	(0.0334)
reg63	-0.129***	-0.104***	-0.167***	-0.135***	-0.117***
	(0.0331)	(0.0334)	(0.0369)	(0.0285)	(0.0268)
reg64	-0.100**	-0.151***	-0.105*	-0.0462	-0.0631*
	(0.0495)	(0.0489)	(0.0546)	(0.0401)	(0.0376)
reg65	0.457***	0.364***	0.391***	0.176***	0.163***
	(0.0356)	(0.0352)	(0.0388)	(0.0301)	(0.0280)
reg66	-0.0723**	-0.0457	-0.0547	-0.0615**	-0.0312
	(0.0367)	(0.0366)	(0.0405)	(0.0307)	(0.0290)
Constant	6.328***	6.624***	7.069***	5.922***	5.784***
	(0.181)	(0.192)	(0.203)	(0.148)	(0.140)
Observations	2,245	2,305	2,351	2,647	2,703
R-squared	0.432	0.408	0.387	0.547	0.544

Source: Author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets.

Table A5.6: Results of Household Expenditure Models for Urban Area, 2004-2012 (Cross-Sectional Data)

Variables	2004 **lexp**	2006 **lexp**	2008 **lexp**	2010 **lexp**	2012 **lexp**
hhland	-0.241*** (0.0314)	-0.117*** (0.0297)	-0.0661** (0.0321)	-0.0878** (0.0364)	-0.0467 (0.0345)
labour	0.371*** (0.1000)	0.242*** (0.0868)	0.205** (0.0899)	0.0285 (0.0977)	0.608*** (0.0722)
lfixedca	0.0128*** (0.00252)	0.0149*** (0.00247)	0.0121*** (0.00246)	0.227*** (0.00831)	0.296*** (0.00984)
skilled ratio	0.593*** (0.0469)	0.616*** (0.0417)	0.613*** (0.0421)	0.348*** (0.0466)	0.215*** (0.0428)
occuphd_1	0.323*** (0.0609)	0.412*** (0.0560)	0.390*** (0.0567)	0.373*** (0.0742)	0.379*** (0.0784)
occuphd_2	0.269*** (0.0529)	0.390*** (0.0499)	0.349*** (0.0481)	0.365*** (0.0544)	0.274*** (0.0488)
occuphd_3	0.137*** (0.0514)	0.283*** (0.0500)	0.110** (0.0548)	0.170*** (0.0587)	0.220*** (0.0552)
occuphd_4	0.165** (0.0660)	0.298*** (0.0751)	0.274*** (0.0748)	0.205** (0.0830)	0.0864 (0.0650)
occuphd_5	0.130*** (0.0451)	0.0875** (0.0440)	0.122*** (0.0445)	0.0802* (0.0425)	0.105*** (0.0394)
occuphd_6	0.321*** (0.0900)	0.287*** (0.0763)	0.0993 (0.0680)	0.00597 (0.0640)	0.0563 (0.0585)
occuphd_7	0.0204 (0.0390)	0.0358 (0.0366)	0.0290 (0.0382)	0.0180 (0.0453)	0.0307 (0.0408)
occuphd_8	0.146*** (0.0535)	0.137*** (0.0520)	0.0307 (0.0507)	0.156*** (0.0529)	0.0868* (0.0510)
occuphd_10	0.274** (0.113)	0.285*** (0.109)	0.337** (0.136)	0.454** (0.218)	0.427** (0.202)

Variables	2004 **lexp**	2006 **lexp**	2008 **lexp**	2010 **lexp**	2012 **lexp**
occuphd_11	0.130*** (0.0401)	0.202*** (0.0392)	0.151*** (0.0397)	0.0755 (0.0476)	0.158*** (0.0462)
hhsize	-0.0592*** (0.00731)	-0.0641*** (0.00741)	-0.0746*** (0.00773)	-0.114*** (0.00974)	-0.144*** (0.00877)
gender	-0.0474* (0.0260)	0.00692 (0.0248)	-0.00826 (0.0250)	-0.0114 (0.0290)	0.0252 (0.0266)
marital	0.0423 (0.0328)	-0.00290 (0.0305)	0.0348 (0.0310)	0.00739 (0.0353)	-0.0467 (0.0319)
agehead	0.00518 (0.00560)	0.00326 (0.00587)	-0.00696 (0.00556)	0.00211 (0.00567)	0.00664 (0.00510)
$agehead^2$	-6.41e-05 (5.21e-05)	-5.68e-05 (5.42e-05)	4.82e-05 (5.10e-05)	-4.48e-05 (5.56e-05)	-8.23e-05* (4.82e-05)
pelderly	0.00927 (0.0644)	-0.0513 (0.0591)	-0.179*** (0.0596)	-0.0276 (0.0940)	-0.0166 (0.0614)
pchild	-0.273*** (0.0612)	-0.223*** (0.0629)	-0.211*** (0.0652)	-0.523*** (0.112)	-0.236*** (0.0646)
pfemale	-0.0999* (0.0535)	-0.0864* (0.0513)	-0.0720 (0.0516)	0.00587 (0.0573)	-0.103** (0.0523)
ethnic	0.141*** (0.0456)	0.139*** (0.0427)	0.182*** (0.0454)	0.230*** (0.0455)	0.181*** (0.0422)
saving	0.272*** (0.0311)	0.220*** (0.0314)	0.315*** (0.0335)	0.351*** (0.0366)	0.152*** (0.0302)
headruraln	0.0847** (0.0355)	0.175*** (0.0337)	0.154*** (0.0360)	0.131*** (0.0451)	0.116*** (0.0433)
headsalary	0.00767 (0.0375)	0.0758** (0.0357)	0.0392 (0.0374)	-0.0417 (0.0430)	-0.00609 (0.0402)
remittance	0.000557 (0.0283)	0.0275 (0.0301)	-0.00679 (0.0264)	-0.0382 (0.0300)	0.0874*** (0.0289)

Variables	2004 **lexp**	2006 **lexp**	2008 **lexp**	2010 **lexp**	2012 **lexp**
manufactu	-0.0213	-0.00831	-0.0590*	0.00907	0.0439
	(0.0364)	(0.0355)	(0.0356)	(0.0394)	(0.0360)
reg62	-0.196***	-0.147***	-0.223***	-0.0813*	-0.0897**
	(0.0379)	(0.0366)	(0.0369)	(0.0426)	(0.0396)
reg63	-0.0991***	-0.0824***	-0.102***	-0.129***	-0.192***
	(0.0310)	(0.0304)	(0.0305)	(0.0347)	(0.0318)
reg64	-0.0687	-0.0898**	-0.102**	-0.0241	-0.0905**
	(0.0464)	(0.0445)	(0.0451)	(0.0487)	(0.0446)
reg65	0.357***	0.325***	0.323***	-0.0104	-0.0703**
	(0.0333)	(0.0321)	(0.0320)	(0.0366)	(0.0332)
reg66	-0.0880**	-0.0488	-0.0647*	-0.225***	-0.219***
	(0.0343)	(0.0334)	(0.0335)	(0.0373)	(0.0344)
Constant	6.109***	6.281***	9.461***	6.931***	6.349***
	(0.169)	(0.175)	(0.167)	(0.180)	(0.167)
Observations	2,247	2,305	2,352	2,647	2,703
R-squared	0.403	0.409	0.387	0.513	0.523

Source: Author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets.

Table A5.7: Results of Household Income Models for Rural Area, 2004-2012 (Cross-Sectional Data)

Variables	2004 **lincome**	2006 **lincome**	2008 **lincome**	2010 **lincome**	2012 **lincome**
hhland	-0.0862*** (0.0194)	0.0199 (0.0203)	0.0691*** (0.0214)	-0.0428** (0.0202)	0.0129 (0.0206)
labour	0.217*** (0.0540)	0.0971* (0.0531)	-0.0592 (0.0589)	0.0928* (0.0515)	0.0591 (0.0446)
lfixedca	0.0345*** (0.00164)	0.0222*** (0.00161)	0.0279*** (0.00166)	0.139*** (0.00394)	0.174*** (0.00493)
skilled ratio	0.854*** (0.0434)	0.873*** (0.0425)	0.926*** (0.0412)	0.625*** (0.0394)	0.646*** (0.0392)
occuphd_1	0.234*** (0.0417)	0.282*** (0.0432)	0.301*** (0.0478)	0.271*** (0.0558)	0.260*** (0.0565)
occuphd_2	0.285*** (0.0904)	0.342*** (0.0807)	0.388*** (0.0923)	0.319*** (0.0689)	0.268*** (0.0693)
occuphd_3	0.267*** (0.0485)	0.256*** (0.0507)	0.305*** (0.0537)	0.269*** (0.0496)	0.145*** (0.0525)
occuphd_4	0.518*** (0.0793)	0.225*** (0.0758)	0.321*** (0.0785)	0.261*** (0.0620)	0.247*** (0.0671)
occuphd_5	0.160*** (0.0456)	0.177*** (0.0448)	0.205*** (0.0428)	0.219*** (0.0299)	0.207*** (0.0299)
occuphd_6	0.165*** (0.0342)	0.202*** (0.0308)	0.192*** (0.0305)	0.0948*** (0.0215)	0.0947*** (0.0215)
occuphd_7	0.0914*** (0.0265)	0.0623** (0.0252)	0.0909*** (0.0252)	0.147*** (0.0223)	0.165*** (0.0229)
occuphd_8	0.265*** (0.0528)	0.265*** (0.0538)	0.177*** (0.0506)	0.271*** (0.0392)	0.183*** (0.0394)
occuphd_10	0.222 (0.188)	0.532*** (0.192)	0.540*** (0.190)	0.234 (0.230)	0.321 (0.364)

Variables	2004 **lincome**	2006 **lincome**	2008 **lincome**	2010 **lincome**	2012 **lincome**
occuphd_11	0.0359 (0.0242)	0.0539** (0.0253)	0.000853 (0.0271)	0.0482* (0.0269)	0.0336 (0.0266)
hhsize	-0.0858*** (0.00420)	-0.0610*** (0.00460)	-0.0598*** (0.00491)	-0.0893*** (0.00502)	-0.0824*** (0.00526)
gender	-0.0667*** (0.0227)	-0.0345 (0.0228)	-0.0273 (0.0242)	-0.0519** (0.0221)	0.00378 (0.0229)
marital	0.164*** (0.0243)	0.0881*** (0.0247)	0.0635** (0.0261)	0.0646*** (0.0242)	0.00264 (0.0249)
agehead	0.0141*** (0.00304)	0.0102*** (0.00343)	0.00387 (0.00367)	0.00522 (0.00320)	0.00710** (0.00318)
agehead^2	-0.000105*** (2.98e-05)	-0.000103*** (3.33e-05)	-4.81e-05 (3.54e-05)	-4.71e-05 (3.18e-05)	-6.74e-05** (3.07e-05)
pelderly	-0.217*** (0.0369)	-0.170*** (0.0373)	-0.259*** (0.0384)	-0.0185 (0.0509)	-0.196*** (0.0361)
pchild	-0.301*** (0.0345)	-0.508*** (0.0393)	-0.590*** (0.0417)	-0.391*** (0.0599)	-0.453*** (0.0424)
pfemale	-0.149*** (0.0338)	-0.132*** (0.0342)	-0.148*** (0.0360)	-0.0667** (0.0340)	-0.0899*** (0.0347)
ethnic	0.285*** (0.0197)	0.317*** (0.0200)	0.324*** (0.0214)	0.247*** (0.0201)	0.299*** (0.0206)
saving	0.291*** (0.0273)	0.337*** (0.0306)	0.315*** (0.0331)	0.293*** (0.0314)	0.216*** (0.0294)
headruraln	0.137*** (0.0297)	0.242*** (0.0276)	0.187*** (0.0308)	0.117*** (0.0302)	0.125*** (0.0317)
headsalary	-0.0122 (0.0282)	0.0425 (0.0268)	0.0637** (0.0275)	0.0564** (0.0244)	0.0480* (0.0248)
remittance	0.0214 (0.0172)	-0.0136 (0.0187)	-0.0238 (0.0190)	0.0111 (0.0176)	0.0181 (0.0176)

Variables	2004 **lincome**	2006 **lincome**	2008 **lincome**	2010 **lincome**	2012 **lincome**
manufactu	0.197*** (0.0302)	0.212*** (0.0300)	0.207*** (0.0306)	0.0863*** (0.0226)	0.0933*** (0.0247)
reg62	-0.0123 (0.0221)	-0.0142 (0.0229)	-0.0534** (0.0244)	-0.130*** (0.0235)	-0.0495** (0.0237)
reg63	-0.0831*** (0.0183)	-0.0900*** (0.0187)	-0.0692*** (0.0199)	-0.125*** (0.0201)	-0.112*** (0.0202)
reg64	0.203*** (0.0286)	0.202*** (0.0295)	0.156*** (0.0313)	0.117*** (0.0297)	0.154*** (0.0298)
reg65	0.475*** (0.0263)	0.491*** (0.0269)	0.530*** (0.0290)	0.245*** (0.0269)	0.245*** (0.0275)
reg66	0.254*** (0.0195)	0.247*** (0.0196)	0.238*** (0.0207)	0.0563*** (0.0206)	-0.0188 (0.0208)
Constant	5.316*** (0.0881)	5.710*** (0.0990)	6.172*** (0.107)	5.547*** (0.0960)	5.462*** (0.0970)
Observations	6,931	6,880	6,831	6,749	6,696
R-squared	0.378	0.379	0.380	0.499	0.484

Source: Author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets.

Table A5.8: Results of Household Expenditure Models for Rural Area, 2004-2012 (Cross-Sectional Data)

Variables	2004 **lexp**	2006 **lexp**	2008 **lexp**	2010 **lexp**	2012 **lexp**
hhland	-0.0576***	0.0241	0.0489***	0.00977	0.0490**
	(0.0164)	(0.0174)	(0.0170)	(0.0230)	(0.0222)
labour	0.337***	0.166***	0.341***	0.149**	0.576***
	(0.0459)	(0.0453)	(0.0467)	(0.0585)	(0.0481)
lfixedca	0.0226***	0.0155***	0.0169***	0.184***	0.236***
	(0.00139)	(0.00138)	(0.00132)	(0.00448)	(0.00531)
skilled ratio	0.758***	0.727***	0.623***	0.480***	0.346***
	(0.0369)	(0.0363)	(0.0327)	(0.0448)	(0.0423)
occuphd_1	0.230***	0.253***	0.285***	0.230***	0.201***
	(0.0354)	(0.0369)	(0.0379)	(0.0635)	(0.0609)
occuphd_2	0.230***	0.276***	0.349***	0.329***	0.316***
	(0.0767)	(0.0690)	(0.0733)	(0.0784)	(0.0747)
occuphd_3	0.245***	0.238***	0.245***	0.320***	0.160***
	(0.0412)	(0.0434)	(0.0426)	(0.0564)	(0.0566)
occuphd_4	0.402***	0.318***	0.228***	0.259***	0.186**
	(0.0673)	(0.0648)	(0.0623)	(0.0705)	(0.0723)
occuphd_5	0.0810**	0.131***	0.165***	0.224***	0.165***
	(0.0387)	(0.0383)	(0.0339)	(0.0340)	(0.0322)
occuphd_6	0.0970***	0.263***	0.137***	0.0608**	0.0566**
	(0.0290)	(0.0263)	(0.0242)	(0.0244)	(0.0231)
occuphd_7	0.0594***	0.0747***	0.0896***	0.113***	0.0743***
	(0.0225)	(0.0215)	(0.0200)	(0.0254)	(0.0247)
occuphd_8	0.171***	0.200***	0.143***	0.235***	0.152***
	(0.0448)	(0.0460)	(0.0401)	(0.0446)	(0.0425)
occuphd_10	0.133	0.658***	0.479***	0.621**	-0.255
	(0.160)	(0.164)	(0.151)	(0.261)	(0.392)

Variables	2004 **lexp**	2006 **lexp**	2008 **lexp**	2010 **lexp**	2012 **lexp**
occuphd_11	0.0651*** (0.0205)	0.0744*** (0.0216)	0.0519** (0.0215)	0.103*** (0.0306)	0.0619** (0.0287)
hhsize	-0.0803*** (0.00357)	-0.0655*** (0.00393)	-0.0749*** (0.00390)	-0.115*** (0.00572)	-0.120*** (0.00567)
gender	-0.0182 (0.0192)	0.0186 (0.0195)	-0.0145 (0.0192)	-0.0199 (0.0252)	-0.0122 (0.0247)
marital	0.0992*** (0.0206)	0.0332 (0.0211)	0.0330 (0.0207)	0.0383 (0.0276)	0.0117 (0.0268)
agehead	0.0202*** (0.00258)	0.0122*** (0.00293)	0.0116*** (0.00291)	0.00944*** (0.00364)	0.0150*** (0.00343)
$agehead^2$	-0.000174*** (2.53e-05)	-0.000121*** (2.85e-05)	-0.000126*** (2.81e-05)	-0.000101*** (3.62e-05)	-0.000155*** (3.31e-05)
pelderly	-0.126*** (0.0313)	-0.207*** (0.0319)	-0.0996*** (0.0304)	0.0483 (0.0579)	-0.0860** (0.0390)
pchild	-0.270*** (0.0293)	-0.495*** (0.0336)	-0.431*** (0.0331)	-0.404*** (0.0682)	-0.421*** (0.0457)
pfemale	-0.109*** (0.0287)	-0.0433 (0.0292)	-0.0833*** (0.0286)	0.0333 (0.0386)	-0.00962 (0.0374)
ethnic	0.254*** (0.0167)	0.274*** (0.0171)	0.275*** (0.0170)	0.356*** (0.0229)	0.338*** (0.0222)
saving	0.250*** (0.0232)	0.264*** (0.0261)	0.263*** (0.0262)	0.243*** (0.0357)	0.207*** (0.0317)
headruraln	0.140*** (0.0252)	0.188*** (0.0236)	0.173*** (0.0244)	0.105*** (0.0343)	0.0560 (0.0342)
headsalary	-0.0333 (0.0239)	0.0398* (0.0229)	0.0274 (0.0219)	-0.0742*** (0.0277)	-0.0422 (0.0268)
remittance	0.0545*** (0.0146)	0.0482*** (0.0160)	0.00617 (0.0151)	0.0120 (0.0200)	0.0140 (0.0190)

Variables	2004 **lexp**	2006 **lexp**	2008 **lexp**	2010 **lexp**	2012 **lexp**
manufactu	0.0974*** (0.0257)	0.0811*** (0.0257)	0.0489** (0.0242)	-0.0302 (0.0258)	-0.00790 (0.0266)
reg62	0.0350* (0.0188)	0.0264 (0.0195)	-0.00790 (0.0193)	-0.0384 (0.0267)	0.00904 (0.0256)
reg63	-0.0245 (0.0155)	-0.0411** (0.0160)	-0.0691*** (0.0157)	-0.108*** (0.0229)	-0.147*** (0.0217)
reg64	0.175*** (0.0242)	0.139*** (0.0252)	0.168*** (0.0248)	-0.0206 (0.0338)	0.0220 (0.0321)
reg65	0.464*** (0.0223)	0.457*** (0.0230)	0.390*** (0.0230)	0.0668** (0.0306)	0.0581* (0.0297)
reg66	0.221*** (0.0166)	0.220*** (0.0167)	0.131*** (0.0164)	-0.0842*** (0.0235)	-0.166*** (0.0224)
Constant	4.985*** (0.0748)	5.408*** (0.0846)	8.479*** (0.0849)	6.515*** (0.109)	6.233*** (0.105)
Observations	6,932	6,881	6,832	6,749	6,696
R-squared	0.383	0.392	0.382	0.480	0.494

Source: Author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets.

Table A5.9: Results of Household Poverty Status Models for the Whole Country (MOLISA), 2004-2012 (Cross-Sectional Data)

Variables	2004 **MOLISA**	2006 **MOLISA**	2008 **MOLISA**	2010 **MOLISA**	2012 **MOLISA**
hhland	0.001 [0.001]	-0.167*** [0.001]	-0.066*** [0.001]	-0.212*** [0.001]	-0.350*** [0.001]
labour	-0.343*** [0.003]	-0.182*** [0.003]	-0.055*** [0.003]	-0.103*** [0.003]	-0.046*** [0.003]
lfixedcap	-0.073*** [0.000]	-0.057*** [0.000]	-0.048*** [0.000]	-0.241*** [0.000]	-0.345*** [0.000]
skilled ratio	-1.959*** [0.006]	-1.422*** [0.004]	-1.908*** [0.004]	-1.044*** [0.004]	-1.204*** [0.004]
occuphd_1	-0.742*** [0.006]	-0.648*** [0.004]	-0.642*** [0.004]	-1.055*** [0.009]	-0.607*** [0.006]
occuphd_2	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]
occuphd_ 3	-0.384*** [0.005]	-0.559*** [0.004]	0 [0.000]	-1.335*** [0.011]	0 [0.000]
occuphd_4	-0.888*** [0.009]	-1.217*** [0.010]	-1.174*** [0.009]	-0.392*** [0.005]	-1.420*** [0.010]
occuphd_5	-0.295*** [0.004]	-0.104*** [0.003]	-0.249*** [0.002]	-0.325*** [0.002]	-0.277*** [0.002]
occuphd_6	-0.400*** [0.004]	-0.337*** [0.002]	-0.359*** [0.002]	-0.102*** [0.002]	-0.192*** [0.001]
occuphd_7	-0.291*** [0.002]	-0.205*** [0.002]	-0.350*** [0.002]	-0.234*** [0.002]	-0.404*** [0.002]
occuphd_8	-1.304*** [0.011]	-0.652*** [0.005]	-0.482*** [0.004]	-0.744*** [0.004]	-0.360*** [0.003]
occuphd_10	-0.199*** [0.013]	0 [0.000]	-0.886*** [0.016]	0 [0.000]	0 [0.000]

Variables	2004 **MOLISA**	2006 **MOLISA**	2008 **MOLISA**	2010 **MOLISA**	2012 **MOLISA**
occuphd_11	-0.042*** [0.002]	-0.177*** [0.002]	-0.046*** [0.001]	0.103*** [0.002]	-0.043*** [0.002]
hhsize	0.032*** [0.000]	0.011*** [0.000]	0.005*** [0.000]	0.048*** [0.000]	0.058*** [0.000]
gender	0.084*** [0.002]	0.005*** [0.001]	-0.008*** [0.001]	-0.033*** [0.001]	-0.027*** [0.001]
marital	-0.516*** [0.002]	-0.410*** [0.001]	-0.358*** [0.001]	-0.242*** [0.001]	-0.224*** [0.001]
age head	0.021*** [0.000]	0.016*** [0.000]	0.008*** [0.000]	0.009*** [0.000]	-0.001*** [0.000]
agehead^2	-0.000*** [0.000]	-0.000*** [0.000]	-0.000*** [0.000]	-0.000*** [0.000]	-0.000*** [0.000]
pelderly	0.148*** [0.003]	0.124*** [0.003]	0.089*** [0.003]	0.272*** [0.003]	0.437*** [0.003]
pchild	0.395*** [0.003]	0.656*** [0.003]	0.704*** [0.003]	0.428*** [0.003]	0.650*** [0.003]
pfemale	-0.030*** [0.002]	0.202*** [0.002]	-0.006*** [0.002]	-0.132*** [0.002]	-0.078*** [0.002]
ethnic	-0.466*** [0.001]	-0.504*** [0.001]	-0.524*** [0.001]	-0.615*** [0.001]	-0.596*** [0.001]
saving	-1.032*** [0.004]	-1.012*** [0.004]	-0.839*** [0.003]	-0.403*** [0.003]	-0.863*** [0.004]
headruraln	-0.276*** [0.002]	-0.409*** [0.002]	-0.039*** [0.002]	0.014*** [0.002]	-0.176*** [0.002]
headsalary	0.183*** [0.002]	-0.126*** [0.002]	0.239*** [0.002]	0.117*** [0.002]	-0.075*** [0.002]
remittance	-0.014*** [0.001]	0.092*** [0.001]	0.060*** [0.001]	0.022*** [0.001]	0.028*** [0.001]

Variables	2004 **MOLISA**	2006 **MOLISA**	2008 **MOLISA**	2010 **MOLISA**	2012 **MOLISA**
manufactu	-0.166*** [0.002]	-0.115*** [0.002]	-0.017*** [0.002]	0.053*** [0.001]	0.008*** [0.002]
reg62	0.032*** [0.002]	0.244*** [0.002]	0.322*** [0.002]	0.275*** [0.002]	0.197*** [0.002]
reg63	0.210*** [0.001]	0.388*** [0.001]	0.449*** [0.001]	0.185*** [0.001]	0.268*** [0.001]
reg64	0.098*** [0.002]	0.232*** [0.002]	0.153*** [0.002]	0.107*** [0.002]	0.020*** [0.002]
reg65	-0.191*** [0.002]	-0.304*** [0.002]	-0.109*** [0.002]	0.092*** [0.002]	-0.061*** [0.002]
reg66	-0.039*** [0.002]	-0.010*** [0.001]	0.030*** [0.001]	-0.011*** [0.002]	0.079*** [0.001]
urban	-0.221*** [0.002]	-0.301*** [0.001]	-0.405*** [0.001]	-0.365*** [0.001]	-0.481*** [0.001]
Constant	-0.586*** [0.007]	-0.418*** [0.006]	-0.409*** [0.006]	1.435*** [0.006]	2.857*** [0.006]
Observations	9017	8980	8772	9093	8844

Source: Author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets.

Table A5.10: Marginal Effects of Household Poverty Status Regression (MOLISA) for the Whole Country, 2004-2012

Variables	2004 **probit_mfx MOLISA**	2006 **probit_mfx MOLISA**	2008 **probit_mfx MOLISA**	2010 **probit_mfx MOLISA**	2012 **probit_mfx MOLISA**
hhland	0.000133 -0.000151	-0.0276*** -0.000219	-0.0107*** -0.000204	-0.0235*** -0.000162	-0.0421*** -0.000182
labour	-0.0355*** -0.000312	-0.0288*** -0.000447	-0.00881*** -0.000446	-0.0109*** -0.000307	-0.00505*** -0.000295
lfixedca	-0.00756*** -0.0000145	-0.00904*** -0.0000169	-0.00773*** -0.0000162	-0.0256*** -0.0000348	-0.0381*** -0.0000486
skilled ratio	-0.203*** -0.000532	-0.226*** -0.000551	-0.305*** -0.000548	-0.111*** -0.000373	-0.133*** -0.000411
occuphd_1	-0.0431*** -0.000159	-0.0667*** -0.000249	-0.0669*** -0.000244	-0.0501*** -0.000126	-0.0418*** -0.000226
occuphd_3	-0.0294*** -0.00029	-0.0611*** -0.000301		-0.0548*** -0.0000945	
occuphd_4	-0.0455*** -0.000166	-0.0841*** -0.000169	-0.0843*** -0.00017	-0.0305*** -0.000282	-0.0563*** -0.0000834
occuphd_5	-0.0242*** -0.000252	-0.0155*** -0.000388	-0.0340*** -0.000271	-0.0280*** -0.00015	-0.0257*** -0.000168
occuphd_6	-0.0303*** -0.000186	-0.0430*** -0.000232	-0.0458*** -0.000207	-0.0102*** -0.000146	-0.0188*** -0.000128
occuphd_7	-0.0247*** -0.000159	-0.0290*** -0.000207	-0.0463*** -0.000168	-0.0216*** -0.000126	-0.0354*** -0.000115
occuphd_8	-0.0515*** -0.0000959	-0.0667*** -0.000259	-0.0562*** -0.000282	-0.0461*** -0.000116	-0.0306*** -0.000177
occuphd_10	-0.0175*** -0.000947		-0.0759*** -0.000517		

Variables	2004 **probit_mfx** **MOLISA**	2006 **probit_mfx** **MOLISA**	2008 **probit_mfx** **MOLISA**	2010 **probit_mfx** **MOLISA**	2012 **probit_mfx** **MOLISA**
occuphd_11	-0.00425*** -0.000165	-0.0258*** -0.000202	-0.00722*** -0.000226	0.0116*** -0.000195	-0.00463*** -0.000169
hhsize	0.00332*** -0.0000342	0.00169*** -0.0000464	0.000803*** -0.0000464	0.00513*** -0.000036	0.00637*** -0.0000389
gender	0.00843*** -0.000162	0.000770*** -0.000219	-0.00133*** -0.000216	-0.00361*** -0.000159	-0.00303*** -0.000165
marital	-0.0692*** -0.000291	-0.0769*** -0.000316	-0.0661*** -0.000295	-0.0291*** -0.000202	-0.0275*** -0.000204
agehead	0.00220*** -0.0000259	0.00252*** -0.0000348	0.00122*** -0.0000343	0.00101*** -0.0000207	-0.000136*** -0.0000215
agehead^2	-0.0000212*** -0.00000242	-0.0000268*** -0.00000334	-0.0000116*** -0.000000327	-0.000142*** -0.0000202	-0.000433*** -0.0000203
pelderly	0.0153*** -0.000342	0.0196*** -0.000476	0.0142*** -0.000467	0.0289*** -0.000323	0.0484*** -0.000307
pchild	0.0409*** -0.000344	0.104*** -0.000537	0.113*** -0.000518	0.0455*** -0.00037	0.0719*** -0.000368
pfemale	-0.00309*** -0.000257	0.0321*** -0.000333	-0.00102** -0.000326	-0.0140*** -0.000236	-0.00864*** -0.00024
ethnic	-0.0641*** -0.00026	-0.102*** -0.000304	-0.108*** -0.00031	-0.0928*** -0.000249	-0.0917*** -0.000253
saving	-0.0536*** -0.0000958	-0.0872*** -0.00013	-0.0802*** -0.000148	-0.0323*** -0.000171	-0.0544*** -0.000109
headruraln	-0.0239*** -0.000169	-0.0526*** -0.000181	-0.00617*** -0.000263	0.00152*** -0.00023	-0.0175*** -0.000205
headsalary	0.0213*** -0.000264	-0.0188*** -0.000231	0.0431*** -0.00031	0.0132*** -0.000197	-0.00792*** -0.000168

Variables	2004 **probit_mfx** **MOLISA**	2006 **probit_mfx** **MOLISA**	2008 **probit_mfx** **MOLISA**	2010 **probit_mfx** **MOLISA**	2012 **probit_mfx** **MOLISA**
remittance	-0.00151***	0.0139***	0.00932***	0.00227***	0.00300***
	-0.000145	-0.000189	-0.000171	-0.000121	-0.000126
manufactu	-0.0172***	-0.0182***	-0.00273***	0.00567***	0.00860***
	-0.000238	-0.000293	-0.00027	-0.000155	-0.000175
reg62	0.00340***	0.0436***	0.0604***	0.0345***	0.0244***
	-0.000201	-0.000304	-0.000327	-0.00024	-0.000223
reg63	0.0239***	0.0707***	0.0844***	0.0215***	0.0334***
	-0.000177	-0.000248	-0.000255	-0.000178	-0.00019
reg64	0.0109***	0.0422***	0.0268***	0.0123***	0.00224***
	-0.000273	-0.000394	-0.00037	-0.000261	-0.000238
reg65	-0.0176***	-0.0414***	-0.0165***	0.0103***	-0.00649***
	-0.000164	-0.000201	-0.000236	-0.000204	-0.000185
reg66	-0.00398***	-0.00163***	0.00489***	-0.00119***	0.00903***
	-0.000156	-0.000208	-0.000214	-0.000162	-0.000175
urban	-0.0209***	-0.0434***	-0.0570***	-0.0344***	-0.0451***
	-0.000132	-0.000166	-0.000156	-0.000113	-0.000111
N	9017	8980	8772	9093	8844

Source: The author's calculation

Table A5.11: Results of Household Poverty Status Models for the Whole Country (GSO), 2004-2012 (Cross-Sectional Data)

Variables	2004 **GSO**	2006 **GSO**	2008 **GSO**	2010 **GSO**	2012 **GSO**
hhland	0.201*** [0.068]	-0.062 [0.071]	-0.091 [0.074]	0.073 [0.064]	0.01 [0.081]
labour	-0.541** [0.211]	-0.132 [0.201]	-0.474* [0.248]	-0.163 [0.164]	-0.989*** [0.238]
lfixedca	-0.065*** [0.006]	-0.056*** [0.005]	-0.058*** [0.006]	-0.384*** [0.014]	-0.263*** [0.016]
skilled ratio	-2.933*** [0.338]	-3.116*** [0.349]	-3.044*** [0.353]	-1.333*** [0.187]	-1.322*** [0.261]
occuphd_1	-1.067*** [0.225]	-0.720*** [0.247]	-0.978*** [0.285]	-0.432** [0.212]	0 [0.000]
occuphd_2	0 [0.000]	0 [0.000]	-0.568 [0.593]	0 [0.000]	0 [0.000]
occuphd_3	-0.933*** [0.299]	-1.090** [0.435]	-0.723** [0.343]	-0.933*** [0.297]	-0.498 [0.366]
occuphd_4	-0.896** [0.413]	0 [0.000]	-0.314 [0.336]	-0.344 [0.220]	-0.950** [0.455]
occuphd_5	-0.445** [0.209]	-0.471** [0.206]	-0.575** [0.226]	-0.374*** [0.105]	-0.975*** [0.214]
occuphd_ 6	-0.213* [0.129]	-0.746*** [0.143]	-0.368*** [0.122]	-0.216*** [0.068]	-0.210** [0.083]
occuphd_7	-0.166* [0.095]	-0.296*** [0.095]	-0.355*** [0.097]	-0.410*** [0.069]	-0.745*** [0.121]
occuphd_8	-0.589** [0.248]	-0.730** [0.292]	-0.499* [0.269]	-0.568*** [0.140]	-0.524** [0.213]
occuphd_10	-0.645 [0.660]	0 [0.000]	-0.387 [0.765]	0 [0.000]	0 [0.000]

Variables	2004 **GSO**	2006 **GSO**	2008 **GSO**	2010 **GSO**	2012 **GSO**
occuphd_11	-0.018 [0.079]	-0.190** [0.082]	-0.007 [0.085]	-0.219*** [0.081]	-0.124 [0.090]
hhsize	0.241*** [0.014]	0.201*** [0.015]	0.210*** [0.015]	0.276*** [0.016]	0.123*** [0.018]
gender	0.039 [0.078]	0.002 [0.080]	0.053 [0.082]	0.022 [0.070]	0.144 [0.090]
marital	-0.329*** [0.082]	-0.175** [0.084]	-0.202** [0.087]	-0.06 [0.076]	-0.1 [0.092]
agehead	-0.055*** [0.010]	-0.025** [0.011]	-0.026** [0.011]	-0.031*** [0.009]	-0.033*** [0.010]
$agehead^2$	0.000*** [0.000]	0.000** [0.000]	0.000** [0.000]	0.000*** [0.000]	0.000*** [0.000]
pelderly	0.437*** [0.131]	0.534*** [0.130]	0.318** [0.141]	0.087 [0.171]	0.626*** [0.126]
pchild	0.454*** [0.112]	1.130*** [0.133]	1.196*** [0.136]	1.120*** [0.189]	0.813*** [0.150]
pfemale	0.296*** [0.114]	0.154 [0.116]	-0.015 [0.122]	-0.106 [0.106]	0.159 [0.126]
ethnic	-0.789*** [0.057]	-0.797*** [0.058]	-0.816*** [0.062]	-0.842*** [0.055]	-0.486*** [0.065]
saving	-1.011*** [0.177]	-0.669*** [0.159]	-0.878*** [0.194]	-0.564*** [0.140]	-0.777*** [0.221]
headruraln	-0.221* [0.120]	-0.635*** [0.120]	-0.562*** [0.142]	-0.280*** [0.104]	-0.320* [0.180]
headsalary	0.294*** [0.095]	-0.107 [0.096]	-0.081 [0.098]	-0.023 [0.075]	-0.215** [0.107]
remittance	-0.061 [0.054]	-0.123** [0.060]	-0.024 [0.059]	0.015 [0.054]	-0.140** [0.060]

Variables	2004 **GSO**	2006 **GSO**	2008 **GSO**	2010 **GSO**	2012 **GSO**
manufactu	-0.621*** [0.124]	-0.420*** [0.115]	-0.224** [0.113]	0.116* [0.068]	-0.252** [0.102]
reg62	0.261*** [0.075]	0.233*** [0.078]	0.318*** [0.085]	-0.033 [0.072]	0.131 [0.089]
reg63	0.327*** [0.064]	0.284*** [0.066]	0.284*** [0.072]	-0.218*** [0.063]	0.057 [0.082]
reg64	0.14 [0.090]	0.105 [0.095]	0.04 [0.104]	-0.249*** [0.088]	-0.116 [0.107]
reg65	-0.924*** [0.124]	-0.776*** [0.122]	-0.762*** [0.141]	-0.442*** [0.089]	-0.210* [0.121]
reg66	-0.146** [0.072]	-0.271*** [0.075]	0.017 [0.077]	-0.275*** [0.066]	-0.074 [0.085]
urban/rural	-0.752*** [0.081]	-0.561*** [0.080]	-0.641*** [0.085]	-0.330*** [0.061]	-0.069 [0.074]
Constant	0.424 [0.282]	-0.429 [0.315]	-0.547 [0.333]	3.164*** [0.303]	1.815*** [0.323]
Observations	9017	8891	9184	9093	8941

Source: The author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.12: Results of Household Poverty Status Models for Urban Area (MOLISA), 2004-2012 (Cross-Sectional Data)

Variables	2004 **MOLISA**	2006 **MOLISA**	2008 **MOLISA**	2010 **MOLISA**	2012 **MOLISA**
hhland	0.117 [0.150]	-0.151 [0.140]	0.135 [0.145]	-0.203 [0.164]	-0.127 [0.203]
labour	-0.052 [0.353]	-0.293 [0.328]	0.915*** [0.332]	-0.34 [0.364]	0.437 [0.379]
lfixedca	-0.056*** [0.014]	-0.074*** [0.013]	-0.062*** [0.013]	-0.216*** [0.026]	-0.535*** [0.053]
skilled ratio	-1.911*** [0.455]	-1.196*** [0.286]	-1.396*** [0.309]	-1.111*** [0.334]	-0.763** [0.373]
occuphd_1	0 [0.000]	-0.511 [0.443]	-0.543 [0.441]	0 [0.000]	0 [0.000]
occuphd_2	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]
occuphd_3	-0.119 [0.355]	-0.706* [0.415]	0 [0.000]	0 [0.000]	0 [0.000]
occuphd_4	0 [0.000]	0 [0.000]	0 [0.000]	-0.016 [0.460]	-0.303 [0.522]
occuphd_5	-0.294 [0.281]	0.151 [0.200]	-0.141 [0.209]	-0.074 [0.188]	-0.263 [0.219]
occuphd_6	0 [0.000]	-0.716* [0.371]	-0.326 [0.305]	0.177 [0.243]	-0.39 [0.297]
occuphd_7	-0.172 [0.209]	-0.098 [0.175]	-0.011 [0.167]	-0.164 [0.196]	-0.664** [0.272]
occuphd_8	0 [0.000]	-0.872* [0.462]	-0.191 [0.289]	-0.357 [0.290]	0.236 [0.276]
occuphd_10	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]

Variables	2004 **MOLISA**	2006 **MOLISA**	2008 **MOLISA**	2010 **MOLISA**	2012 **MOLISA**
occuphd_11	0.075 [0.184]	-0.674*** [0.175]	-0.340* [0.182]	-0.088 [0.193]	-0.227 [0.235]
hhsize	0.035 [0.037]	0.038 [0.033]	0.049 [0.035]	0.07 [0.043]	0.107** [0.046]
gender	0.112 [0.154]	-0.024 [0.129]	-0.079 [0.127]	0.038 [0.154]	-0.208 [0.165]
marital	-0.511*** [0.172]	-0.324** [0.143]	-0.455*** [0.139]	-0.336** [0.162]	0.123 [0.180]
agehead	-0.003 [0.030]	0.102*** [0.033]	0.001 [0.028]	0.029 [0.025]	0.03 [0.028]
$agehead^2$	0 [0.000]	-0.001*** [0.000]	0 [0.000]	0 [0.000]	0 [0.000]
pelderly	0.012 [0.402]	0.515 [0.331]	1.014*** [0.333]	0.223 [0.381]	0.768* [0.408]
pchild	0.539 [0.392]	0.653 [0.401]	1.000** [0.394]	0.067 [0.437]	1.385*** [0.461]
pfemale	0.125 [0.269]	0.028 [0.248]	-0.481** [0.238]	-0.184 [0.261]	-0.001 [0.294]
ethnic	-0.139 [0.196]	-0.358** [0.178]	-0.326* [0.186]	-0.402** [0.170]	-0.216 [0.189]
saving	0 [0.000]	0 [0.000]	-0.934** [0.371]	-0.554* [0.327]	0 [0.000]
headruraln	-0.172 [0.192]	-0.561*** [0.161]	0.003 [0.164]	-0.063 [0.208]	-0.203 [0.252]
headsalary	-0.001 [0.200]	-0.424** [0.172]	0.141 [0.172]	-0.038 [0.192]	-0.472** [0.232]

Variables	2004 **MOLISA**	2006 **MOLISA**	2008 **MOLISA**	2010 **MOLISA**	2012 **MOLISA**
remittance	-0.044 [0.142]	0.221 [0.173]	-0.006 [0.127]	-0.105 [0.141]	0.106 [0.184]
manufactu	-0.222 [0.208]	-0.048 [0.176]	-0.162 [0.174]	-0.033 [0.185]	-0.11 [0.220]
reg62	0.309 [0.213]	-0.171 [0.198]	0.266 [0.214]	0.398 [0.248]	0.229 [0.256]
reg63	0.021 [0.187]	-0.134 [0.156]	0.460*** [0.168]	0.489** [0.212]	0.589*** [0.218]
reg64	0.356 [0.223]	0.348* [0.192]	0.342 [0.226]	0.048 [0.299]	-1.009* [0.535]
reg65	-0.169 [0.204]	-0.361** [0.172]	0.15 [0.182]	0.383* [0.225]	0.207 [0.236]
reg66	0.123 [0.190]	-0.066 [0.159]	0.392** [0.174]	0.440** [0.220]	0.316 [0.228]
Constant	-0.991 [0.884]	-3.038*** [0.975]	-1.518* [0.799]	0.246 [0.772]	1.786** [0.893]
Observations	1627	1881	2028	2184	1972

Source: The author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.13: Marginal Effects of Household Poverty Status Regression for Urban Area (MOLISA), 2004-2012

Variables	2004 **probit_mfx** **MOLISA**	2006 **probit_mfx** **MOLISA**	2008 **probit_mfx** **MOLISA**	2010 **probit_mfx** **MOLISA**	2012 **probit_mfx** **MOLISA**
hhland	0.00991 -0.0133	-0.0127 -0.0111	0.0112 -0.0128	-0.00932 -0.00694	-0.00443 -0.00675
labour	-0.00415 -0.0284	-0.0262 -0.0294	0.0709** -0.0264	-0.0172 -0.0185	0.0161 -0.0141
lfixedca	-0.00446*** -0.00117	-0.00661*** -0.0012	-0.00481*** -0.00109	-0.0109*** -0.00195	-0.0197*** -0.0038
skilled ratio	-0.154*** -0.0312	-0.107*** -0.0242	-0.108*** -0.0219	-0.0562*** -0.0152	-0.0281* -0.0132
occuphd_1		-0.0305 -0.0161	-0.0271* -0.0129	-0.0008 -0.0225	-0.00828 -0.01
occuphd_3	-0.00873 -0.0236	-0.0372*** -0.0112			
occuphd_5	-0.0189 -0.0142	0.0152 -0.0223	-0.00977 -0.0129	-0.00358 -0.00868	-0.00827 -0.00595
occuphd_6		-0.0357*** -0.00925	-0.0191 -0.0131	0.0106 -0.0169	-0.00992 -0.00517
occuphd_7	-0.0123 -0.0133	-0.00825 -0.0138	-0.00087 -0.0127	-0.00735 -0.00783	-0.0155*** -0.00468
occuphd_8		-0.0404*** -0.00893	-0.0127 -0.0163	-0.0135 -0.008	0.0109 -0.0156
occuphd_11	0.00622 -0.0158	-0.0450*** -0.00951	-0.0230* -0.0109	-0.00429 -0.00901	-0.00741 -0.00689
hhsize	0.00281 -0.00297	0.00337 -0.00297	0.00377 -0.00271	0.00355 -0.00222	0.00396* -0.00183
gender	0.00887	-0.00218	-0.00628	0.00191	-0.00831

Variables	2004 **probit_mfx** **MOLISA**	2006 **probit_mfx** **MOLISA**	2008 **probit_mfx** **MOLISA**	2010 **probit_mfx** **MOLISA**	2012 **probit_mfx** **MOLISA**
	-0.012	-0.0117	-0.0102	-0.0076	-0.00714
marital	-0.0526*	-0.0338	-0.0445**	-0.0206	0.00422
	-0.0224	-0.0174	-0.017	-0.012	-0.00578
agehead	-0.00022	0.00911**	7.01E-05	0.00149	0.00111
	-0.00241	-0.00298	-0.00214	-0.00128	-0.00103
agehead^2	2.57E-06	-0.0000796**	-3.4E-06	-1.6E-05	-1E-05
	-2.1E-05	-2.7E-05	-2E-05	-1.2E-05	-9.3E-06
pelderly	0.00096	0.0461	0.0785**	0.0113	0.0283
	-0.0323	-0.0297	-0.0267	-0.0192	-0.0154
pchild	0.0433	0.0585	0.0775*	0.00341	0.0511**
	-0.0316	-0.036	-0.031	-0.0221	-0.018
pfemale	0.0101	0.00247	-0.0373*	-0.0093	-2E-05
	-0.0217	-0.0222	-0.0187	-0.0133	-0.0108
ethnic	-0.0124	-0.0417	-0.0328	-0.0287	-0.00968
	-0.0195	-0.0261	-0.0235	-0.0165	-0.0102
saving			-0.0386***	-0.0184**	
			-0.00716	-0.00645	
headruraln	-0.0129	-0.0414***	0.000225	-0.00307	-0.00677
	-0.0133	-0.0103	-0.0127	-0.00987	-0.00765
headsalary	-7.9E-05	-0.0315**	0.0118	-0.00187	-0.0138*
	-0.0161	-0.0109	-0.0154	-0.00932	-0.00589
remittance	-0.0036	0.0172	-0.00044	-0.00571	0.0036
	-0.012	-0.0116	-0.00988	-0.0082	-0.00575
manufactu	-0.0179	-0.00434	-0.0125	-0.00168	-0.00407
	-0.0168	-0.0157	-0.0136	-0.00933	-0.00813

Variables	2004 **probit_mfx** **MOLISA**	2006 **probit_mfx** **MOLISA**	2008 **probit_mfx** **MOLISA**	2010 **probit_mfx** **MOLISA**	2012 **probit_mfx** **MOLISA**
reg62	0.0307 -0.0254	-0.0137 -0.0141	0.0247 -0.0234	0.0275 -0.0219	0.0101 -0.0135
reg63	0.0017 -0.0154	-0.0112 -0.0123	0.0452* -0.0203	0.0332 -0.0181	0.0318 -0.0165
reg64	0.0374 -0.0296	0.04 -0.0276	0.0345 -0.0286	0.00255 -0.0164	-0.0166*** -0.00414
reg65	-0.0125 -0.0138	-0.0270* -0.0108	0.0127 -0.0167	0.0248 -0.0178	0.00875 -0.0114
reg66	0.0106 -0.0177	-0.0057 -0.0132	0.0381 -0.0209	0.0299 -0.019	0.0146 -0.013
N	1627	1881	2028	2184	1972

Source: The author's calculation

Table A5.14: Results of Household Poverty Status Models for Rural Area (MOLISA), 2004-2012 (Cross-Sectional Data)

Variables	2004 **MOLISA**	2006 **MOLISA**	2008 **MOLISA**	2010 **MOLISA**	2012 **MOLISA**
hhland	-0.065 [0.070]	-0.226*** [0.066]	-0.197*** [0.066]	-0.220*** [0.073]	-0.385*** [0.071]
labour	-0.378*** [0.141]	-0.153 [0.143]	-0.208 [0.145]	-0.126 [0.154]	-0.056 [0.141]
lfixedca	-0.078*** [0.006]	-0.057*** [0.005]	-0.046*** [0.005]	-0.229*** [0.012]	-0.287*** [0.016]
skilled ratio	-1.937*** [0.306]	-1.824*** [0.237]	-2.098*** [0.230]	-1.061*** [0.220]	-1.335*** [0.228]
occuphd_1	-0.637*** [0.237]	-0.593*** [0.215]	-0.693*** [0.225]	-0.965** [0.396]	-0.613** [0.294]
occuphd_2	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]
occuphd_3	0 [0.000]	-0.490* [0.251]	0 [0.000]	-0.838** [0.399]	0 [0.000]
occuphd_4	-0.832* [0.480]	-0.998** [0.440]	-0.781** [0.366]	-0.439 [0.306]	0 [0.000]
occuphd_5	-0.316 [0.223]	-0.26 [0.176]	-0.404*** [0.155]	-0.413*** [0.138]	-0.322** [0.127]
occuphd_6	-0.316** [0.149]	-0.255** [0.109]	-0.338*** [0.106]	-0.144* [0.081]	-0.219*** [0.078]
occuphd_7	-0.344*** [0.120]	-0.177** [0.088]	-0.491*** [0.087]	-0.270*** [0.086]	-0.380*** [0.087]
occuphd_8	-0.921** [0.420]	-0.548** [0.257]	-0.638*** [0.233]	-0.877*** [0.240]	-0.545*** [0.178]
occuphd_10	0.236 [0.631]	0 [0.000]	-0.327 [0.702]	0 [0.000]	0 [0.000]

Variables	2004 **MOLISA**	2006 **MOLISA**	2008 **MOLISA**	2010 **MOLISA**	2012 **MOLISA**
occuphd_11	-0.028 [0.081]	-0.079 [0.078]	0.009 [0.078]	0.155* [0.089]	-0.002 [0.085]
hhsize	0.033** [0.015]	0.004 [0.014]	-0.007 [0.015]	0.044*** [0.017]	0.033* [0.018]
gender	0.055 [0.084]	0.038 [0.075]	0.08 [0.075]	-0.096 [0.080]	0.004 [0.081]
marital	-0.518*** [0.084]	-0.450*** [0.077]	-0.422*** [0.077]	-0.237*** [0.082]	-0.327*** [0.081]
agehead	0.025** [0.012]	0.014 [0.011]	0.002 [0.011]	-0.002 [0.010]	-0.007 [0.010]
$agehead^2$	-0.000** [0.000]	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]
pelderly	0.149 [0.154]	0.088 [0.154]	-0.058 [0.152]	0.326** [0.163]	0.444*** [0.147]
pchild	0.373** [0.153]	0.676*** [0.170]	0.663*** [0.166]	0.456** [0.182]	0.541*** [0.173]
pfemale	-0.081 [0.118]	0.217** [0.106]	0.084 [0.106]	-0.141 [0.117]	0.012 [0.114]
ethnic	-0.497*** [0.065]	-0.497*** [0.058]	-0.520*** [0.059]	-0.612*** [0.062]	-0.643*** [0.062]
saving	-0.850*** [0.194]	-0.890*** [0.174]	-0.676*** [0.152]	-0.446** [0.182]	-0.722*** [0.187]
headruraln	-0.314** [0.137]	-0.499*** [0.108]	-0.171 [0.108]	-0.193 [0.139]	-0.239* [0.142]
headsalary	0.211** [0.103]	-0.106 [0.091]	0.186** [0.087]	0.136 [0.088]	0.027 [0.089]

Variables	2004 **MOLISA**	2006 **MOLISA**	2008 **MOLISA**	2010 **MOLISA**	2012 **MOLISA**
remittance	-0.01 [0.062]	0.015 [0.060]	0.043 [0.057]	0.045 [0.062]	0.056 [0.058]
manufactu	-0.165 [0.122]	-0.099 [0.103]	0.048 [0.097]	0.130* [0.077]	0.015 [0.085]
reg62	0.024 [0.085]	0.308*** [0.075]	0.257*** [0.076]	0.235*** [0.085]	0.222*** [0.083]
reg63	0.197*** [0.069]	0.438*** [0.062]	0.357*** [0.062]	0.159** [0.078]	0.245*** [0.074]
reg64	-0.028 [0.103]	0.207** [0.093]	0.034 [0.096]	0.128 [0.105]	0.078 [0.102]
reg65	-0.324*** [0.109]	-0.456*** [0.108]	-0.330*** [0.104]	-0.033 [0.107]	-0.062 [0.107]
reg66	-0.097 [0.076]	0.023 [0.068]	-0.071 [0.069]	-0.036 [0.083]	0.06 [0.078]
Constant	-0.438 [0.313]	-0.284 [0.312]	0.061 [0.317]	1.740*** [0.314]	2.717*** [0.318]
Observations	6782	6832	6685	6680	6463

Source: The author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.15: Marginal Effects of Household Poverty Status Regression for Rural Area (MOLISA), 2004-2012

Variables	2004 probit_mfx (MOLISA)	2006 probit_mfx (MOLISA)	2008 probit_mfx (MOLISA)	2010 probit_mfx (MOLISA)	2012 probit_mfx (MOLISA)
hhland	-0.0096 -0.0107	-0.0503** -0.0159	-0.0441** -0.0158	-0.0387** -0.0139	-0.0839*** -0.0175
labour	-0.0544** -0.0203	-0.0312 -0.0294	-0.0432 -0.03	-0.0203 -0.0249	-0.0106 -0.0267
lfixedca	-0.0112*** -0.0009	-0.0116*** -0.0011	-0.00962*** -0.0011	-0.0369*** -0.0023	-0.0543*** -0.0033
skilled ratio	-0.279*** -0.0415	-0.373*** -0.0462	-0.435*** -0.0445	-0.171*** -0.0344	-0.253*** -0.0415
occuphd_1	-0.0586*** -0.0121	-0.0853*** -0.0195	-0.0951*** -0.0176	-0.0805*** -0.0121	-0.0787*** -0.0226
occuphd_3		-0.0749** -0.0266		-0.0767*** -0.016	
occuphd_4	-0.0654*** -0.0155	-0.109*** -0.0181	-0.100*** -0.0235	-0.0524* -0.0252	
occuphd_5	-0.0364 -0.0199	-0.0459 -0.0262	-0.0665*** -0.0193	-0.0520*** -0.0129	-0.0511** -0.0166
occuphd_6	-0.0367** -0.0136	-0.0455** -0.0165	-0.0584*** -0.0149	-0.0215 -0.0112	-0.0375** -0.0119
occuphd_7	-0.0400*** -0.0109	-0.0331* -0.015	-0.0802*** -0.0108	-0.0379*** -0.0103	-0.0602*** -0.0113
occuphd_8	-0.0688*** -0.0116	-0.0806** -0.0247	-0.0904*** -0.02	-0.0795*** -0.0096	-0.0742*** -0.016
occuphd_10	0.04 -0.124		-0.0557 -0.095		

Variables	2004 **probit_mfx (MOLISA)**	2006 **probit_mfx (MOLISA)**	2008 **probit_mfx (MOLISA)**	2010 **probit_mfx (MOLISA)**	2012 **probit_mfx (MOLISA)**
occuphd_11	-0.004 -0.0113	-0.0156 -0.0148	0.0019 -0.0164	0.027 -0.0167	-0.0004 -0.0161
hhsize	0.00475* -0.0022	0.00075 -0.003	-0.0015 -0.0031	0.00710** -0.0027	0.00616 -0.0034
gender	0.00773 -0.0115	0.0077 -0.015	0.0162 -0.0148	-0.0161 -0.0139	0.00083 -0.0152
marital	-0.0940*** -0.0185	-0.108*** -0.0212	-0.102*** -0.0212	-0.0424** -0.0162	-0.0699*** -0.0193
agehead	0.00358* -0.0017	0.00281 -0.0022	0.00052 -0.0023	-0.0003 -0.0016	-0.0014 -0.0019
$agehead^2$	-0.0000364* -0.00002	-0.00003 -0.00002	-0.000008 -0.00002	-0.000009 -0.00002	-0.000001 -0.00002
pelderly	0.0215 -0.0222	0.018 -0.0315	-0.0121 -0.0316	0.0525* -0.0263	0.0840** -0.0278
pchild	0.0538* -0.022	0.138*** -0.0348	0.137*** -0.0345	0.0735* -0.0294	0.102** -0.0328
pfemale	-0.0117 -0.017	0.0444* -0.0217	0.0175 -0.022	-0.0227 -0.0189	0.00236 -0.0215
ethnic	-0.0891*** -0.0142	-0.120*** -0.0162	-0.128*** -0.0169	-0.123*** -0.0152	-0.149*** -0.0172
saving	-0.0703*** -0.0075	-0.110*** -0.0103	-0.0955*** -0.0129	-0.0541*** -0.0156	-0.0896*** -0.0129
headruraln	-0.0369** -0.0128	-0.0784*** -0.0123	-0.0325 -0.0187	-0.0279 -0.0177	-0.0397 -0.0204
headsalary	0.0346 -0.019	-0.0206 -0.0166	0.0422* -0.0215	0.0236 -0.0163	0.00517 -0.0172

Variables	2004 **probit_mfx (MOLISA)**	2006 **probit_mfx (MOLISA)**	2008 **probit_mfx (MOLISA)**	2010 **probit_mfx (MOLISA)**	2012 **probit_mfx (MOLISA)**
remittance	-0.0015 -0.009	0.00315 -0.012	0.00872 -0.0114	0.00713 -0.0095	0.0104 -0.0105
manufactu	-0.0238 -0.0176	-0.0203 -0.021	0.00996 -0.0201	0.021 -0.0124	0.00285 -0.016
reg62	0.00357 -0.0125	0.0700*** -0.0186	0.0582** -0.0185	0.0417* -0.0165	0.0454* -0.0183
reg63	0.0306** -0.0116	0.102*** -0.0162	0.0825*** -0.0158	0.0271 -0.014	0.0504** -0.0165
reg64	-0.004 -0.0143	0.0468* -0.0231	0.00724 -0.0206	0.0222 -0.0194	0.0154 -0.0209
reg65	-0.0382*** -0.0103	-0.0738*** -0.0132	-0.0578*** -0.0151	-0.0052 -0.0166	-0.0113 -0.0189
reg66	-0.0134 -0.0102	0.00471 -0.0141	-0.0143 -0.0136	-0.0057 -0.013	0.0115 -0.0155
N	6782	6832	6685	6680	6463

Source: The author's calculation

Table A5.16: Results of Household Poverty Status for Urban Area (GSO), 2004-2012 (Cross-Sectional Data)

Variables	2004 **(GSO)**	2006 **(GSO)**	2008 **(GSO)**	2010 **(GSO)**	2012 **(GSO)**
hhland	0.552*** [0.152]	0.326** [0.159]	0.366*** [0.139]	0.214 [0.147]	-0.002 [0.206]
labour	0.83 [0.560]	-0.233 [0.620]	-0.231 [0.553]	0.695* [0.403]	-1.723** [0.847]
lfixedca	-0.034** [0.014]	-0.073*** [0.016]	-0.025** [0.013]	-0.357*** [0.031]	-0.299*** [0.048]
skilled ratio	-2.433*** [0.599]	-2.358*** [0.528]	-1.870*** [0.368]	-1.718*** [0.425]	-1.189** [0.506]
occuphd_1	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]
occuphd_ 2	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]
occuphd_3	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]	0.236 [0.444]
occuphd_4	0 [0.000]	0 [0.000]	-0.087 [0.477]	-0.057 [0.505]	-0.013 [0.547]
occuphd_5	-0.626* [0.337]	-0.55 [0.401]	-0.721* [0.372]	-0.197 [0.205]	-0.687* [0.365]
occuphd_6	0 [0.000]	0 [0.000]	-0.529* [0.320]	-0.112 [0.226]	-0.153 [0.252]
occuphd_7	-0.332 [0.217]	-0.613** [0.295]	0.178 [0.171]	-0.263 [0.185]	-0.299 [0.268]
occuphd_ 8	0 [0.000]	-0.516 [0.425]	0.006 [0.289]	-0.239 [0.249]	0.111 [0.382]

Variables	2004 **(GSO)**	2006 **(GSO)**	2008 **(GSO)**	2010 **(GSO)**	2012 **(GSO)**
occuphd_10	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]
occuphd_11	-0.21 [0.203]	-0.341 [0.210]	-0.139 [0.176]	-0.477** [0.202]	-0.474* [0.252]
hhsize	0.120*** [0.039]	0.209*** [0.042]	0.118*** [0.035]	0.250*** [0.042]	0.157*** [0.051]
gender	0.267 [0.179]	0.259 [0.188]	-0.146 [0.135]	-0.035 [0.157]	0.011 [0.214]
marital	-0.589*** [0.197]	-0.295 [0.206]	-0.098 [0.158]	0.082 [0.184]	0.018 [0.240]
agehead	-0.009 [0.030]	0.01 [0.036]	0.019 [0.028]	-0.021 [0.026]	-0.034 [0.030]
$agehead^2$	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]	0 [0.000]
pelderly	1.190*** [0.335]	0.877** [0.346]	0.877*** [0.287]	0.760* [0.412]	0.524 [0.372]
pchild	1.355*** [0.347]	1.074*** [0.411]	0.838** [0.335]	2.366*** [0.488]	0.678 [0.436]
pfemale	0.197 [0.287]	0.273 [0.344]	-0.126 [0.260]	-0.35 [0.288]	0.156 [0.353]
ethnic	-0.208 [0.204]	-0.437** [0.207]	-0.155 [0.193]	-0.752*** [0.169]	-0.461** [0.188]
saving	-1.201*** [0.430]	0.024 [0.238]	-0.788** [0.310]	0 [0.000]	-0.36 [0.355]
headruraln	-0.052 [0.197]	-0.472** [0.223]	-0.121 [0.167]	-0.474** [0.206]	-0.671** [0.306]

Variables	2004 **(GSO)**	2006 **(GSO)**	2008 **(GSO)**	2010 **(GSO)**	2012 **(GSO)**
headsalary	0.137 [0.213]	-0.197 [0.228]	-0.069 [0.181]	-0.159 [0.179]	-0.752*** [0.258]
remittance	-0.197 [0.145]	0.267 [0.223]	-0.027 [0.134]	-0.004 [0.147]	-0.208 [0.182]
manufactu	-0.448* [0.250]	-0.785*** [0.296]	-0.321* [0.191]	-0.09 [0.186]	-0.539* [0.305]
reg62	-0.025 [0.204]	0.215 [0.222]	0.765*** [0.205]	-0.339 [0.214]	0.16 [0.260]
reg63	-0.291* [0.174]	-0.369* [0.208]	0.471*** [0.180]	-0.465*** [0.177]	0.17 [0.232]
reg64	-0.216 [0.219]	0.326 [0.227]	0.496** [0.219]	-0.517** [0.223]	-0.157 [0.309]
reg65	-0.994*** [0.253]	-1.271*** [0.342]	-0.159 [0.221]	-0.317* [0.192]	-0.36 [0.293]
reg66	-0.21 [0.178]	-0.095 [0.196]	0.412** [0.186]	-0.295 [0.183]	-0.138 [0.251]
Constant	-1.127 [0.931]	-2.470** [1.126]	-2.437*** [0.863]	1.442* [0.775]	2.175** [0.960]
Observations	1704	1852	1984	1962	2397

Source: The author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.17: Marginal Effects of Household Poverty Status Regressions for Urban Area (GSO), 2004-2012

Variables	2004 **probit_mfx (GSO)**	2006 **probit_mfx (GSO)**	2008 **probit_mfx (GSO)**	2010 **probit_mfx (GSO)**	2012 **probit_mfx (GSO)**
hhland	0.0324* -0.013	0.00804 -0.005	0.0291* 0.000	0.0120 -0.009	0000208 -0.003
labour	0.0360 -0.025	0.00461 -0.012	-0.0150 0.000	0.0350 -0.021	-0.0227 -0.012
lfixedca	0.00146* -0.001	0.00145** 0.000	0.00165 0.000	-0.0180*** -0.003	0.00394** -0.001
skilled ratio	-0.105*** -0.023	-0.0467*** -0.013	-0.122*** 0.000	-0.0864*** -0.018	-0.0157* -0.006
occuphd_1			0.000		
occuphd_2			0.000		
occuphd_3			0.000		0.00412 -0.010
occuphd_4			0.00521 0.000	0.00270 -0.023	.000163 -0.007
occuphd_5	-0.0162** -0.006	0.00644* -0.003	-0.0269*** 0.000	0.00881 -0.008	0.00579* -0.002
occuphd_6			-0.0216** 0.000	0.00508 -0.009	0.00168 -0.002
occuphd_7	-0.0113 -0.006	0.00755* -0.003	0.0131 0.000	-0.0110 -0.007	0.00301 -0.002
occuphd_8		0.00605 -0.003	.000408 0.000	0.00988 -0.009	0.00166 -0.006

Variables	2004 probit_mfx (GSO)	2006 probit_mfx (GSO)	2008 probit_mfx (GSO)	2010 probit_mfx (GSO)	2012 probit_mfx (GSO)
occuphd_10			0.000		
occuphd_11	0.00836 -0.008	0.00567 -0.003	0.00851 0.000	-0.0191** -0.007	0.00480 -0.003
hhsize	0.00522** -0.002	0.00415** -0.001	0.00765** 0.000	0.0126*** -0.003	0.00207* -0.001
gender	0.0111 -0.008	0.00487 -0.004	0.00985 0.000	0.00179 -0.008	.000139 -0.003
marital	-0.0360* -0.017	0.00713 -0.006	0.00673 0.000	0.00397 -0.008	.000230 -0.003
agehead	.000400 -0.001	.000196 -0.001	0.00125 0.000	0.00108 -0.001	.000449 0.000
$agehead^2$	0000170 0.000	0000701 0.000	0000111 0.000	0000134 0.000	0000387 0.000
pelderly	0.0516** -0.017	0.0174* -0.008	0.0571** 0.000	0.0382 -0.021	0.00690 -0.005
pchild	0.0587** -0.019	0.0213* -0.010	0.0545* 0.000	0.119*** -0.028	0.00894 -0.006
pfemale	0.00856 -0.013	0.00540 -0.007	0.00822 0.000	-0.0176 -0.015	0.00205 -0.005
ethnic	-0.0109 -0.013	-0.0141 -0.011	-0.0115 0.000	-0.0711** -0.026	-0.0103 -0.007
saving	-0.0232*** -0.006	.000482 -0.005	-0.0292*** 0.000		0.00345 -0.003
headruraln	0.00220 -0.008	0.00781* -0.004	0.00748 0.000	-0.0195** -0.007	0.00631* -0.003

Variables	2004 **probit_mfx (GSO)**	2006 **probit_mfx (GSO)**	2008 **probit_mfx (GSO)**	2010 **probit_mfx (GSO)**	2012 **probit_mfx (GSO)**
headsalary	0.00655 -0.011	0.00336 -0.004	0.00432 0.000	0.00737 -0.008	0.00725* -0.003
remittance	0.00988 -0.009	0.00419 -0.003	0.00179 0.000	.000220 -0.007	0.00336 -0.004
manufactu	-0.0194 -0.011	-0.0156* -0.007	-0.0209 0.000	0.00455 -0.009	0.00711 -0.004
reg62	0.00105 -0.008	0.00522 -0.007	0.0870* 0.000	-0.0133* -0.007	0.00247 -0.005
reg63	-0.0108 -0.006	0.00585 -0.003	0.0396* 0.000	-0.0184** -0.006	0.00256 -0.004
reg64	0.00771 -0.006	0.00922 -0.009	0.0482 0.000	-0.0170** -0.005	0.00174 -0.003
reg65	-0.0263*** -0.007	-0.0137** -0.004	0.00946 0.000	-0.0132 -0.007	0.00370 -0.003
reg66	0.00790 -0.006	0.00176 -0.003	0.0345 0.000	-0.0123 -0.007	0.00163 -0.003
N	1704	1852	1984	1962	2397

Source: The author's calculation

Table 5.18: Results of Household Poverty Status Models for Rural Area (GSO), 2004-2012 (Cross-Sectional Data)

Variables	2004 **(GSO)**	2006 **(GSO)**	2008 **(GSO)**	2010 **(GSO)**	2012 **(GSO)**
hhland	0.053 [0.081]	-0.138* [0.073]	-0.108 [0.072]	0.033 [0.072]	-0.02 [0.090]
labour	-0.672*** [0.250]	-0.107 [0.200]	-0.281 [0.220]	-0.310* [0.183]	-0.938*** [0.250]
lfixedca	-0.076*** [0.006]	-0.058*** [0.006]	-0.064*** [0.005]	-0.403*** [0.016]	-0.259*** [0.017]
skilled ratio	-2.744*** [0.417]	-3.253*** [0.363]	-2.418*** [0.268]	-1.197*** [0.215]	-1.364*** [0.315]
occuphd_1	-0.655*** [0.232]	-0.783*** [0.248]	-0.920*** [0.252]	-0.392* [0.221]	0 [0.000]
occuphd_2	0 [0.000]	0 [0.000]	-0.68 [0.619]	0 [0.000]	0 [0.000]
occuphd_3	-0.860** [0.404]	-1.124** [0.442]	-0.720** [0.293]	-0.657** [0.309]	0 [0.000]
occuphd_ 4	-1.180* [0.611]	0 [0.000]	-0.535 [0.335]	-0.389 [0.243]	0 [0.000]
occuphd_ 5	-0.323 [0.249]	-0.382* [0.203]	-0.282* [0.169]	-0.446*** [0.125]	-1.063*** [0.268]
occuphd_6	0.045 [0.138]	-0.573*** [0.129]	-0.328*** [0.112]	-0.223*** [0.072]	-0.227*** [0.088]
occuphd_7	-0.193 [0.124]	-0.284*** [0.096]	-0.473*** [0.096]	-0.428*** [0.075]	-0.855*** [0.140]
occuphd_8	-0.413 [0.324]	-0.919*** [0.356]	-0.577** [0.255]	-0.697*** [0.175]	-0.715*** [0.270]
occuphd_10	0 [0.000]	0 [0.000]	-0.487 [0.774]	0 [0.000]	0 [0.000]

Variables	2004 **(GSO)**	2006 **(GSO)**	2008 **(GSO)**	2010 **(GSO)**	2012 **(GSO)**
occuphd_11	0.024 [0.089]	-0.092 [0.083]	0.086 [0.081]	-0.162* [0.090]	-0.064 [0.097]
hhsize	0.189*** [0.015]	0.184*** [0.015]	0.175*** [0.015]	0.285*** [0.017]	0.119*** [0.020]
gender	-0.012 [0.092]	0.021 [0.083]	0.027 [0.079]	0.03 [0.079]	0.159 [0.101]
marital	-0.367*** [0.095]	-0.175** [0.086]	-0.129 [0.084]	-0.089 [0.085]	-0.103 [0.102]
agehead	-0.025** [0.011]	-0.023** [0.011]	-0.026** [0.011]	-0.031*** [0.010]	-0.032*** [0.011]
$agehead^2$	0 [0.000]	0.000** [0.000]	0.000** [0.000]	0.000*** [0.000]	0.000*** [0.000]
pelderly	0.640*** [0.139]	0.558*** [0.128]	0.550*** [0.124]	-0.061 [0.191]	0.615*** [0.136]
pchild	0.573*** [0.128]	1.150*** [0.134]	1.170*** [0.131]	0.951*** [0.209]	0.832*** [0.161]
pfemale	0.238* [0.128]	0.237** [0.116]	0.135 [0.114]	-0.062 [0.116]	0.174 [0.136]
ethnic	-0.682*** [0.066]	-0.808*** [0.060]	-0.730*** [0.061]	-0.841*** [0.059]	-0.505*** [0.070]
saving	-0.700*** [0.180]	-0.758*** [0.164]	-0.750*** [0.161]	-0.423*** [0.147]	-0.930*** [0.280]
headruraln	-0.223 [0.154]	-0.590*** [0.125]	-0.388*** [0.134]	-0.276** [0.128]	-0.255 [0.238]
headsalary	-0.164 [0.130]	-0.174* [0.103]	-0.057 [0.099]	-0.004 [0.084]	-0.13 [0.121]
remittance	-0.208*** [0.060]	-0.140** [0.061]	-0.175*** [0.056]	0.015 [0.059]	-0.132** [0.064]

Variables	2004 **(GSO)**	2006 **(GSO)**	2008 **(GSO)**	2010 **(GSO)**	2012 **(GSO)**
manufactu	-1.013*** [0.177]	-0.511*** [0.120]	-0.441*** [0.115]	0.156** [0.075]	-0.201* [0.109]
reg62	-0.102 [0.086]	0.161** [0.078]	0.217*** [0.079]	0.009 [0.078]	0.121 [0.096]
reg63	0.171** [0.069]	0.313*** [0.064]	0.245*** [0.065]	-0.179*** [0.068]	0.041 [0.089]
reg64	-0.431*** [0.107]	0.016 [0.097]	0.127 [0.096]	-0.219** [0.097]	-0.122 [0.115]
reg65	-1.093*** [0.150]	-0.874*** [0.127]	-0.899*** [0.137]	-0.500*** [0.103]	-0.149 [0.136]
reg66	-0.629*** [0.085]	-0.344*** [0.074]	-0.139* [0.071]	-0.274*** [0.071]	-0.071 [0.092]
Constant	0.123 [0.322]	-0.228 [0.317]	-0.122 [0.321]	3.470*** [0.335]	1.800*** [0.348]
Observations	6893	6786	6832	6680	6375

Source: The author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table 5.19: Marginal Effects of Household Poverty Status Regression for Rural Area (GSO), 2004-2012

Variables	2004 **probit_mfx (GSO)**	2006 **probit_mfx (GSO)**	2008 **probit_mfx (GSO)**	2010 **probit_mfx (GSO)**	2012 **probit_mfx (GSO)**
hhland	0.00592 -0.009	-0.0255 -0.014	-0.0201 0.000	0.00852 -0.019	0.00209 -0.009
labour	-0.0776** -0.029	-0.0187 -0.035	-0.0498 0.000	-0.0812 -0.048	-0.0962*** -0.026
lfixedca	0.00881*** -0.001	-0.0101*** -0.001	-0.0114*** 0.000	-0.105*** -0.004	-0.0266*** -0.002
skilled ratio	-0.317*** -0.043	-0.565*** -0.055	-0.430*** 0.000	-0.313*** -0.055	-0.140*** -0.031
occuphd_1	-0.0460*** -0.009	-0.0817*** -0.013	-0.0901*** 0.000	-0.0846* -0.038	
occuphd_2			-0.0766* 0.000		
occuphd_3	-0.0516*** -0.009	-0.0936*** -0.011	-0.0800*** 0.000	-0.123*** -0.037	
occuphd_4	-0.0555*** -0.007		-0.0667* 0.000	-0.0840* -0.042	
occuphd_5	-0.0291 -0.017	-0.0518* -0.021	-0.0420* 0.000	-0.0961*** -0.021	-0.0535*** -0.005
occuphd_6	0.00539 -0.017	-0.0699*** -0.010	-0.0479*** 0.000	-0.0538*** -0.016	-0.0202** -0.007
occuphd_7	-0.0195 -0.011	-0.0422*** -0.012	-0.0654*** 0.000	-0.0954*** -0.014	-0.0534*** -0.005
occuphd_8	-0.0346 -0.018	-0.0868*** -0.014	-0.0706*** 0.000	-0.129*** -0.020	-0.0424*** -0.008

Variables	2004 **probit_mfx (GSO)**	2006 **probit_mfx (GSO)**	2008 **probit_mfx (GSO)**	2010 **probit_mfx (GSO)**	2012 **probit_mfx (GSO)**
occuphd_10			-0.0625 0.000		
occuphd_11	0.00283 -0.011	-0.0152 -0.013	0.0159 0.000	-0.0400 -0.021	0.00633 -0.009
hhsize	0.0219*** -0.002	0.0320*** -0.003	0.0312*** 0.000	0.0745*** -0.005	0.0122*** -0.002
gender	0.00143 -0.011	0.00365 -0.014	0.00478 0.000	0.00787 -0.020	0.0151 -0.009
marital	-0.0510** -0.016	-0.0327 -0.017	-0.0241 0.000	-0.0239 -0.024	-0.0112 -0.012
agehead	0.00291* -0.001	0.00395* -0.002	0.00471* 0.000	0.00824** -0.003	0.00332** -0.001
$agehead^2$	0000173 0.000	0000399* 0.000	0000443* 0.000	0000703** 0.000	0000273* 0.000
pelderly	0.0740*** -0.016	0.0969*** -0.022	0.0977*** 0.000	-0.0159 -0.050	0.0631*** -0.014
pchild	0.0662*** -0.015	0.200*** -0.024	0.208*** 0.000	0.249*** -0.055	0.0853*** -0.017
pfemale	0.0275 -0.015	0.0411* -0.020	0.0240 0.000	-0.0161 -0.030	0.0178 -0.014
ethnic	-0.110*** -0.015	-0.188*** -0.018	-0.169*** 0.000	-0.262*** -0.021	-0.0656*** -0.012
saving	-0.0493*** -0.007	-0.0824*** -0.010	-0.0840*** 0.000	-0.0912*** -0.025	-0.0488*** -0.006
headruraln	-0.0220 -0.013	-0.0728*** -0.010	-0.0551*** 0.000	-0.0643* -0.026	-0.0218 -0.017

Variables	2004 **probit_mfx (GSO)**	2006 **probit_mfx (GSO)**	2008 **probit_mfx (GSO)**	2010 **probit_mfx (GSO)**	2012 **probit_mfx (GSO)**
headsalary	-0.0169 -0.012	-0.0273 -0.015	0.00980 0.000	0.000929 -0.022	-0.0122 -0.010
remittance	-0.0269** -0.009	-0.0260* -0.012	-0.0336** 0.000	0.00384 -0.015	-0.0146 -0.008
manufactu	-0.117*** -0.020	-0.0887*** -0.021	-0.0783*** 0.000	0.0408* -0.020	-0.0207 -0.011
reg62	-0.0112 -0.009	0.0297 -0.015	0.0420* 0.000	0.00226 -0.020	0.0132 -0.011
reg63	0.0213* -0.009	0.0605*** -0.014	0.0474*** 0.000	-0.0448** -0.016	0.00424 -0.009
reg64	-0.0369*** -0.007	0.00285 -0.017	0.0242 0.000	-0.0523* -0.021	-0.0115 -0.010
reg65	-0.0631*** -0.005	-0.0924*** -0.008	-0.0965*** 0.000	-0.106*** -0.017	-0.0138 -0.011
reg66	-0.0557*** -0.006	-0.0525*** -0.010	-0.0235* 0.000	-0.0666*** -0.016	0.00703 -0.009
N	6893	6786	6832	6680	6375

Source: The author's calculation

Table A5.20: Results of Household Expenditure Models for the Whole Country, Urban and Rural Areas, 2004-2008 (Panel Data)

Variables	2004-2006			2006-2008		
	County lexp	**Urban lexp**	**Rural lexp**	**Country lexp**	**Urban lexp**	**Rural lexp**
labour	0.153*** [0.058]	-0.105 [0.141]	0.257*** [0.060]	0.154 [0.302]	-0.712 [0.630]	0.392 [0.351]
lfixed capital	0.010*** [0.002]	0.007* [0.005]	0.012*** [0.002]	-0.001 [0.011]	0.004 [0.021]	-0.005 [0.013]
skilled ratio	0.328*** [0.055]	0.443*** [0.088]	0.201*** [0.067]	1.115*** [0.280]	0.729* [0.402]	1.464*** [0.382]
hhsize	-0.118*** [0.008]	-0.111*** [0.020]	-0.116*** [0.009]	-0.274*** [0.044]	-0.201** [0.092]	-0.299*** [0.050]
agehead	0.049*** [0.008]	0.065*** [0.015]	0.042*** [0.009]	0.422*** [0.065]	0.204** [0.104]	0.520*** [0.083]
$agehead^2$	-0.000*** [0.000]	-0.001*** [0.000]	-0.000*** [0.000]	-0.003*** [0.001]	-0.001 [0.001]	-0.004*** [0.001]
pelderly	-0.027 [0.074]	-0.102 [0.155]	0.006 [0.082]	-0.382 [0.433]	-0.049 [0.906]	-0.37 [0.512]
pchild	0.101** [0.050]	0.235** [0.114]	0.065 [0.055]	-1.948*** [0.382]	-2.407*** [0.787]	-1.789*** [0.437]
pfemale	-0.117* [0.068]	-0.183 [0.148]	-0.111 [0.070]	0.385 [0.388]	0.28 [0.770]	0.443 [0.452]
manufactur	0.097*** [0.037]	0.095 [0.071]	0.105** [0.042]	0.072 [0.208]	-0.362 [0.348]	0.348 [0.260]
Constant	4.978*** [0.202]	4.996*** [0.425]	4.959*** [0.219]	-3.449* [1.776]	3.023 [2.957]	-6.171*** [2.227]
Observations	7858	1935	5923	8250	2027	6223
Number of id	3932	984	2978	4127	1026	3125
R-squared	0.11	0.11	0.11	0.08	0.05	0.1

Source: The author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.21: Results of Household Income Models for the Whole Country, Urban and Rural Area, 2004-2008 (Panel Data)

Variables	2004-2006			2006-2008		
	Country lincome	Urban lincome	Rural lincome	Country lincome	Urban lincome	Rural lincome
labour	0.224*** [0.069]	0.117 [0.160]	0.283*** [0.075]	0.084 [0.068]	-0.14 [0.151]	0.142* [0.076]
lfixed capital	0.012*** [0.003]	0.008 [0.005]	0.014*** [0.003]	0.013*** [0.003]	0.018*** [0.006]	0.011*** [0.003]
skilled ratio	0.509*** [0.059]	0.566*** [0.097]	0.433*** [0.071]	0.484*** [0.065]	0.499*** [0.087]	0.465*** [0.097]
hhsize	-0.128*** [0.009]	-0.102*** [0.020]	-0.133*** [0.010]	-0.111*** [0.010]	-0.122*** [0.024]	-0.109*** [0.012]
agehead	0.064*** [0.009]	0.079*** [0.020]	0.055*** [0.010]	0.059*** [0.013]	0.014 [0.018]	0.079*** [0.017]
$agehead^2$	-0.001*** [0.000]	-0.001*** [0.000]	-0.000*** [0.000]	-0.000*** [0.000]	0 [0.000]	-0.001*** [0.000]
pelderly	0.023 [0.089]	0.058 [0.171]	0.009 [0.105]	-0.247** [0.098]	-0.18 [0.202]	-0.255** [0.115]
pchild	0.232*** [0.058]	0.327*** [0.126]	0.202*** [0.065]	-0.509*** [0.088]	-0.504*** [0.194]	-0.516*** [0.098]
pfemale	-0.104 [0.073]	-0.128 [0.147]	-0.118 [0.082]	-0.188** [0.093]	-0.361* [0.193]	-0.125 [0.107]
manufactu	0.207*** [0.044]	0.116 [0.075]	0.258*** [0.055]	0.162*** [0.048]	0.105 [0.089]	0.211*** [0.057]
Constant	4.723*** [0.249]	4.613*** [0.554]	4.797*** [0.272]	5.336*** [0.343]	7.184*** [0.520]	4.607*** [0.445]
Observations	7856	1934	5922	8248	2027	6221
Number of id	3932	984	2978	4127	1026	3125
R-squared	0.12	0.12	0.12	0.11	0.11	0.11

Source: The author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.22: Results of Household Income and Expenditure Models for the Whole Country, Urban and Rural Areas, 2010-2012 (Panel Data)

Variables	2010-2012					
	Country lexp	**Urban lexp**	**Rural lexp**	**Country lincome**	**Urban lincome**	**Rural lincome**
labour	0.004 [0.122]	-0.186 [0.190]	0.056 [0.147]	-0.125 [0.100]	-0.127 [0.203]	-0.112 [0.119]
lfixed capital	0.169*** [0.011]	0.205*** [0.032]	0.159*** [0.012]	0.141*** [0.010]	0.159*** [0.023]	0.135*** [0.011]
skilled ratio	0.236*** [0.067]	0.301*** [0.107]	0.155* [0.086]	0.350*** [0.062]	0.296*** [0.089]	0.393*** [0.083]
hhsize	-0.126*** [0.011]	-0.155*** [0.022]	-0.114*** [0.012]	-0.115*** [0.010]	-0.104*** [0.019]	-0.113*** [0.012]
agehead	0.028* [0.017]	0.008 [0.030]	0.037* [0.021]	0.013 [0.017]	-0.046** [0.022]	0.037 [0.023]
$agehead^2$	0.000 [0.000]	0.000 [0.000]	0.000 [0.000]	0.000 [0.000]	0.001** [0.000]	0.000 [0.000]
pelderly	-0.019 [0.110]	-0.192 [0.204]	0.063 [0.131]	-0.080 [0.095]	-0.118 [0.195]	-0.053 [0.106]
pchild	-0.485*** [0.086]	-0.354** [0.156]	-0.519*** [0.102]	-0.355*** [0.078]	-0.332*** [0.128]	-0.356*** [0.096]
pfemale	-0.075 [0.090]	-0.094 [0.160]	-0.063 [0.111]	-0.070 [0.081]	0.054 [0.130]	-0.121 [0.103]
manufactu	0.006 [0.043]	-0.025 [0.087]	0.014 [0.049]	0.053 [0.039]	0.083 [0.065]	0.023 [0.047]
Constant	6.632*** [0.396]	7.363*** [0.699]	6.226*** [0.493]	5.524*** [0.375]	7.173*** [0.477]	4.712*** [0.524]
Observations	7243	1895	5348	7243	1895	5348
Number of id	3724	994	2750	3724	994	2750
R-squared	0.19	0.21	0.18	0.21	0.21	0.22

Source: The author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.23: Results of Household Poverty Status Models for the Whole Country, Urban and Rural areas (MOLISA), 2004-2012 (Panel Data)

Variables	2004-2006			2006-2008			2010-2012		
	Country	Rural	Urban	Country	Rural	Urban	Country	Rural	Urban
labour	0.683	2.246	-0.563	0.883	0.411	-0.614	-0.359	-0.228	-1.06
	[2.026]	[4.427]	[5.128]	[1.678]	[2.855]	[4.642]	[0.397]	[0.489]	[1.523]
lfixed capital	-0.064	-0.098	-0.039	-0.011	-0.035	0.009	-0.198**	-0.11	-0.776*
	[0.054]	[0.125]	[0.128]	[0.047]	[0.074]	[0.113]	[0.081]	[0.093]	[0.413]
skilled ratio	-124.956	-143.303	-636.961	-4.376*	-15.401**	-3.015	-2.325**	-1.687	-4.003
	[36,632.780]	[9108960.353]	[0.000]	[2.482]	[6.654]	[3.127]	[1.159]	[1.792]	[5.026]
hhsize	0.250*	0.431	0.195	-0.019	-0.019	-0.579	0.183	0.250*	0.247
	[0.134]	[0.314]	[0.376]	[0.140]	[0.292]	[0.556]	[0.116]	[0.145]	[0.617]
gender	0.097	14.621	-1.000	-0.237	-2.720**	1.496	-0.905*	-0.898	-3.098
	[0.780]	[720.633]	[1.543]	[0.712]	[1.087]	[2.102]	[0.518]	[0.662]	[2.177]
marital	0.25	15.296	-0.153	0.377	2.175	1.884	-0.306	0.194	-4.306
	[0.968]	[743.452]	[1.736]	[0.827]	[1.365]	[2.808]	[0.572]	[0.744]	[3.376]
agehead	0.007	-0.053	-0.033	0.157	0.144	0.498	0.024	-0.039	1.124
	[0.138]	[0.338]	[0.370]	[0.121]	[0.151]	[0.548]	[0.081]	[0.092]	[0.739]
$agehead^2$	0	0.001	0	-0.001	-0.001	-0.004	0	0	-0.011
	[0.001]	[0.003]	[0.003]	[0.001]	[0.001]	[0.005]	[0.001]	[0.001]	[0.007]
pelderly	0.711	3.48	-0.335	1.987*	2.164	2.461	0.264	1.196	-3.678
	[1.520]	[3.871]	[3.152]	[1.199]	[1.863]	[3.193]	[1.015]	[1.249]	[5.906]
pchild	0.934	6.481	-3.27	2.005	2.523	5.169	0.984	1.124	1.591
	[1.466]	[4.331]	[4.046]	[1.291]	[1.761]	[3.817]	[0.978]	[1.206]	[5.258]
pfemale	0.298	-0.097	0.81	1.011	-0.83	7.124	-0.963	-1.541	1.689
	[1.372]	[3.430]	[2.922]	[1.151]	[1.751]	[5.090]	[0.885]	[1.142]	[5.308]
manufactu	-0.859	-0.654	-2.075	-2.087	-3.414*	-1.716	-0.03	-0.263	0.644
	[1.305]	[3.446]	[3.130]	[2.060]	[1.959]	[2.624]	[0.516]	[0.676]	[2.908]
Constant	-7.498**	-41.252	-8.695	-10.164***	-16.672***	-26.255	-3.792*	-3.842	-29.772*
	[3.763]	[1,035.438]	[10.196]	[3.606]	[4.477]	[17.431]	[2.172]	[2.550]	[17.185]
Observations	1127	692	435	1202	755	447	1585	1028	557
Number of id	565	348	219	601	378	224	793	516	281

Source: The author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.24: Results of Household Poverty Status Models for the Whole Country, Urban and Rural Areas (GSO), 2004-2012 (Panel Data)

Variables	2004-2006			2006-2008			2010-2012		
	Country	Rural	Urban	Country	Rural	Urban	Country	Rural	Urban
labour	1.057 [1.650]	1.553 [2.272]	-229.989 [1536733.894]	0.914 [2.402]	-0.471 [2.933]	5,590.65 [53520059.764]	-0.502 [0.433]	-0.381 [0.465]	-4.368 [3.459]
lfixed capital	-0.011 [0.047]	-0.057 [0.063]	0.192 [0.126]	-0.071 [0.061]	-0.063 [0.064]	-110.456 [2280693.256]	-0.218*** [0.082]	-0.15 [0.093]	-1.13 [1.081]
skilled ratio	-126.476 [9,146.287]	-4,529.48 [0.000]	-415.326 [0.000]	-125.432 [317,255.567]	-117.933 [27,348.131]	-10137.79 [0.000]	-3.615** [1.736]	-2.505 [2.285]	-110.858 [0.000]
hhsize	0.082 [0.125]	0.031 [0.170]	0.443 [0.312]	0.204 [0.174]	0.22 [0.156]	209.509 [8891412.965]	0.224* [0.119]	0.208 [0.139]	-0.814 [1.328]
gender	-0.161 [0.589]	-0.892 [0.939]	0.548 [1.284]	3.684** [1.778]	2.788 [1.878]	644.229 [1.273e+08]	0.216 [0.612]	0.225 [0.831]	-1.711 [2.899]
marital	-0.564 [0.668]	0.296 [1.028]	-3.527** [1.457]	-1.875 [1.211]	-1.569 [1.531]	143.733 [1.300e+08]	0.08 [0.688]	-0.089 [0.905]	3.694 [3.594]
agehead	-0.001 [0.112]	-0.015 [0.168]	0.284 [0.293]	-0.002 [0.142]	-0.075 [0.147]	64.614 [1633361.983]	-0.046 [0.081]	-0.015 [0.093]	-2.325*** [0.749]
$agehead^2$	0 [0.001]	0 [0.002]	-0.003 [0.003]	0 [0.001]	0 [0.001]	-0.47 [22,115.599]	0 [0.001]	0 [0.001]	0.027*** [0.010]
pelderly	1.39 [1.275]	1.027 [1.691]	5.117* [2.635]	1.863 [1.678]	0.681 [1.708]	2,475.38 [0.000]	0.118 [1.076]	0.283 [1.266]	-276.331 [0.000]
pchild	1.848 [1.162]	1.663 [1.590]	3.321 [2.825]	-0.294 [1.653]	-0.534 [1.641]	-3,191.29 [0.000]	0.813 [1.024]	0.657 [1.196]	-2.807 [14.848]
pfemale	-0.469 [1.044]	-1.072 [1.420]	-0.231 [2.280]	3.183* [1.792]	2.126 [1.703]	921.132 [0.000]	0.961 [0.948]	0.988 [1.130]	3.975 [7.667]
manufactu	-2.105 [1.445]	-3.058 [2.233]	-1.42 [1.805]	-1.846 [2.185]	-72.41 [7,973.681]	1,525.27 [49759197.254]	-0.685 [0.615]	-0.536 [0.710]	-42.191 [6.924e+08]
Constant	-4.857 [2.997]	-5.94 [4.461]	-16.177** [8.052]	-8.585* [4.383]	-6.601 [4.189]	-5,812.91 [0.000]	-4.276* [2.203]	-4.651* [2.528]	49.346 [0.000]
Observations	1127	692	435	1202	755	447	1585	1028	557
Number of id	565	348	219	601	378	224	793	516	281

Source: The author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.25: Results of Household Poverty Status Models (Order Probit)(GSO) for the Whole Country, 2004-2006

Prob (GSO)	Estimation				Marginal effects		
	Coef.	Std. Err.	z	P>z	dy/dx	Std. Err.	X
hhland	-0.0591	0.127092	-0.47	0.642	0.018088	0.03839	0.850093
labour	0.00857	0.240681	0.04	0.972	-0.00266	0.07477	0.538162
lfixedca	-0.00728	0.009432	-0.77	0.44	0.002261	0.00295	4.55356
skilled ratio	0.211742	0.677436	0.31	0.755	-0.06578	0.21062	0.009751
occuphd_1	0.234675	0.520253	0.45	0.652	-0.06666	0.1339	0.005587
occuphd_3	4.952379	101.6436	0.05	0.961	-0.24256	0.01329	0.001862
occuphd_4	-0.39278	0.855582	-0.46	0.646	0.136822	0.32493	0.001862
occuphd_5	-0.93912	0.436811	-2.15	0.032	0.351349	0.17034	0.00838
occuphd_6	0.351775	0.312578	1.13	0.26	-0.09531	0.07363	0.013966
occuphd_7	0.335891	0.207493	1.62	0.105	-0.09232	0.05161	0.040037
occuphd_8	-0.38449	0.842089	-0.46	0.648	0.13368	0.31897	0.001862
occuphd_11	-0.21199	0.132661	-1.6	0.11	0.069162	0.04597	0.147114
hhsize	0.062893	0.021509	2.92	0.003	-0.01954	0.00719	4.93203
gender	0.023447	0.159827	0.15	0.883	-0.00732	0.0501	0.770019
marital	-0.09718	0.158861	-0.61	0.541	0.029614	0.04763	0.771881
agehead	0.062578	0.01898	3.3	0.001	-0.01944	0.00646	48.4162
agehead^2	-0.00066	0.000184	-3.59	0	0.000205	0.00006	2586.8
pelderly	0.363018	0.262967	1.38	0.167	-0.11277	0.08309	0.14656
pchild	-0.14173	0.254029	-0.56	0.577	0.04403	0.07913	0.317942
pfemale	-0.34579	0.202793	-1.71	0.088	0.107422	0.06466	0.541538
ethnic	0.111442	0.097295	1.15	0.252	-0.03485	0.03095	0.586592
saving	0.363879	0.311963	1.17	0.243	-0.09811	0.07278	0.014898
headruraln	0.023366	0.247237	0.09	0.925	-0.0072	0.0756	0.026071
headsalary	-0.1378	0.191004	-0.72	0.471	0.044607	0.06446	0.053073
remittance	-0.04389	0.098956	-0.44	0.657	0.013489	0.03015	0.837989
manufactu	0.104594	0.240618	0.43	0.664	-0.03249	0.07487	0.046167
reg62	-0.09557	0.145587	-0.66	0.512	0.030112	0.04667	0.284916
reg63	-0.16383	0.124961	-1.31	0.19	0.051858	0.04081	0.329609
reg64	-0.12663	0.16992	-0.75	0.456	0.040734	0.05671	0.091248
reg65	0.278953	0.32938	0.85	0.397	-0.07796	0.08238	0.014898
reg66	0.006428	0.149362	0.04	0.966	-0.00199	0.04625	0.1527
urban	0.260187	0.117461	2.22	0.027	-0.07513	0.03332	0.133147
/cut1	0.581228	0.521445					
/cut2	1.461873	0.522344					
Obs	1074						
Pseudo R2	0.0337						

Source: The author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.26: Results of Household Poverty Status Models (Order Probit) (MOLISA) for the Whole Country, 2004-2006

Prob (MOLISA)	Estimation				Marginal effects		
	Coef.	Std. Err.	z	P>z	dy/dx	Std. Err.	X
hhland	0.060221	0.100094	0.6	0.547	-0.02362	0.03939	0.761975
labour	0.225333	0.21179	1.06	0.287	-0.08811	0.08308	0.577407
lfixedca	-0.019	0.00864	-2.2	0.028	0.007431	0.00342	4.04599
skilled ratio	-0.4225	0.403162	-1.05	0.295	0.165214	0.15813	0.018938
occuphd_1	0.061081	0.344823	0.18	0.859	-0.02373	0.133	0.008843
occuphd_3	-0.06638	0.448173	-0.15	0.882	0.026109	0.17719	0.005895
occuphd_4	5.880388	167.2756	0.04	0.972	-0.42579	0.01359	0.002211
occuphd_5	-0.37801	0.271583	-1.39	0.164	0.149888	0.10675	0.016212
occuphd_6	-0.02408	0.230466	-0.1	0.917	0.009436	0.09052	0.019897
occuphd_7	0.023569	0.157111	0.15	0.881	-0.0092	0.06117	0.050847
occuphd_8	0.219007	1.051185	0.21	0.835	-0.08314	0.38427	0.000737
occuphd_11	0.114446	0.113239	1.01	0.312	-0.04434	0.04359	0.153279
hhsize	0.045555	0.02138	2.13	0.033	-0.01781	0.00846	4.51879
gender	0.08999	0.114109	0.79	0.43	-0.03531	0.04495	0.711127
marital	-0.0293	0.117271	-0.25	0.803	0.011443	0.04574	0.718497
agehead	0.023291	0.017717	1.31	0.189	-0.00911	0.00696	49.2587
agehead^2	-0.00019	0.00017	-1.11	0.265	7.42E-05	0.00007	2648.59
pelderly	0.374349	0.238032	1.57	0.116	-0.14638	0.09371	0.143113
pchild	0.342699	0.230559	1.49	0.137	-0.13401	0.09071	0.282849
pfemale	-0.30072	0.167458	-1.8	0.073	0.11759	0.06606	0.538275
ethnic	-0.08321	0.086099	-0.97	0.334	0.032425	0.03353	0.683861
saving	0.512649	0.299428	1.71	0.087	-0.18319	0.09801	0.011791
headruraln	-0.16135	0.180323	-0.89	0.371	0.063795	0.07187	0.039794
headsalary	-0.02088	0.131561	-0.16	0.874	0.00818	0.05162	0.090641
remittance	-0.11894	0.093099	-1.28	0.201	0.046037	0.03585	0.867354
manufactu	-0.20417	0.158126	-1.29	0.197	0.079836	0.06211	0.075626
reg62	-0.17321	0.121408	-1.43	0.154	0.06818	0.04816	0.247605
reg63	-0.26171	0.105354	-2.48	0.013	0.102997	0.04192	0.297716
reg64	-0.27297	0.151458	-1.8	0.071	0.108179	0.06033	0.07664
reg65	0.206138	0.168225	1.23	0.22	-0.07869	0.06286	0.056006
reg66	0.05747	0.122641	0.47	0.639	-0.02239	0.04761	0.191599
urban	0.079439	0.103837	0.77	0.444	-0.03086	0.04013	0.125276
/cut1	0.511344	0.474588					
/cut2	1.49729	0.475601					
Obs	1357						
Pseudo R2	0.0257						

Source: The author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.27: Results of Household Poverty Status Models (Order Probit) (GSO) for the Whole Country, 2006-2008

Prob (GSO)	Estimation				Marginal effects		
	Coef.	Std. Err.	z	P>z	dy/dx	Std. Err.	X
hhland	-0.14113	0.127443	-1.11	0.268	0.053707	0.04844	0.84726
labour	-0.11569	0.284308	-0.41	0.684	0.044669	0.10993	0.539734
lfixedca	0.002607	0.009006	0.29	0.772	-0.00101	0.00348	4.48345
skilled ratio	0.125868	0.634028	0.2	0.843	-0.0486	0.24488	0.012662
occuphd_3	-5.04189	165.2035	-0.03	0.976	0.604425	0.16106	0.001797
occuphd_4	-5.31469	115.8371	-0.05	0.963	0.608288	0.11502	0.003594
occuphd_5	0.02523	0.343685	0.07	0.941	-0.00971	0.13183	0.01168
occuphd_6	-0.72957	0.224736	-3.25	0.001	0.283721	0.08202	0.031447
occuphd_7	-0.13351	0.221096	-0.6	0.546	0.05224	0.08758	0.031447
occuphd_8	0.793627	0.462975	1.71	0.086	-0.25307	0.13397	0.008086
occuphd_11	-0.13081	0.130299	-1	0.315	0.051	0.0515	0.158131
hhsize	0.009465	0.021809	0.43	0.664	-0.00365	0.00843	4.71159
gender	0.110299	0.140829	0.78	0.434	-0.04289	0.05532	0.788859
marital	-0.11667	0.142095	-0.82	0.412	0.044609	0.05414	0.791554
agehead	0.035633	0.0182	1.96	0.05	-0.01376	0.00725	50.0207
$agehead^2$	-0.00035	0.000176	-2.02	0.044	0.000137	0.00007	2768.75
pelderly	-0.26876	0.300033	-0.9	0.37	0.103771	0.11664	0.178972
pchild	0.226492	0.333167	0.68	0.497	-0.08745	0.12915	0.321319
pfemale	0.055565	0.183567	0.3	0.762	-0.02145	0.07093	0.534556
ethnic	-0.31382	0.09798	-3.2	0.001	0.11985	0.0407	0.584906
saving	-0.30949	0.334641	-0.92	0.355	0.122301	0.13345	0.014376
headruraln	-0.73429	0.231092	-3.18	0.001	0.285605	0.08435	0.042228
headsalary	-0.04975	0.201358	-0.25	0.805	0.019315	0.0786	0.045822
remittance	0.047402	0.098137	0.48	0.629	-0.01837	0.03825	0.841869
manufactu	-0.22637	0.226371	-1	0.317	0.087401	0.08814	0.044917
reg62	-0.43484	0.144746	-3	0.003	0.169438	0.05834	0.322552
reg63	-0.19596	0.126588	-1.55	0.122	0.076299	0.05027	0.283917
reg64	-0.51737	0.164397	-3.15	0.002	0.203824	0.06427	0.111411
reg65	-0.76926	0.309152	-2.49	0.013	0.297652	0.11037	0.019766
reg66	-0.33694	0.151703	-2.22	0.026	0.132584	0.06079	0.141959
urban	0.254959	0.125638	2.03	0.042	-0.09535	0.04831	0.119497
/cut1	-0.07787	0.551337					
/cut2	0.723721	0.551655					
Obs	1113						
Pseudo R2	0.0389						

Source: The author's calculation

Table A5.28: Results of Household Poverty Status Models (Order Probit) (MOLISA) for the Whole Country, 2006-2008

Prob (MOLISA)	Estimation				Marginal effects		
	Coef.	Std. Err.	z	P>z	dy/dx	Std. Err.	X
hhland	0.142679	0.094992	1.5	0.133	-0.04477	0.03071	0.775851
labour	-0.12782	0.207871	-0.61	0.539	0.03902	0.06351	0.606295
lfixedca	0.005026	0.007764	0.65	0.517	-0.00153	0.00237	4.13682
skilled ratio	0.233284	0.361773	0.64	0.519	-0.07121	0.11053	0.020964
occuphd_1	0.443539	0.363797	1.22	0.223	-0.11256	0.0739	0.007065
occuphd_2	5.132225	133.1593	0.04	0.969	-0.23321	0.0108	0.000642
occuphd_3	0.410988	0.556982	0.74	0.461	-0.10573	0.11635	0.003211
occuphd_4	-0.1854	0.659592	-0.28	0.779	0.060242	0.2266	0.001927
occuphd_5	-0.12122	0.209702	-0.58	0.563	0.038533	0.06925	0.021195
occuphd_6	0.148731	0.18878	0.79	0.431	-0.04299	0.05154	0.025048
occuphd_7	0.047914	0.136123	0.35	0.725	-0.0144	0.04025	0.055234
occuphd_8	0.595512	0.409196	1.46	0.146	-0.14045	0.06945	0.00578
occuphd_11	-0.13471	0.108605	-1.24	0.215	0.04258	0.03555	0.129737
hhsize	0.046504	0.020019	2.32	0.02	-0.0142	0.00618	4.31985
gender	-0.10571	0.100818	-1.05	0.294	0.031716	0.02979	0.717405
marital	0.079277	0.10417	0.76	0.447	-0.02453	0.0327	0.741169
agehead	0.011707	0.016708	0.7	0.483	-0.00357	0.00511	49
$agehead^2$	-0.00014	0.000166	-0.83	0.407	0.000042	0.00005	2610.95
pelderly	0.042617	0.216453	0.2	0.844	-0.01301	0.06608	0.146852
pchild	-0.53415	0.246659	-2.17	0.03	0.163058	0.07601	0.288457
pfemale	0.024734	0.146719	0.17	0.866	-0.00755	0.04479	0.539112
ethnic	0.217746	0.078757	2.76	0.006	-0.0683	0.02565	0.681439
saving	0.149938	0.293841	0.51	0.61	-0.04325	0.07975	0.010276
headruraln	-0.31313	0.1463	-2.14	0.032	0.104429	0.05275	0.061015
headsalary	-0.20647	0.126395	-1.63	0.102	0.066839	0.04327	0.07964
remittance	-0.05245	0.085999	-0.61	0.542	0.015786	0.02553	0.862556
manufactu	-0.33969	0.146319	-2.32	0.02	0.103695	0.04515	0.082679
reg62	0.230386	0.109034	2.11	0.035	-0.06723	0.03067	0.24727
reg63	0.21872	0.094494	2.31	0.021	-0.06436	0.02711	0.282595
reg64	0.313869	0.127695	2.46	0.014	-0.0866	0.03206	0.098908
reg65	-0.04156	0.161514	-0.26	0.797	0.01286	0.05064	0.050096
reg66	0.335891	0.111688	3.01	0.003	-0.09393	0.02914	0.17341
urban	0.282034	0.103877	2.72	0.007	-0.07894	0.02701	0.113038
/cut1	-0.13251	0.461244					
/cut2	1.296649	0.462133					
Obs	1557						
Pseudo R2	0.0232						

Source: The author's calculation

Table A5.29: Results of Household Poverty Status Models (Order Probit) (MOLISA) for the Whole Country, 2010-2012

Prob (MOLISA)	Estiamtion				Marginal effects		
	Coef.	Std. Err.	z	P>z	dy/dx	Std. Err.	X
hhland	0.016959	0.107074	0.16	0.874	-.006037	0.03819	0.735762
labour	0.056593	0.197093	0.29	0.774	-.0201071	0.07007	0.58211
lfixedca	-0.01409	0.013846	-1.02	0.309	.0050072	0.00496	7.81455
skilled ratio	0.482913	0.353313	1.37	0.172	-.1715761	0.12723	0.02209
occuphd_1	0.761227	0.411566	1.85	0.064	-.2088895	0.08794	0.00596
occuphd_2	-5.85118	189.2417	-0.03	0.975	.6876301	0.01203	0.001325
occuphd_3	-1.30442	0.632232	-2.06	0.039	.4799391	0.18144	0.003311
occuphd_4	1.488543	0.651574	2.28	0.022	-.2921648	0.08446	0.003311
occuphd_5	0.213513	0.197544	1.08	0.280	-.0719448	0.06351	0.043046
occuphd_6	0.027091	0.133317	0.20	0.839	-.0095696	0.04683	0.062914
occuphd_7	0.325996	0.14429	2.26	0.024	-.106522	0.04575	0.051656
occuphd_8	-0.10165	0.302472	-0.34	0.737	.0369348	0.11225	0.009934
occuphd_11	0.034111	0.117336	0.29	0.771	-.0120452	0.0412	0.13245
hhsize	0.027323	0.021954	1.24	0.213	-.0097075	0.00789	4.05364
gender	-0.25425	0.107098	-2.37	0.018	.0876365	0.03757	0.719205
marital	0.034131	0.106994	0.32	0.750	-.0121717	0.03832	0.730464
agehead	0.001596	0.013515	0.12	0.906	-.0005671	0.0048	47.5245
$agehead^2$	-0.000061	0.000134	-0.45	0.651	.0000216	0.00005	2517.26
pelderly	0.002979	0.204336	0.01	0.988	-.0010585	0.0726	0.161889
pchild	-0.17229	0.233349	-0.74	0.460	.0612126	0.08324	0.289632
pfemale	-0.28829	0.157906	-1.83	0.068	.1024295	0.05746	0.544502
ethnic	-0.04185	0.084664	-0.49	0.621	.0148648	0.03012	0.508609
saving	0.584338	0.332603	1.76	0.079	-.1725448	0.08267	0.009272
headruraln	-0.07273	0.207372	-0.35	0.726	.0262331	0.07594	0.04702
headsalary	0.066801	0.118067	0.57	0.572	-.02343	0.04097	0.113907
remittance	0.08333	0.07881	1.06	0.290	-.0299775	0.02889	0.825166
manufactu	-0.01961	0.104418	-0.19	0.851	.0069681	0.03711	0.117931
reg62	-0.03451	0.126815	-0.27	0.786	.0122944	0.04532	0.335099
reg63	-0.1079	0.124339	-0.87	0.386	.0388691	0.04559	0.217219
reg64	-0.04049	0.148721	-0.27	0.785	.0144999	0.05369	0.090066
reg65	0.172222	0.160112	1.08	0.282	-.0588655	0.05305	0.075497
reg66	-0.26257	0.134059	-1.96	0.050	.0965241	0.05157	0.184106
urban	0.061719	0.111117	0.56	0.579	-.0216618	0.0386	0.102649
/cut1	-0.85022	0.419253					
/cut2	0.282232	0.418902					
Obs	1510						
Pseudo R2	0.019						

Source: The author's calculation

Table A5.30: Results of Household Poverty Status Models (Order Probit) (GSO) for the Whole Country, 2010-2012

Prob (GSO)	Estimation				Marginal effects		
	Coef.	Std. Err.	z	P>z	dy/dx	Std. Err.	X
hhland	-0.16284	0.134413	-1.21	0.226	.0502731	0.04765	0.850324
labour	-0.81448	0.262559	-3.10	0.002	.2616451	0.15162	0.555363
lfixedca	0.004762	0.014398	0.33	0.741	-.0015297	0.00468	7.80168
skilled ratio	1.025041	0.526317	1.95	0.051	-.3292843	0.23169	0.014562
occuphd_1	4.921668	134.8563	0.04	0.971	-.2616355	0.15887	0.004045
occuphd_2	4.662586	303.2687	0.02	0.988	-.2564113	0.22212	0.000809
occuphd_3	-1.42983	0.799157	-1.79	0.074	.5247143	0.23807	0.002427
occuphd_4	5.233728	173.1507	0.03	0.976	-.2592958	0.19416	0.002427
occuphd_5	0.049016	0.329656	0.15	0.882	-.0154968	0.10282	0.016181
occuphd_6	0.099671	0.150959	0.66	0.509	-.0310723	0.0483	0.06068
occuphd_7	-0.22602	0.203138	-1.11	0.266	.0772886	0.07963	0.032362
occuphd_8	-0.25869	0.422525	-0.61	0.540	.0894648	0.15916	0.007282
occuphd_11	0.18845	0.14092	1.34	0.181	-.0575286	0.05094	0.115696
hhsize	-0.03781	0.022816	-1.66	0.097	.0121469	0.00937	4.42233
gender	0.186943	0.141223	1.32	0.186	-.0620612	0.05553	0.786408
marital	-0.0842	0.140524	-0.60	0.549	.0266167	0.04566	0.782362
agehead	0.069061	0.015094	4.58	0.000	-.0221852	0.01173	46.161
$agehead^2$	-0.00067	0.000153	-4.40	0.000	.0002161	0.00012	2391.34
pelderly	-0.92506	0.277639	-3.33	0.001	.2971649	0.16859	0.142569
pchild	-0.82496	0.291299	-2.83	0.005	.2650116	0.15823	0.332761
pfemale	0.42255	0.187635	2.25	0.024	-.1357402	0.08891	0.542707
ethnic	0.028993	0.098789	0.29	0.769	-.0093012	0.03197	0.43123
saving	1.161667	0.449362	2.59	0.010	-.2228857	0.18328	0.007282
headruraln	0.323681	0.31536	1.03	0.305	-.0926332	0.0958	0.021036
headsalary	-0.13142	0.175688	-0.75	0.454	.0437823	0.0635	0.054207
remittance	0.128963	0.082801	1.56	0.119	-.0424087	0.03383	0.788835
manufactu	0.015313	0.133802	0.11	0.909	-.0049191	0.04305	0.086866
reg62	0.302297	0.146864	2.06	0.040	-.0950199	0.06542	0.402913
reg63	0.309244	0.140474	2.20	0.028	-.0934602	0.06411	0.226537
reg64	0.226925	0.172234	1.32	0.188	-.0681582	0.0608	0.085761
reg65	-0.68972	0.235996	-2.92	0.003	.2557624	0.11115	0.029126
reg66	0.005634	0.150071	0.04	0.970	-.0018076	0.04809	0.152104
urban	-0.20517	0.120727	-1.70	0.089	.0692374	0.05155	0.101942
/cut1	0.466033	0.467367					
/cut2	1.385805	0.46828					
Obs	1236						
Pseudo R2	0.037						

Source: The author's calculation

Table A5.30: Results of Household Poverty Status Models (Order Probit) (GSO and MOLISA) for Urban and Rural Areas, 2004-2006

Variables	GSO				MOLISA			
	Urban		Rural		Urban		Rural	
	Coef.	Marginal effects	Coef.	Marginal effects	Coef.	Marginal effects	Coef.	Marginal effects
hhland	-0.002 (0.303)	0.000478 (0.0692)	0.007 (0.153)	-0.00221 (0.0485)	-0.475* (0.271)	0.175 (0.216)	0.169 (0.114)	-0.0668 (0.0453)
labour	1.240 (1.014)	-0.283 (2.637)	-0.489 (0.427)	0.154 (0.145)	0.169 (0.967)	-0.0613 (0.360)	-0.626** (0.317)	0.246** (0.125)
lfixedca	0.046 (0.031)	-0.0106 (0.0985)	-0.016 (0.010)	0.00500 (0.00366)	0.027 (0.034)	-0.00982 (0.0175)	-0.022** (0.009)	0.00882** (0.00359)
skilled ratio	-0.006 (1.401)	0.00138 (0.320)	-0.407 (0.895)	0.128 (0.286)	-0.852 (0.709)	0.310 (0.468)	-0.269 (0.539)	0.106 (0.212)
occuphd_4	-5.258 (554.955)	0.863 (1.733)	5.356 (282.472)	-0.247* (0.136)	5.512 (288.375)	-0.345 (0.878)	5.616 (92.985)	-0.433*** (0.0146)
occuphd_5	-1.301 (0.895)	0.445 (1.543)	-0.857 (0.590)	0.321 (0.236)	-0.002 (0.432)	0.000787 (0.157)	-0.601 (0.390)	0.235 (0.143)
occuphd_6	6.304 (408.427)	-0.166 (1.671)	0.272 (0.327)	-0.0774 (0.0892)	0.555 (0.906)	-0.172 (0.411)	-0.026 (0.241)	0.0102 (0.0949)
occuphd_7	0.078 (0.539)	-0.0173 (0.202)	0.420* (0.237)	-0.113 (0.0739)	-0.230 (0.422)	0.0866 (0.184)	0.018 (0.176)	-0.00693 (0.0688)
occuphd_11	-0.036 (0.395)	0.00820 (0.119)	-0.264* (0.144)	0.0881 (0.0577)	0.219 (0.323)	-0.0775 (0.156)	0.128 (0.123)	-0.0498 (0.0472)
hhsize	0.134* (0.081)	-0.0306 (0.285)	0.060*** (0.023)	-0.0189* (0.00984)	0.030 (0.064)	-0.0108 (0.0269)	0.045** (0.023)	-0.0177** (0.00900)
gender	0.150 (0.448)	-0.0350 (0.336)	0.068 (0.175)	-0.0216 (0.0570)	-0.181 (0.263)	0.0657 (0.126)	0.182 (0.131)	-0.0718 (0.0519)

Variables	GSO				MOLISA			
	Urban		Rural		Urban		Rural	
	Coef.	Marginal effects	Coef.	Marginal effects	Coef.	Marginal effects	Coef.	Marginal effects
marital	-0.105 (0.448)	0.0236 (0.244)	-0.198 (0.175)	0.0597 (0.0557)	-0.042 (0.296)	0.0152 (0.109)	-0.095 (0.133)	0.0370 (0.0518)
agehead	0.050 (0.071)	-0.0114 (0.107)	0.077*** (0.019)	-0.0244** (0.0107)	-0.067 (0.056)	0.0243 (0.0368)	0.042** (0.018)	-0.0163** (0.00724)
$agehead^2$	-0.001 (0.001)	0.000116 (0.00109)	-0.001*** (0.000)	0.000256** (0.000110)	0.001 (0.000)	-0.000184 (0.000287)	-0.000** (0.000)	0.000143** (7.14e-05)
pelderly	0.671 (0.621)	-0.153 (1.429)	0.373 (0.241)	-0.117 (0.0871)	-0.073 (0.487)	0.0264 (0.180)	0.265 (0.208)	-0.104 (0.0816)
pchild	-0.318 (0.812)	0.0726 (0.699)	-0.137 (0.217)	0.0430 (0.0700)	-1.327** (0.622)	0.482 (0.650)	0.240 (0.194)	-0.0941 (0.0763)
pfemale	0.368 (0.608)	-0.0839 (0.791)	-0.487** (0.222)	0.153* (0.0891)	-0.488 (0.457)	0.177 (0.279)	-0.303* (0.183)	0.119* (0.0719)
ethnic	0.973** (0.403)	-0.306 (1.644)	0.082 (0.106)	-0.0258 (0.0346)	0.004 (0.376)	-0.00144 (0.137)	-0.096 (0.092)	0.0375 (0.0360)
saving	-5.520 (389.886)	0.872 (1.449)	0.647* (0.347)	-0.156 (0.0987)	0.553 (0.927)	-0.171 (0.413)	0.483 (0.322)	-0.175* (0.104)
headruraln	-0.411 (0.398)	0.110 (0.861)	0.604 (0.376)	-0.149 (0.0999)	-0.220 (0.347)	0.0825 (0.158)	-0.273 (0.227)	0.108 (0.0902)
headsalary	-0.128 (0.549)	0.0308 (0.306)	-0.021 (0.222)	0.00657 (0.0707)	-0.079 (0.331)	0.0289 (0.127)	0.037 (0.150)	-0.0143 (0.0585)
remittance	-0.038 (0.371)	0.00864 (0.116)	-0.086 (0.106)	0.0264 (0.0335)	-0.306 (0.293)	0.105 (0.190)	-0.083 (0.100)	0.0323 (0.0388)
manufactu	0.934 (0.636)	-0.213 (1.985)	-0.221 (0.283)	0.0695 (0.0927)	-0.412 (0.363)	0.150 (0.231)	-0.129 (0.180)	0.0506 (0.0706)

Variables	GSO				MOLISA			
	Urban		Rural		Urban		Rural	
	Coef.	Marginal effects	Coef.	Marginal effects	Coef.	Marginal effects	Coef.	Marginal effects
reg62	-0.654 (0.486)	0.185 (1.301)	-0.025 (0.158)	0.00801 (0.0501)	0.698 (0.445)	-0.214 (0.442)	-0.227* (0.129)	0.0896* (0.0510)
reg63	-1.225** (0.494)	0.378 (1.964)	-0.033 (0.134)	0.0105 (0.0426)	0.007 (0.429)	-0.00266 (0.156)	-0.294*** (0.111)	0.116*** (0.0439)
reg64	-1.203** (0.526)	0.374 (1.924)	0.059 (0.190)	-0.0181 (0.0581)	0.722* (0.428)	-0.222 (0.452)	-0.440*** (0.167)	0.174*** (0.0648)
reg65	-1.070 (0.796)	0.355 (1.595)	0.773** (0.392)	-0.175 (0.109)	0.287 (0.453)	-0.0991 (0.213)	0.279 (0.196)	-0.106 (0.0712)
reg66	-0.597 (0.447)	0.151 (1.237)	0.121 (0.171)	-0.0369 (0.0524)	0.428 (0.394)	-0.149 (0.254)	0.084 (0.135)	-0.0327 (0.0524)
occuphd_1			0.310 (0.547)	-0.0867 (0.138)			0.073 (0.348)	-0.0283 (0.134)
occuphd_3			5.084 (199.680)	-0.249** (0.0973)	5.706 (202.492)	-0.358 (0.634)	-0.815 (0.597)	0.309 (0.196)
occuphd_8			-0.220 (0.864)	0.0740 (0.310)			0.209 (1.052)	-0.0801 (0.389)
Constant cut1	1.248 (2.218)		0.814 (0.557)		-3.051 (1.891)		0.845* (0.510)	
Constant cut2	2.226 (2.220)		1.719*** (0.558)		-1.814 (1.885)		1.819*** (0.512)	
Observations	143	143	931	931	170	170	1,187	1,187

Source: The author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.31: Results of Household Poverty Status Models (Order Probit) (GSO and MOLISA) for Urban and Rural Areas, 2006- 2008

Variables	GSO				MOLISA			
	Urban		Rural		Urban		Rural	
	Coef.	Marginal effects	Coef.	Marginal effects	Coef.	Marginal effects	Coef.	Marginal effects
hhland	0.242	-0.0963	-0.142	0.0536	0.325	-0.0657	0.122	-0.0385
	(0.317)	(0.135)	(0.150)	(0.0565)	(0.268)	(0.292)	(0.106)	(0.0347)
labour	0.215	-0.0856	-1.617***	0.621***	0.371	-0.0787	-0.496*	0.151
	(1.197)	(0.479)	(0.502)	(0.217)	(0.870)	(0.382)	(0.289)	(0.0924)
lfixedca	-0.075**	0.0300	0.006	-0.00230	0.035	-0.00737	0.003	-0.00106
	(0.030)	(0.0223)	(0.010)	(0.00374)	(0.028)	(0.0319)	(0.008)	(0.00251)
skilled ratio	-0.885	0.352	0.390	-0.150	1.564**	-0.332	-0.374	0.114
	(2.086)	(0.859)	(0.700)	(0.270)	(0.786)	(1.419)	(0.465)	(0.144)
occuphd_4	-5.278	0.546	-5.354	0.615***			-0.135	0.0431
	(650.913)	(2.565)	(133.623)	(0.156)			(0.657)	(0.219)
occuphd_6	-6.544	0.589	-0.521**	0.205**	-0.644	0.183	0.228	-0.0639
	(286.961)	(1.904)	(0.235)	(0.0915)	(0.720)	(0.600)	(0.198)	(0.0521)
occuphd_7	0.237	-0.0929	-0.048	0.0185	-0.613	0.170	0.039	-0.0118
	(0.501)	(0.233)	(0.262)	(0.102)	(0.497)	(0.554)	(0.144)	(0.0430)
occuphd_8	0.515	-0.194	5.266	-0.393*	-1.576**	0.537	5.499	-0.238***
	(0.680)	(0.523)	(225.651)	(0.204)	(0.704)	(0.676)	(84.784)	(0.0116)
occuphd_11	-0.351	0.139	-0.081	0.0312	0.126	-0.0257	-0.156	0.0498
	(0.438)	(0.174)	(0.141)	(0.0549)	(0.315)	(0.128)	(0.118)	(0.0400)
hhsize	-0.017	0.00687	0.015	-0.00569	-0.137*	0.0290	0.056***	-0.0171**
	(0.084)	(0.0338)	(0.023)	(0.00906)	(0.073)	(0.124)	(0.021)	(0.00724)
gender	-0.587	0.228	0.135	-0.0522	-0.158	0.0334	-0.106	0.0318
	(0.534)	(0.348)	(0.154)	(0.0605)	(0.280)	(0.154)	(0.113)	(0.0337)
marital	0.302	-0.120	-0.126	0.0478	0.551*	-0.128	0.071	-0.0220
	(0.497)	(0.197)	(0.153)	(0.0579)	(0.309)	(0.497)	(0.116)	(0.0365)

Variables	GSO				MOLISA			
	Urban		Rural		Urban		Rural	
	Coef.	Marginal effects	Coef.	Marginal effects	Coef.	Marginal effects	Coef.	Marginal effects
agehead	-0.080	0.0317	0.029	-0.0112	0.108	-0.0229	0.004	-0.00119
	(0.093)	(0.0418)	(0.018)	(0.00710)	(0.074)	(0.0988)	(0.017)	(0.00505)
agehead^2	0.001	-0.000206	-0.000	0.000107	-0.001	0.000213	-0.000	1.59e-05
	(0.001)	(0.000362)	(0.000)	(6.84e-05)	(0.001)	(0.000919)	(0.000)	(4.99e-05)
pelderly	-0.044	0.0176	-0.386*	0.148*	-0.782	0.166	0.099	-0.0303
	(0.859)	(0.342)	(0.226)	(0.0900)	(0.721)	(0.721)	(0.184)	(0.0565)
pchild	-0.071	0.0284	0.142	-0.0545	-0.246	0.0523	-0.470**	0.144**
	(0.850)	(0.338)	(0.238)	(0.0919)	(0.614)	(0.257)	(0.190)	(0.0634)
pfemale	0.076	-0.0303	0.025	-0.00943	2.267***	-0.481	-0.122	0.0372
	(0.770)	(0.307)	(0.193)	(0.0742)	(0.555)	(2.046)	(0.156)	(0.0482)
ethnic	-0.478	0.183	-0.217**	0.0828*	-0.036	0.00761	0.277***	-0.0870***
	(0.479)	(0.410)	(0.106)	(0.0426)	(0.340)	(0.0771)	(0.083)	(0.0305)
saving	2.442*	-0.491	-0.646*	0.253*	6.296	-0.146	0.020	-0.00601
	(1.257)	(3.075)	(0.392)	(0.147)	(210.447)	(0.672)	(0.313)	(0.0943)
headruraln	-0.442	0.175	-0.728**	0.284**	-0.292	0.0673	-0.416**	0.143**
	(0.428)	(0.182)	(0.333)	(0.121)	(0.299)	(0.275)	(0.185)	(0.0717)
headsalary	0.190	-0.0750	-0.343	0.135	-0.468	0.117	-0.173	0.0556
	(0.394)	(0.177)	(0.259)	(0.104)	(0.329)	(0.430)	(0.140)	(0.0481)
remittance	-0.231	0.0909	0.069	-0.0266	-0.208	0.0401	-0.041	0.0125
	(0.396)	(0.193)	(0.103)	(0.0404)	(0.338)	(0.192)	(0.090)	(0.0271)
manufactu	-1.248*	0.497	-0.189	0.0728	-0.182	0.0386	-0.356**	0.109**
	(0.642)	(0.402)	(0.264)	(0.102)	(0.389)	(0.184)	(0.164)	(0.0537)
reg62	-1.713**	0.563	-0.300**	0.116*	-1.349***	0.441	0.334***	-0.0962***
	(0.761)	(1.594)	(0.153)	(0.0613)	(0.468)	(0.795)	(0.115)	(0.0364)
reg63	0.025	-0.00994	-0.126	0.0487	-0.236	0.0534	0.302***	-0.0878***
	(0.753)	(0.299)	(0.131)	(0.0513)	(0.326)	(0.228)	(0.101)	(0.0326)

Variables	GSO				MOLISA			
	Urban		Rural		Urban		Rural	
	Coef.	Marginal effects	Coef.	Marginal effects	Coef.	Marginal effects	Coef.	Marginal effects
reg64	-0.424	0.168	-0.517***	0.203***	-0.428	0.105	0.406***	-0.108***
	(0.748)	(0.298)	(0.179)	(0.0704)	(0.368)	(0.399)	(0.141)	(0.0398)
reg65	-1.242	0.426	-0.189	0.0739	-0.364	0.0889	-0.186	0.0603
	(0.837)	(1.382)	(0.395)	(0.157)	(0.372)	(0.345)	(0.191)	(0.0659)
reg66	0.031	-0.0125	-0.449***	0.177***	-0.050	0.0108	0.364***	-0.101***
	(0.742)	(0.295)	(0.167)	(0.0667)	(0.336)	(0.0863)	(0.123)	(0.0369)
occuphd_3			-4.486	0.612***	5.652	-0.145	0.059	-0.0177
			(164.617)	(0.181)	(207.399)	(0.673)	(0.690)	(0.202)
occuphd_5			0.147	-0.0552	-0.298	0.0719	-0.075	0.0237
			(0.363)	(0.133)	(0.357)	(0.287)	(0.282)	(0.0909)
occuphd_1					-1.292	0.434	0.851**	-0.177**
					(0.931)	(0.791)	(0.432)	(0.0691)
occuphd_2					4.941	-0.137		
					(305.414)	(0.735)		
Constant cut1	-4.562*		-0.056		2.044		-0.189	
	(2.652)		(0.554)		(2.058)		(0.476)	
Constant cut2	-3.852		0.786		3.617*		1.266***	
	(2.646)		(0.554)		(2.071)		(0.477)	
Observations	133	133	980	980	176	176	1,381	1,381

Source: The author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.32: Results of Household Poverty Status Models (Order Probit) (GSO and MOLISA) for Urban and Rural Areas, 2010- 2012

Variables	GSO				MOLISA			
	Urban		Rural		Urban		Rural	
	Coef.	Marginal effects	Coef.	Marginal effects	Coef.	Marginal effects	Coef.	Marginal effects
hhland	0.143	-0.0526	-0.077	0.0236	-0.016	0.00527	-0.006	0.00216
	(0.536)	(0.219)	(0.151)	(0.0476)	(0.435)	(0.153)	(0.114)	(0.0400)
labour	-0.978	0.360	-0.728***	0.228	0.848	-0.276	-0.108	0.0380
	(1.063)	(0.772)	(0.278)	(0.166)	(0.668)	(2.919)	(0.212)	(0.0746)
lfixedca	-0.010	0.00357	0.003	-0.000836	0.012	-0.00405	-0.018	0.00628
	(0.063)	(0.0242)	(0.015)	(0.00479)	(0.058)	(0.0467)	(0.014)	(0.00509)
skilled ratio	4.503***	-1.659	1.084	-0.339	1.003	-0.327	0.699*	-0.246*
	(1.626)	(3.117)	(0.660)	(0.295)	(0.863)	(3.454)	(0.405)	(0.143)
occuphd_3	6.450	-0.364	-5.997	0.760***	-8.976	0.756	-1.016	0.388*
	(327.928)	(1.432)	(202.858)	(0.253)	(853.429)	(4.897)	(0.667)	(0.233)
occuphd_5	0.730	-0.225	0.102	-0.0308	0.772*	-0.212	-0.074	0.0264
	(0.747)	(0.720)	(0.420)	(0.124)	(0.412)	(2.863)	(0.243)	(0.0885)
occuphd_6	2.119***	-0.381	0.003	-0.00100	1.331**	-0.256	-0.069	0.0248
	(0.715)	(1.667)	(0.158)		(0.562)	(4.534)	(0.139)	(0.0504)
occuphd_7	-2.739***	0.715	0.209	-0.0606	0.092	-0.0291	0.364**	-0.116***
	(0.714)	(1.330)	(0.242)	(0.0776)	(0.521)	(0.364)	(0.154)	(0.0444)
occuphd_8	-6.972	0.714	0.890	-0.188	-0.675	0.251	0.103	-0.0352
	(160.114)	(0.886)	(0.627)	(0.192)	(0.802)	(1.324)	(0.359)	(0.120)
occuphd_11	1.910***	-0.519	0.083	-0.0253	0.352	-0.108	0.040	-0.0139
	(0.621)	(1.438)	(0.151)	(0.0478)	(0.455)	(1.282)	(0.126)	(0.0438)
hhsize	-0.106	0.0390	-0.031	0.00962	0.024	-0.00797	0.027	-0.00963
	(0.093)	(0.0797)	(0.024)	(0.00969)	(0.093)	(0.0893)	(0.023)	(0.00816)
gender	2.171***	-0.721***	0.057	-0.0180	0.070	-0.0227	-0.361***	0.121***
	(0.710)	(0.227)	(0.152)	(0.0500)	(0.359)	(0.266)	(0.115)	(0.0372)

Variables	GSO				MOLISA			
	Urban		Rural		Urban		Rural	
	Coef.	Marginal effects	Coef.	Marginal effects	Coef.	Marginal effects	Coef.	Marginal effects
marital	-1.798***	0.503	-0.025	0.00787	-0.587*	0.184	0.144	-0.0516
	(0.671)	(1.376)	(0.152)	(0.0473)	(0.339)	(2.027)	(0.116)	(0.0422)
agehead	-0.108	0.0396	0.072***	-0.0224	-0.138**	0.0450	0.011	-0.00383
	(0.077)	(0.0784)	(0.016)	(0.0148)	(0.061)	(0.474)	(0.014)	(0.00500)
agehead^2	0.001	-0.000305	-0.001***	0.000218	0.001**	-0.000398	-0.000	5.53e-05
	(0.001)	(0.000618)	(0.000)	(0.000145)	(0.001)	(0.00420)	(0.000)	(5.00e-05)
pelderly	-1.357	0.500	-0.962***	0.301	-0.576	0.188	-0.015	0.00537
	(1.401)	(1.057)	(0.292)	(0.208)	(0.767)	(1.992)	(0.218)	(0.0768)
pchild	-0.901	0.332	-0.750**	0.235	-0.728	0.237	-0.171	0.0603
	(1.178)	(0.751)	(0.307)	(0.175)	(0.815)	(2.515)	(0.251)	(0.0886)
pfemale	0.774	-0.285	0.446**	-0.139	0.452	-0.147	-0.428**	0.151**
	(0.936)	(0.629)	(0.196)	(0.106)	(0.566)	(1.564)	(0.168)	(0.0597)
ethnic	-0.662	0.228	0.058	-0.0180	-0.332	0.101	-0.036	0.0125
	(0.425)	(0.544)	(0.107)	(0.0351)	(0.332)	(1.218)	(0.090)	(0.0319)
headruraln	1.292*	-0.344	0.350	-0.0956	-0.306	0.103	0.009	-0.00317
	(0.681)	(1.223)	(0.475)	(0.132)	(0.524)	(0.984)	(0.268)	(0.0939)
headsalary	2.124***	-0.418	-0.193	0.0638	-0.182	0.0614	0.053	-0.0186
	(0.603)	(1.683)	(0.197)	(0.0768)	(0.508)	(0.611)	(0.125)	(0.0431)
remittance	-0.050	0.0183	0.157*	-0.0506	-0.342	0.102	0.154*	-0.0556*
	(0.386)	(0.145)	(0.087)	(0.0411)	(0.345)	(1.276)	(0.083)	(0.0306)
manufactu	0.319	-0.117	0.007	-0.00220	-0.056	0.0182	-0.029	0.0102
	(0.564)	(0.300)	(0.143)	(0.0446)	(0.393)	(0.231)	(0.112)	(0.0395)
reg62	-0.727	0.280	0.312**	-0.0959	-0.377	0.132	-0.036	0.0128
	(0.704)	(0.345)	(0.157)	(0.0772)	(0.594)	(1.101)	(0.132)	(0.0467)
reg63	-1.153	0.426	0.338**	-0.0983	-0.404	0.138	-0.077	0.0274
	(0.708)	(0.466)	(0.151)	(0.0799)	(0.528)	(1.251)	(0.131)	(0.0471)

Variables	GSO				MOLISA			
	Urban		Rural		Urban		Rural	
	Coef.	Marginal effects	Coef.	Marginal effects	Coef.	Marginal effects	Coef.	Marginal effects
reg64	-1.554**	0.551	0.317*	-0.0897	6.352	-0.318	-0.124	0.0445
	(0.703)	(0.507)	(0.186)	(0.0807)	(387.276)	(4.712)	(0.154)	(0.0569)
reg65	-1.831**	0.608	-0.697**	0.256*	0.527	-0.156	-0.052	0.0187
	(0.861)	(0.799)	(0.271)	(0.134)	(0.562)	(1.936)	(0.180)	(0.0649)
reg66	-1.993**	0.666	0.026	-0.00804	-0.577	0.202	-0.270*	0.0987*
	(0.825)	(0.571)	(0.160)	(0.0498)	(0.560)	(1.606)	(0.143)	(0.0540)
occuphd_1			4.934	-0.250			0.722*	-0.199**
			(134.771)	(0.208)			(0.413)	(0.0810)
occuphd_2			4.651	-0.244	-5.709	0.750	-5.729	0.692***
			(303.192)	(0.267)	(853.428)	(4.968)	(136.826)	(0.0127)
occuphd_4			5.269	-0.247	6.374	-0.290	1.216*	-0.267***
			(172.698)	(0.240)	(605.823)	(4.996)	(0.731)	(0.0732)
saving			0.876*	-0.186	6.445	-0.290	0.400	-0.125
			(0.456)	(0.184)	(562.439)	(5.096)	(0.354)	(0.0955)
Constant cut1	-5.064**		0.663		-4.133**		-0.861**	
	(2.406)		(0.493)		(2.005)		(0.438)	
Constant cut2	-4.164*		1.627***		-3.330*		0.332	
	(2.397)		(0.494)		(1.998)		(0.438)	
Observations	126	126	1,110	1,110	155	155	1,355	1,355

Source: The author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.33: Results of Household Poverty Status Models (MOLISA), 2004-2008

Variables	Country	Urban	Rural
labour	-0.660	-8.860	-0.709
	(11.00)	(36.94)	(21.31)
lfixedca	0.0294	-0.0564	0.0234
	(0.365)	(0.215)	(0.639)
skilled ratio	-3.570	6.307	-2.471
	(98.79)	(12.77)	(69.80)
hhsize	0.216	-0.0229	0.118
	(1.143)	(0.512)	(1.950)
gender	-0.485	-0.662	0.816
	(4.230)	(2.404)	(6.954)
marital	2.481	1.703	1.931
	(4.411)	(2.250)	(5.577)
agehead	-0.221	-0.370	-0.0491
	(1.083)	(0.396)	(1.899)
agehead^2	0.00224	0.00273	0.000725
	(0.0110)	(0.00329)	(0.0193)
pelderly	-0.378	0.239	0.381
	(8.898)	(3.970)	(16.93)
pchild	-4.431	-4.325	-2.779
	(6.287)	(3.641)	(14.98)
pfemale	1.114	6.454	1.476
	(12.40)	(5.043)	(12.39)
manufactu	-0.338	-7.540*	-0.0212
	(10.07)	(4.556)	(39.29)
Constant	2.259	7.981	-2.789
	(26.65)	(10.79)	(47.55)
Observations	525	75	450
Number of id	175	25	150

Source: The author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.33: Results of Household Poverty Status Model (GSO), 2004-2008

Variables	Country	Urban	Rural
labour	-0.122 (0.959)	0.538 (5.093)	0.685 (1.347)
lfixedca	0.0157 (0.0213)	0.0399 (0.216)	0.00736 (0.0239)
skilled ratio	2.504 (1.728)		0.597 (1.694)
hhsize	-0.0698 (0.0536)	0.0804 (0.509)	-0.0253 (0.0588)
gender	-0.890*** (0.338)	-1.879 (2.529)	-0.945** (0.383)
marital	0.235 (0.321)	-1.592 (2.250)	0.165 (0.359)
agehead	0.109** (0.0425)	-0.302 (0.538)	0.0747* (0.0452)
$agehead^2$	-0.00105*** (0.000393)	0.00250 (0.00417)	-0.000662 (0.000422)
pelderly	-1.026* (0.530)	-0.359 (3.326)	-1.602*** (0.599)
pchild	-1.205** (0.491)	1.002 (5.735)	-2.130*** (0.558)
pfemale	-0.608 (0.462)	2.361 (4.368)	-1.144** (0.506)
manufactu	0.598 (0.502)	0.0326 (3.357)	0.509 (0.585)
Constant	-0.485 (1.212)	10.30 (16.88)	0.787 (1.308)
Observations	554	74	474
Number of id	185	25	159

Source: The author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.34: Results of Household Poverty Status Models (Order Probit) (MOLISA), 2004-2008

Variables	Country	Urban	Rural
hhland	0.546***	-0.105	0.842***
	(0.129)	(0.351)	(0.161)
labour	-0.233	-1.854	-0.00880
	(0.391)	(1.416)	(0.419)
lfixedca	-0.0288***	-0.140***	-0.0258**
	(0.0104)	(0.0493)	(0.0111)
skilled ratio	0.703	1.039	0.782
	(0.443)	(1.128)	(0.518)
hhsize	0.0728***	0.232***	0.0654**
	(0.0261)	(0.0895)	(0.0290)
gender	-0.0584	-0.591	0.0229
	(0.135)	(0.388)	(0.156)
marital	0.0415	-0.852**	0.111
	(0.135)	(0.394)	(0.153)
agehead	-0.0227	-0.0496	-0.0329
	(0.0219)	(0.0759)	(0.0242)
$agehead^2$	0.000297	0.000162	0.000415*
	(0.000214)	(0.000653)	(0.000240)
pelderly	-0.401*	0.717	-0.397
	(0.239)	(0.821)	(0.262)
pchild	-0.443**	-2.348***	-0.338
	(0.224)	(0.819)	(0.242)
pfemale	-0.397**	-0.439	-0.412*
	(0.201)	(0.673)	(0.221)
ethnic	-0.144	-0.314	-0.132
	(0.105)	(0.438)	(0.118)
saving	0.485	7.149	0.0613
	(0.345)	(433.3)	(0.403)
headruraln	-0.715***	-1.294**	-1.157**
	(0.271)	(0.551)	(0.451)
headsalary	-0.329**	-0.613	-0.381*
	(0.163)	(0.463)	(0.196)
remittance	-0.0483	-0.692*	0.0194
	(0.112)	(0.363)	(0.122)
manufactu	-0.0421	-1.002*	0.117
	(0.190)	(0.548)	(0.214)
reg62	-0.0227	7.782	-0.0573
	(0.152)	(278.7)	(0.163)
reg63	-0.0171	7.026	-0.0895
	(0.131)	(278.7)	(0.135)
reg64	0.0522	8.418	-0.00757
	(0.191)	(278.7)	(0.212)
reg65	0.770***	8.977	0.752***
	(0.224)	(278.7)	(0.275)
reg66	0.410**	8.036	0.543***
	(0.159)	(278.7)	(0.180)

Variables	Country	Urban	Rural
Constant cut1	-0.366 (0.604)	3.483 (278.7)	-0.129 (0.662)
Constant cut2	0.599 (0.604)	4.759 (278.7)	0.864 (0.663)
Observations	908	123	785

Source: The author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.35: Marginal Effects of Household Poverty Status Models (Order Probit) (MOLISA), 2004-2008

Variable	Country				Urban				Rural			
	dy/dx	Std. Err.	z	P>z	dy/dx	Std. Err.	z	P>z	dy/dx	Std. Err.	z	P>z
hhland	-.2148991	0.05008	-4.29	0	.0417217	0.14737	0.28	0.777	-.3254503	0.06117	-5.32	0
labour	.0912492	0.15308	0.6	0.551	.737187	1.17948	0.63	0.532	.0034415	0.16392	0.02	0.983
lfixedca	.0112832	0.0041	2.75	0.006	.0556524	0.08068	0.69	0.49	.0100869	0.00469	2.15	0.032
skilled ratio	-.274893	0.1738	-1.58	0.114	-.4131654	0.73378	-0.56	0.573	-.3056839	0.20988	-1.46	0.145
hhsize	-.028456	0.01032	-2.76	0.006	-.0922529	0.13452	-0.69	0.493	-.0255883	0.01226	-2.09	0.037
gender	.0227981	0.0526	0.43	0.665	.2318311	0.30744	0.75	0.451	-.0089564	0.06132	-0.15	0.884
marital	-.0162411	0.05294	-0.31	0.759	.3263069	0.8348	0.39	0.696	-.0435609	0.06076	-0.72	0.473
agehead	.0088825	0.00857	1.04	0.3	.0197136	0.04099	0.48	0.631	.0128493	0.00975	1.32	0.187
$agehead^2$	-.0001163	0.00008	-1.39	0.165	-.0000645	0.00027	-0.23	0.815	-.0001624	0.0001	-1.65	0.099
pelderly	.156785	0.09401	1.67	0.095	-.2850846	0.51703	-0.55	0.581	.1553107	0.10606	1.46	0.143
pchild	.1732505	0.08794	1.97	0.049	.9337374	1.35273	0.69	0.49	.1323254	0.09767	1.35	0.175
pfemale	.1553213	0.0791	1.96	0.05	.174402	0.36313	0.48	0.631	.1612864	0.09108	1.77	0.077
ethnic	.0558952	0.04079	1.37	0.171	.1222288	0.46354	0.26	0.792	.0515706	0.04678	1.1	0.27
saving	-.1745376	0.11165	-1.56	0.118	-.5374346	6.51483	-0.08	0.934	-.0238267	0.15554	-0.15	0.878
headruraln	.277001	0.09685	2.86	0.004	.4519134	2.66747	0.17	0.865	.413644	0.16669	2.48	0.013
headsalary	.1304964	0.06466	2.02	0.044	.239118	0.50198	0.48	0.634	.1508538	0.0774	1.95	0.051
remittance	.0188137	0.04347	0.43	0.665	.2566731	1.43189	0.18	0.858	-.00759	0.04772	-0.16	0.874

Variable	Country				Urban				Rural			
	dy/dx	**Std. Err.**	**z**	**P>z**	**dy/dx**	**Std. Err.**	**z**	**P>z**	**dy/dx**	**Std. Err.**	**z**	**P>z**
manufactu	.0164837	0.07419	0.22	0.824	.3983467	0.60095	0.66	0.507	-.0457368	0.0842	-0.54	0.587
reg62	.008898	0.05976	0.15	0.882	-.8074832	11.998	-0.07	0.946	.0224533	0.06406	0.35	0.726
reg63	.0067086	0.05119	0.13	0.896	-.97593	5.08554	-0.19	0.848	.0351029	0.05332	0.66	0.51
reg64	-.0203295	0.07396	-0.27	0.783	-.8279734	11.183	-0.07	0.941	.0029615	0.08295	0.04	0.972
reg65	-.2605001	0.06971	-3.74	0	-.8448053	10.46	-0.08	0.936	-.2545666	0.14049	-1.81	0.07
reg66	-.1538451	0.05797	-2.65	0.008	-.9931969	1.83677	-0.54	0.589	-.1985481	0.09094	-2.18	0.029

Source: The author's calculation

Table A5.36: Results of Household Poverty Status (Order Probit) (GSO), 2004-2008

Variables	Country	Urban	Rural
hhland	-0.165	0.276	-0.206
	(0.150)	(0.334)	(0.199)
labour	0.00910	1.811	-0.323
	(0.482)	(1.405)	(0.548)
lfixedca	-0.0127	-0.0292	-0.0159
	(0.0113)	(0.0410)	(0.0123)
skilled ratio	0.499	2.061	0.432
	(0.722)	(3.032)	(0.818)
hhsize	0.0563**	-0.0162	0.0716**
	(0.0268)	(0.0925)	(0.0301)
gender	-0.0139	0.634	0.00447
	(0.161)	(0.537)	(0.179)
marital	-0.129	-0.884*	-0.104
	(0.158)	(0.522)	(0.175)
agehead	0.0641***	0.0433	0.0644***
	(0.0204)	(0.0843)	(0.0218)
$agehead^2$	-0.000718***	-0.000321	-0.000772***
	(0.000193)	(0.000742)	(0.000208)
pelderly	0.438	0.652	0.323
	(0.268)	(0.901)	(0.293)
pchild	-0.0262	0.675	-0.241
	(0.248)	(0.921)	(0.268)
pfemale	0.0228	2.072**	0.102
	(0.222)	(0.872)	(0.239)
ethnic	-0.270**	0.452	-0.142
	(0.115)	(0.578)	(0.132)
saving	-0.459		-0.326
	(0.432)		(0.435)
headruraln	-0.432	0.552	-1.169***
	(0.268)	(0.490)	(0.380)
headsalary	0.130	0.261	0.120
	(0.231)	(0.575)	(0.285)
remittance	-0.0419	-0.0439	-0.0553
	(0.116)	(0.422)	(0.126)
manufactu	0.173	0.628	-0.179
	(0.250)	(0.607)	(0.300)
reg62	-0.274	-7.111	-0.173
	(0.177)	(344.4)	(0.192)
reg63	0.135	-5.526	0.168
	(0.158)	(344.4)	(0.167)
reg64	-0.419**	-7.744	-0.261
	(0.210)	(344.4)	(0.229)
reg65	-0.793**	-7.271	-0.412
	(0.315)	(344.4)	(0.419)

Variables	Country	Urban	Rural
reg66	0.125	-5.645	0.0706
	(0.178)	(344.4)	(0.211)
Constant cut1	0.456	-4.069	0.462
	(0.623)	(344.4)	(0.672)
Constant cut2	1.210*	-2.742	1.204*
	(0.624)	(344.4)	(0.673)
Observations	785	109	676

Source: The author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.37: Marginal Effects of Household Poverty Status Models (Order Probit) (GSO), 2004-2008

Variable	Country				Urban				Rural			
	dy/dx	Std. Err.	z	P>z	dy/dx	Std. Err.	z	P>z	dy/dx	Std. Err.	z	P>z
hhland	.0544769	0.0515	1.06	0.29	-.0640561	1.6017	-0.04	0.968	.0673371	0.06606	1.02	0.308
labour	-.0031043	0.16449	-0.02	0.985	-.4133954	10.56	-0.04	0.969	.1110752	0.19139	0.58	0.562
lfixedca	.0043213	0.0041	1.05	0.292	.0066719	0.17061	0.04	0.969	.0054714	0.00456	1.2	0.23
skilled ratio	-.1702611	0.25207	-0.68	0.499	-.4704758	12.033	-0.04	0.969	-.1483532	0.28484	-0.52	0.602
hhsize	-.0192051	0.01102	-1.74	0.081	.0037022	0.09687	0.04	0.97	-.0245945	0.01283	-1.92	0.055
gender	.004738	0.05469	0.09	0.931	-.1591368	3.57556	-0.04	0.965	-.0015355	0.0617	-0.02	0.98
marital	.0431192	0.05384	0.8	0.423	.1806508	4.77308	0.04	0.97	.0351678	0.05922	0.59	0.553
agehead	-.0218643	0.0099	-2.21	0.027	-.0098878	0.25319	-0.04	0.969	-.0221237	0.01015	-2.18	0.029
agehead^2	.0002447	0.0001	2.38	0.017	.0000732	0.00188	0.04	0.969	.0002651	0.00011	2.44	0.015
pelderly	-.1494047	0.10326	-1.45	0.148	-.1487521	3.80345	-0.04	0.969	-.1111228	0.10651	-1.04	0.297
pchild	.008925	0.08456	0.11	0.916	-.1541185	3.94058	-0.04	0.969	.082873	0.09569	0.87	0.386
pfemale	-.0077579	0.07561	-0.1	0.918	-.4730701	12.08	-0.04	0.969	-.0349425	0.08294	-0.42	0.674
ethnic	.0905996	0.04854	1.87	0.062	-.1228642	2.55233	-0.05	0.962	.0486558	0.04751	1.02	0.306
saving	.1715966	0.17397	0.99	0.324					.1201466	0.17104	0.7	0.482
headruraln	.1606201	0.11039	1.46	0.146	-.1001357	2.9776	-0.03	0.973	.4411738	0.12687	3.48	0.001
headsalary	-.0427172	0.07483	-0.57	0.568	-.0538898	1.49126	-0.04	0.971	-.0399486	0.09262	-0.43	0.666
remittance	.0141724	0.03936	0.36	0.719	.0098627	0.27166	0.04	0.971	.0187966	0.04268	0.44	0.66
manufactu	-.058879	0.08726	-0.67	0.5	-.1434636	3.66556	-0.04	0.969	.0614269	0.10476	0.59	0.558
reg62	.0960197	0.06911	1.39	0.165	.987161	2.5596	0.39	0.7	.0603132	0.0703	0.86	0.391
reg63	-.0454161	0.05464	-0.83	0.406	.9827206	3.94944	0.25	0.803	-.0567527	0.05851	-0.97	0.332
reg64	.1542485	0.0882	1.75	0.08	.9479258	4.97517	0.19	0.849	.0943292	0.08941	1.06	0.291
reg65	.3034689	0.1261	2.41	0.016	.9512429	5.02453	0.19	0.85	.1538682	0.16779	0.92	0.359
reg66	-.041578	0.05958	-0.7	0.485	.9841415	7.11153	0.14	0.89	-.0238812	0.07078	-0.34	0.736

Source: The author's calculation

Table A 5.38: Tests of Models for the whole country

(i) Tests for Household Income Model (Omitted Variables)

2004	2006	2008	2010	2012
Ramsey RESET test using powers of the fitted values of lincome	Ramsey RESET test using powers of the fitted values of lincome	Ramsey RESET test using powers of the fitted values of lincome	Ramsey RESET test using powers of the fitted values of lincome	Ramsey RESET test using powers of the fitted values of lincome
Ho: model has no omitted variables	Ho: model has no omitted variables	Ho: model has no omitted variables	Ho: model has no omitted variables	Ho: model has no omitted variables
F(3, 17311094) = 34370.74	F(3, 19617942) = 51680.89	F(3, 20942599) = 34795.78	F(3, 22272686) = 277077.24	F(3, 23221180) = 319054.52
Prob > F = 0.0000	Prob > F = 0.0000	Prob > F = 0.0000	Prob > F = 0.0000	Prob > F = 0.0000

(ii) Tests for Household Income Model (Heteroscedasticity)

2004	2006	2008	2010	2012
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance	Ho: Constant variance	Ho: Constant variance	Ho: Constant variance	Ho: Constant variance
Variables: fitted values of lincome	Variables: fitted values of lincome	Variables: fitted values of lincome	Variables: fitted values of lincome	Variables: fitted values of lincome
chi2(1) = 85868.19	chi2(1) = 25973.15	chi2(1) = 213964.28	chi2(1) = 105166.87	chi2(1) = 321462.42
Prob > chi2 = 0.0000	Prob > chi2 = 0.0000	Prob > chi2 = 0.0000	Prob > chi2 = 0.0000	Prob > chi2 = 0.0000

(iii) Tests for Household Income Model (Multicollinearity)

Variable	2004		2006		2008		2010		2012	
	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF
agehead^2	68.490	0.015	68.350	0.015	65.740	0.015	55.330	0.018	59.190	0.017
agehead	63.460	0.016	63.530	0.016	60.960	0.016	50.450	0.020	54.400	0.018
pelderly	3.500	0.286	3.790	0.264	3.890	0.257	3.710	0.269	3.620	0.277
labour	2.780	0.360	3.510	0.285	3.660	0.273	3.330	0.300	3.080	0.325
hhland	2.290	0.437	3.280	0.305	3.190	0.313	3.060	0.327	2.860	0.349
pchild	2.220	0.451	2.310	0.433	2.400	0.417	2.580	0.388	2.580	0.388
marital	2.130	0.470	2.010	0.497	2.020	0.494	2.230	0.448	2.270	0.441
gender	2.030	0.493	1.960	0.511	1.990	0.502	2.210	0.453	2.230	0.449
occuphd_11	1.970	0.507	1.910	0.523	1.950	0.512	2.010	0.498	2.050	0.488
headsalary	1.870	0.535	1.830	0.545	1.910	0.523	1.890	0.530	2.000	0.501
urban	1.670	0.600	1.760	0.569	1.750	0.571	1.840	0.545	1.920	0.521
reg62	1.650	0.607	1.670	0.601	1.720	0.582	1.710	0.586	1.750	0.571
reg66	1.630	0.613	1.620	0.618	1.680	0.594	1.680	0.594	1.730	0.577
headruraln	1.600	0.626	1.610	0.622	1.600	0.627	1.680	0.595	1.730	0.577
reg65	1.590	0.629	1.580	0.632	1.590	0.628	1.660	0.603	1.670	0.599
reg63	1.560	0.641	1.580	0.632	1.580	0.633	1.630	0.614	1.640	0.612
hhsize	1.530	0.656	1.570	0.639	1.570	0.638	1.620	0.617	1.630	0.613
skilled ratio	1.500	0.665	1.510	0.663	1.480	0.674	1.610	0.622	1.610	0.621
ethnic	1.350	0.740	1.360	0.738	1.400	0.715	1.590	0.627	1.600	0.625
lfixedca	1.320	0.757	1.330	0.755	1.350	0.743	1.500	0.667	1.590	0.628
occuphd_7	1.300	0.769	1.300	0.771	1.320	0.758	1.500	0.668	1.510	0.664
occuphd_2	1.270	0.786	1.260	0.794	1.310	0.764	1.450	0.690	1.490	0.670
manufactu	1.230	0.815	1.260	0.795	1.260	0.795	1.430	0.699	1.470	0.680
reg64	1.230	0.816	1.230	0.813	1.220	0.817	1.280	0.779	1.280	0.784
pfemale	1.210	0.828	1.190	0.842	1.200	0.833	1.270	0.789	1.260	0.795
occuphd_3	1.180	0.849	1.180	0.851	1.150	0.867	1.250	0.800	1.250	0.802
occuphd_8	1.100	0.911	1.100	0.911	1.130	0.889	1.220	0.822	1.240	0.804
occuphd_1	1.080	0.926	1.090	0.917	1.120	0.894	1.210	0.827	1.200	0.831
occuphd_4	1.080	0.927	1.090	0.917	1.090	0.917	1.200	0.833	1.200	0.831
occuphd_5	1.070	0.932	1.060	0.942	1.080	0.925	1.120	0.896	1.110	0.902
saving	1.060	0.944	1.060	0.945	1.060	0.948	1.090	0.916	1.100	0.906
occuphd_6	1.040	0.964	1.050	0.954	1.040	0.960	1.080	0.929	1.090	0.914
occuphd_10	1.030	0.971	1.030	0.969	1.040	0.965	1.040	0.961	1.040	0.965
remittance	1.030	0.973	1.030	0.972	1.020	0.978	1.010	0.988	1.020	0.984
Mean VIF	5.350		5.410		5.280		4.720		4.950	

(iv) Tests for Household Expenditure Model (Omitted Variables)

2004	2006	2008	2010	2012
Ramsey RESET test using powers of the fitted values of lexp	Ramsey RESET test using powers of the fitted values of lexp	Ramsey RESET test using powers of the fitted values of lexp	Ramsey RESET test using powers of the fitted values of lexp	Ramsey RESET test using powers of the fitted values of lexp
Ho: model has no omitted variables	Ho: model has no omitted variables	Ho: model has no omitted variables	Ho: model has no omitted variables	Ho: model has no omitted variables
F(3, 17316824) = 20669.55	F(3, 19620501) = 33084.29	F(3, 20948797) = 30848.23	F(3, 22272686) = 434959.96	F(3, 23221180) = 389523.33
Prob > F = 0.0000	Prob > F = 0.0000	Prob > F = 0.0000	Prob > F = 0.0000	Prob > F = 0.0000

(v) Tests for Household Expenditure Model (Heteroscedasticity)

2004	2006	2008	2010	2012
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance	Ho: Constant variance	Ho: Constant variance	Ho: Constant variance	Ho: Constant variance
Variables: fitted values of lexp	Variables: fitted values of lexp	Variables: fitted values of lexp	Variables: fitted values of lexp	Variables: fitted values of lexp
chi2(1) = 134214.08	chi2(1) = 161227.59	chi2(1) = 416385.92	chi2(1) = 67299.61	chi2(1) = 222971.03
Prob > chi2 = 0.0000	Prob > chi2 = 0.0000	Prob > chi2 = 0.0000	Prob > chi2 = 0.0000	Prob > chi2 = 0.0000

(vi) Tests for Household Expenditure Model (Multicollinearity)

Variable	2004		2006		2008		2010		2012	
	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF
agehead^2	68.490	0.015	68.350	0.015	65.740	0.015	55.330	0.018	59.190	0.017
agehead	63.460	0.016	63.540	0.016	60.950	0.016	50.450	0.020	54.400	0.018
pelderly	3.490	0.286	3.790	0.264	3.890	0.257	3.710	0.269	3.620	0.277
labour	2.780	0.360	3.510	0.285	3.660	0.273	3.330	0.300	3.080	0.325
hhland	2.290	0.438	3.280	0.305	3.190	0.313	3.060	0.327	2.860	0.349
pchild	2.220	0.451	2.310	0.433	2.400	0.417	2.580	0.388	2.580	0.388
marital	2.130	0.470	2.010	0.497	2.020	0.494	2.230	0.448	2.270	0.441
gender	2.030	0.493	1.960	0.511	1.990	0.502	2.210	0.453	2.230	0.449
occuphd_11	1.970	0.508	1.910	0.523	1.950	0.512	2.010	0.498	2.050	0.488
headsalary	1.870	0.535	1.830	0.545	1.910	0.523	1.890	0.530	2.000	0.501
urban	1.670	0.600	1.760	0.569	1.750	0.571	1.840	0.545	1.920	0.521
reg62	1.650	0.607	1.670	0.601	1.720	0.582	1.710	0.586	1.750	0.571
reg66	1.630	0.613	1.620	0.618	1.680	0.594	1.680	0.594	1.730	0.577
headruraln	1.600	0.626	1.610	0.622	1.600	0.626	1.680	0.595	1.730	0.577
reg65	1.590	0.629	1.580	0.632	1.590	0.628	1.660	0.603	1.670	0.599
reg63	1.560	0.640	1.580	0.632	1.580	0.633	1.630	0.614	1.640	0.612
hhsize	1.530	0.656	1.570	0.638	1.570	0.638	1.620	0.617	1.630	0.613
skilled ratio	1.500	0.665	1.510	0.663	1.480	0.674	1.610	0.622	1.610	0.621
ethnic	1.350	0.740	1.360	0.738	1.400	0.715	1.590	0.627	1.600	0.625
lfixedca	1.320	0.758	1.330	0.755	1.350	0.743	1.500	0.667	1.590	0.628
occuphd_7	1.300	0.769	1.300	0.771	1.320	0.757	1.500	0.668	1.510	0.664
occuphd_2	1.270	0.786	1.260	0.794	1.310	0.764	1.450	0.690	1.490	0.670
manufactu	1.230	0.815	1.260	0.795	1.260	0.795	1.430	0.699	1.470	0.680
reg64	1.230	0.816	1.230	0.813	1.220	0.817	1.280	0.779	1.280	0.784
pfemale	1.210	0.828	1.190	0.842	1.200	0.833	1.270	0.789	1.260	0.795
occuphd_3	1.180	0.849	1.180	0.851	1.150	0.867	1.250	0.800	1.250	0.802
occuphd_8	1.100	0.911	1.100	0.911	1.130	0.889	1.220	0.822	1.240	0.804
occuphd_1	1.080	0.926	1.090	0.917	1.120	0.894	1.210	0.827	1.200	0.831
occuphd_4	1.080	0.927	1.090	0.917	1.090	0.918	1.200	0.833	1.200	0.831
occuphd_5	1.070	0.932	1.060	0.942	1.080	0.925	1.120	0.896	1.110	0.902
saving	1.060	0.944	1.060	0.945	1.060	0.948	1.090	0.916	1.100	0.906
occuphd_6	1.040	0.964	1.050	0.954	1.040	0.960	1.080	0.929	1.090	0.914
occuphd_10	1.030	0.971	1.030	0.969	1.040	0.965	1.040	0.961	1.040	0.965
remittance	1.030	0.973	1.030	0.972	1.020	0.978	1.010	0.988	1.020	0.984
Mean VIF	5.350		5.410		5.280		4.720		4.950	

Table A.5.39: Test of Models for Urban Area

(i) Tests for Household Income Model (Omitted Variables)

2004	2006	2008	2010	2012
Ramsey RESET test using powers of the fitted values of lincome	Ramsey RESET test using powers of the fitted values of lincome	Ramsey RESET test using powers of the fitted values of lincome	Ramsey RESET test using powers of the fitted values of lincome	Ramsey RESET test using powers of the fitted values of lincome
has no omitted variables	has no omitted variables	has no omitted variables	has no omitted variables	has no omitted variables
F(3, 4356551) = 4934.90	F(3, 5394293) = 12324.49	F(3, 5866925) = 15244.41	F(3, 6793157) = 69055.07	F(3, 6965996) = 80875.40
Prob > F = 0.0000	Prob > F = 0.0000	Prob > F = 0.0000	Prob > F = 0.0000	Prob > F = 0.0000

(ii) Tests for Household Income Model (Heteroscedasticity)

2004	2006	2008	2010	2012
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance	Ho: Constant variance	Ho: Constant variance	Ho: Constant variance	Ho: Constant variance
Variables: fitted values of lincome	Variables: fitted values of lincome	Variables: fitted values of lincome	Variables: fitted values of lincome	Variables: fitted values of lincome
chi2(1) = 311.97	chi2(1) = 103.59	chi2(1) = 10190.79	chi2(1) = 25316.17	chi2(1) = 1299.56
Prob > chi2 = 0.0000	Prob > chi2 = 0.0000	Prob > chi2 = 0.0000	Prob > chi2 = 0.0000	Prob > chi2 = 0.0000

(iii) Tests for Household Income Model (Multicollinearity)

Variable	2004		2006		2008		2010		2012	
	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF
agehead^2	66.230	0.015	64.560	0.015	56.100	0.018	53.270	0.019	55.070	0.018
agehead	62.680	0.016	61.930	0.016	53.560	0.019	48.180	0.021	50.960	0.020
occuphd_11	3.040	0.329	3.220	0.310	3.570	0.280	4.010	0.249	4.230	0.237
headsalary	3.020	0.331	3.070	0.325	3.510	0.285	3.850	0.260	4.090	0.244
pelderly	3.000	0.334	3.050	0.328	3.390	0.295	3.740	0.267	3.520	0.284
labour	2.540	0.394	3.030	0.330	3.300	0.303	3.580	0.279	3.180	0.315
headruraln	2.370	0.421	2.940	0.340	3.040	0.329	3.310	0.302	3.080	0.325
pchild	2.060	0.486	2.520	0.397	2.880	0.347	3.100	0.322	2.870	0.349
reg65	1.860	0.539	1.830	0.546	1.800	0.557	2.120	0.473	2.300	0.435
hhland	1.760	0.567	1.730	0.578	1.790	0.559	2.050	0.488	2.180	0.459
marital	1.740	0.574	1.660	0.604	1.650	0.606	1.930	0.518	2.130	0.470
occuphd_2	1.580	0.634	1.560	0.641	1.630	0.612	1.920	0.522	1.920	0.520
skilled ratio	1.580	0.634	1.550	0.644	1.580	0.633	1.730	0.577	1.810	0.551
gender	1.560	0.641	1.550	0.646	1.560	0.643	1.730	0.578	1.690	0.592
reg66	1.510	0.661	1.530	0.655	1.540	0.650	1.710	0.585	1.680	0.593
reg63	1.500	0.665	1.530	0.655	1.530	0.653	1.690	0.590	1.680	0.597
occuphd_7	1.450	0.691	1.480	0.673	1.510	0.660	1.600	0.625	1.680	0.597
hhsize	1.410	0.709	1.440	0.696	1.510	0.664	1.570	0.636	1.600	0.625
reg62	1.370	0.732	1.360	0.734	1.330	0.754	1.530	0.654	1.560	0.639
occuphd_3	1.360	0.738	1.340	0.747	1.310	0.763	1.530	0.654	1.540	0.648
lfixedca	1.330	0.750	1.330	0.751	1.310	0.763	1.530	0.655	1.510	0.664
reg64	1.260	0.792	1.320	0.758	1.290	0.775	1.480	0.674	1.480	0.678

Variable	2004		2006		2008		2010		2012	
	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF
occuphd_1	1.240	0.810	1.230	0.814	1.240	0.803	1.390	0.721	1.440	0.693
occuphd_8	1.220	0.819	1.210	0.826	1.230	0.813	1.300	0.769	1.300	0.769
manufactu	1.210	0.824	1.190	0.838	1.210	0.823	1.250	0.801	1.270	0.785
occuphd_4	1.200	0.831	1.150	0.869	1.200	0.832	1.250	0.801	1.270	0.787
pfemale	1.160	0.863	1.130	0.887	1.140	0.875	1.220	0.823	1.250	0.799
occuphd_5	1.130	0.883	1.110	0.898	1.140	0.879	1.210	0.827	1.220	0.822
ethnic	1.090	0.918	1.110	0.901	1.110	0.898	1.180	0.845	1.170	0.853
saving	1.080	0.923	1.090	0.916	1.090	0.915	1.150	0.868	1.160	0.859
occuphd_10	1.070	0.934	1.080	0.927	1.060	0.945	1.120	0.897	1.150	0.868
occuphd_6	1.060	0.940	1.080	0.928	1.060	0.945	1.110	0.897	1.070	0.936
remittance	1.040	0.961	1.050	0.948	1.050	0.949	1.030	0.968	1.060	0.947
Mean VIF	5.420		5.390		4.950		4.860		5.000	

(iv) Tests for Household Expenditure Model (Omitted Variables)

2004	2006	2008	2010	2012
Ramsey RESET test using powers of the fitted values of lexp	Ramsey RESET test using powers of the fitted values of lexp	Ramsey RESET test using powers of the fitted values of lexp	Ramsey RESET test using powers of the fitted values of lexp	Ramsey RESET test using powers of the fitted values of lexp
Ho: model has no omitted variables	Ho: model has no omitted variables	Ho: model has no omitted variables	Ho: model has no omitted variables	Ho: model has no omitted variables
F(3, 4359701) = 4067.01	F(3, 5394293) = 10800.67	F(3, 5870252) = 9077.81	F(3, 6793157) = 151501.32	F(3, 6965996) = 45519.92
Prob > F = 0.0000	Prob > F = 0.0000	Prob > F = 0.0000	Prob > F = 0.0000	Prob > F = 0.0000

(v) Tests for Household Expenditure Model (Heteroscedasticity)

2004	2006	2008	2010	2012
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance	Ho: Constant variance	Ho: Constant variance	Ho: Constant variance	Ho: Constant variance
Variables: fitted values of lexp	Variables: fitted values of lexp	Variables: fitted values of lexp	Variables: fitted values of lexp	Variables: fitted values of lexp
chi2(1) = 38.72	chi2(1) = 9739.05	chi2(1) = 161573.40	chi2(1) = 18747.15	chi2(1) = 20700.23
Prob > chi2 = 0.0000	Prob > chi2 = 0.0000	Prob > chi2 = 0.0000	Prob > chi2 = 0.0000	Prob > chi2 = 0.0000

(vi) Tests for Household Expenditure Model (Multicollinearity)

Variable	2004		2006		2008		2010		2012	
	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF
agehead^2	66.240	0.015	64.560	0.015	56.090	0.018	53.270	0.019	55.070	0.018
agehead	62.690	0.016	61.930	0.016	53.540	0.019	48.180	0.021	50.960	0.020
occuphd_11	3.040	0.329	3.220	0.310	3.560	0.281	4.010	0.249	4.230	0.237
headsalary	3.020	0.331	3.070	0.325	3.510	0.285	3.850	0.260	4.090	0.244
pelderly	3.000	0.334	3.050	0.328	3.390	0.295	3.740	0.267	3.520	0.284
labour	2.540	0.394	3.030	0.330	3.300	0.303	3.580	0.279	3.180	0.315
headruraln	2.370	0.422	2.940	0.340	3.040	0.329	3.310	0.302	3.080	0.325
pchild	2.060	0.487	2.520	0.397	2.880	0.347	3.100	0.322	2.870	0.349
reg65	1.860	0.539	1.830	0.546	1.800	0.556	2.120	0.473	2.300	0.435
hhland	1.760	0.568	1.730	0.578	1.790	0.559	2.050	0.488	2.180	0.459
marital	1.740	0.574	1.660	0.604	1.650	0.606	1.930	0.518	2.130	0.470
occuphd_2	1.580	0.634	1.560	0.641	1.630	0.613	1.920	0.522	1.920	0.520
skilled ratio	1.580	0.634	1.550	0.644	1.580	0.633	1.730	0.577	1.810	0.551
gender	1.560	0.641	1.550	0.646	1.560	0.643	1.730	0.578	1.690	0.592
reg66	1.510	0.660	1.530	0.655	1.540	0.650	1.710	0.585	1.680	0.593
reg63	1.500	0.665	1.530	0.655	1.530	0.653	1.690	0.590	1.680	0.597
occuphd_7	1.450	0.691	1.480	0.673	1.510	0.660	1.600	0.625	1.680	0.597
hhsize	1.410	0.709	1.440	0.696	1.510	0.664	1.570	0.636	1.600	0.625
reg62	1.370	0.732	1.360	0.734	1.330	0.754	1.530	0.654	1.560	0.639
occuphd_3	1.360	0.738	1.340	0.747	1.310	0.762	1.530	0.654	1.540	0.648
lfixedca	1.330	0.750	1.330	0.751	1.310	0.763	1.530	0.655	1.510	0.664
reg64	1.260	0.792	1.320	0.758	1.290	0.776	1.480	0.674	1.480	0.678
occuphd_1	1.240	0.810	1.230	0.814	1.240	0.804	1.390	0.721	1.440	0.693
occuphd_8	1.220	0.819	1.210	0.826	1.230	0.813	1.300	0.769	1.300	0.769
manufactu	1.210	0.824	1.190	0.838	1.210	0.824	1.250	0.801	1.270	0.785
occuphd_4	1.200	0.831	1.150	0.869	1.200	0.833	1.250	0.801	1.270	0.787
pfemale	1.160	0.863	1.130	0.887	1.140	0.875	1.220	0.823	1.250	0.799
occuphd_5	1.130	0.883	1.110	0.898	1.140	0.879	1.210	0.827	1.220	0.822
ethnic	1.090	0.918	1.110	0.901	1.110	0.898	1.180	0.845	1.170	0.853
saving	1.080	0.923	1.090	0.916	1.090	0.915	1.150	0.868	1.160	0.859
occuphd_10	1.070	0.934	1.080	0.927	1.060	0.945	1.120	0.897	1.150	0.868
occuphd_6	1.060	0.940	1.080	0.928	1.060	0.945	1.110	0.897	1.070	0.936
remittance	1.040	0.961	1.050	0.948	1.050	0.949	1.030	0.968	1.060	0.947
Mean VIF	5.420		5.390		4.950		4.860		5.000	

Table A5.40: Tests of Models for Rural Area

(i) Tests for Household Income Model (Ommitted Variables)

2004	2006	2008	2010	2012
Ramsey RESET test using powers of the fitted values of lincome	Ramsey RESET test using powers of the fitted values of lincome	Ramsey RESET test using powers of the fitted values of lincome	Ramsey RESET test using powers of the fitted values of lincome	Ramsey RESET test using powers of the fitted values of lincome
Ho: model has no omitted variables	Ho: model has no omitted variables	Ho: model has no omitted variables	Ho: model has no omitted variables	Ho: model has no omitted variables
F(3, 12954507) = 14632.49	F(3, 14223613) = 17161.40	F(3, 15075638) = 14403.64	F(3, 15479493) = 266183.89	F(3, 16255148) = 278582.10
Prob > F = 0.0000	Prob > F = 0.0000	Prob > F = 0.0000	Prob > F = 0.0000	Prob > F = 0.0000

(ii) Tests for Household Income Model (Heteroscedasticity)

2004	2006	2008	2010	2012
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance	Ho: Constant variance	Ho: Constant variance	Ho: Constant variance	Ho: Constant variance
Variables: fitted values of lincome	Variables: fitted values of lincome	Variables: fitted values of lincome	Variables: fitted values of lincome	Variables: fitted values of lincome
chi2(1) = 88132.30	chi2(1) = 68235.70	chi2(1) = 139772.89	chi2(1) = 24030.00	chi2(1) = 156897.31
Prob > chi2 = 0.0000	Prob > chi2 = 0.0000	Prob > chi2 = 0.0000	Prob > chi2 = 0.0000	Prob > chi2 = 0.0000

(iii) Tests for Household Income Model (Multicollinearity)

Variable	2004		2006		2008		2010		2012	
	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF
agehead^2	70.520	0.014	71.450	0.014	72.200	0.014	57.540	0.017	62.500	0.016
agehead	64.840	0.015	65.610	0.015	66.070	0.015	52.840	0.019	57.410	0.017
pelderly	3.700	0.270	4.180	0.239	4.050	0.247	3.740	0.268	3.820	0.262
labour	2.830	0.353	3.610	0.277	3.710	0.269	3.240	0.308	3.090	0.323
marital	2.440	0.410	3.360	0.297	3.260	0.307	3.070	0.326	2.900	0.345
gender	2.340	0.428	2.350	0.425	2.360	0.424	2.060	0.484	2.280	0.438
pchild	2.260	0.443	2.270	0.440	2.310	0.432	2.020	0.494	2.160	0.463
reg62	1.750	0.570	1.800	0.555	1.820	0.548	1.810	0.553	1.850	0.541
reg66	1.730	0.577	1.670	0.599	1.730	0.578	1.800	0.556	1.820	0.550
occuphd_11	1.730	0.579	1.650	0.606	1.660	0.603	1.760	0.568	1.780	0.561
hhland	1.630	0.613	1.610	0.621	1.620	0.616	1.710	0.585	1.770	0.565
reg63	1.590	0.627	1.610	0.623	1.590	0.628	1.700	0.588	1.710	0.583
hhsize	1.590	0.628	1.500	0.669	1.520	0.659	1.690	0.593	1.690	0.592
ethnic	1.440	0.694	1.450	0.690	1.490	0.671	1.600	0.625	1.630	0.615
reg65	1.380	0.723	1.360	0.734	1.430	0.699	1.600	0.625	1.620	0.619
headsalary	1.320	0.757	1.310	0.766	1.380	0.726	1.570	0.638	1.570	0.638
headruraln	1.320	0.758	1.290	0.778	1.320	0.760	1.530	0.654	1.560	0.640
lfixedca	1.270	0.788	1.260	0.792	1.310	0.766	1.410	0.708	1.480	0.674
occuphd_7	1.270	0.788	1.260	0.795	1.270	0.787	1.390	0.719	1.420	0.702
pfemale	1.250	0.803	1.250	0.797	1.270	0.788	1.380	0.727	1.400	0.717
reg64	1.230	0.810	1.230	0.811	1.240	0.804	1.350	0.743	1.310	0.764
skilled ratio	1.220	0.819	1.220	0.817	1.230	0.812	1.310	0.764	1.300	0.769
manufactu	1.220	0.823	1.210	0.826	1.210	0.824	1.250	0.799	1.280	0.781
occuphd_3	1.100	0.906	1.100	0.908	1.100	0.913	1.220	0.819	1.230	0.812
occuphd_2	1.050	0.950	1.060	0.946	1.090	0.915	1.200	0.837	1.220	0.819
occuphd_8	1.050	0.952	1.060	0.948	1.080	0.929	1.180	0.846	1.190	0.842
occuphd_5	1.040	0.961	1.050	0.949	1.070	0.936	1.160	0.864	1.120	0.893
occuphd_1	1.040	0.963	1.050	0.953	1.060	0.943	1.150	0.866	1.100	0.907
occuphd_6	1.040	0.966	1.050	0.955	1.050	0.954	1.060	0.942	1.050	0.949
remittance	1.030	0.972	1.030	0.972	1.040	0.965	1.040	0.962	1.050	0.954
saving	1.030	0.973	1.030	0.973	1.030	0.968	1.040	0.966	1.050	0.954
occuphd_4	1.020	0.983	1.020	0.976	1.020	0.981	1.030	0.967	1.040	0.959
occuphd_10	1.010	0.989	1.010	0.993	1.010	0.989	1.010	0.995	1.000	0.997
Mean VIF	5.520		5.640		5.680		4.860		5.160	

(iv) Tests for Household Expenditure Model (Omitted Variables)

2004	2006	2008	2010	2012
Ramsey RESET test using powers of the fitted values of lexp	Ramsey RESET test using powers of the fitted values of lexp	Ramsey RESET test using powers of the fitted values of lexp	Ramsey RESET test using powers of the fitted values of lexp	Ramsey RESET test using powers of the fitted values of lexp
Ho: model has no omitted variables	Ho: model has no omitted variables	Ho: model has no omitted variables	Ho: model has no omitted variables	Ho: model has no omitted variables
F(3, 12957087) = 15142.19	F(3, 14226172) = 12567.74	F(3, 15078509) = 15417.87	F(3, 15479493) = 325829.59	F(3, 16255148) = 361163.93
Prob > F = 0.0000	Prob > F = 0.0000	Prob > F = 0.0000	Prob > F = 0.0000	Prob > F = 0.0000

(v) Tests for Household Expenditure Model (Heteroscedasticity)

2004	2006	2008	2010	2012
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance	Ho: Constant variance	Ho: Constant variance	Ho: Constant variance	Ho: Constant variance
Variables: fitted values of lexp	Variables: fitted values of lexp	Variables: fitted values of lexp	Variables: fitted values of lexp	Variables: fitted values of lexp
chi2(1) = 21749.64	chi2(1) = 65240.98	chi2(1) = 68220.84	chi2(1) = 55570.99	chi2(1) = 294713.72
Prob > chi2 = 0.0000	Prob > chi2 = 0.0000	Prob > chi2 = 0.0000	Prob > chi2 = 0.0000	Prob > chi2 = 0.0000

(vi) Tests for Household Expenditure Model (Multicollinearity)

Variable	2004		2006		2008		2010		2012	
	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF
agehead^2	70.520	0.014	71.450	0.014	72.200	0.014	57.540	0.017	62.500	0.016
agehead	64.840	0.015	65.620	0.015	66.070	0.015	52.840	0.019	57.410	0.017
pelderly	3.700	0.270	4.180	0.239	4.050	0.247	3.740	0.268	3.820	0.262
labour	2.830	0.353	3.610	0.277	3.710	0.269	3.240	0.308	3.090	0.323
marital	2.440	0.410	3.360	0.297	3.260	0.307	3.070	0.326	2.900	0.345
gender	2.340	0.428	2.350	0.425	2.360	0.424	2.060	0.484	2.280	0.438
pchild	2.260	0.443	2.270	0.440	2.310	0.433	2.020	0.494	2.160	0.463
reg62	1.750	0.570	1.800	0.555	1.820	0.548	1.810	0.553	1.850	0.541
reg66	1.730	0.577	1.670	0.598	1.730	0.578	1.800	0.556	1.820	0.550
occuphd_11	1.730	0.579	1.650	0.606	1.660	0.603	1.760	0.568	1.780	0.561
hhland	1.630	0.613	1.610	0.621	1.620	0.616	1.710	0.585	1.770	0.565
reg63	1.590	0.627	1.610	0.623	1.590	0.628	1.700	0.588	1.710	0.583
hhsize	1.590	0.628	1.500	0.669	1.520	0.659	1.690	0.593	1.690	0.592
ethnic	1.440	0.694	1.450	0.690	1.490	0.671	1.600	0.625	1.630	0.615
reg65	1.380	0.723	1.360	0.734	1.430	0.699	1.600	0.625	1.620	0.619
headsalary	1.320	0.757	1.310	0.766	1.380	0.726	1.570	0.638	1.570	0.638
headruraln	1.320	0.758	1.290	0.777	1.320	0.760	1.530	0.654	1.560	0.640
lfixedca	1.270	0.788	1.260	0.792	1.310	0.766	1.410	0.708	1.480	0.674
occuphd_7	1.270	0.788	1.260	0.795	1.270	0.787	1.390	0.719	1.420	0.702
pfemale	1.250	0.803	1.250	0.797	1.270	0.788	1.380	0.727	1.400	0.717
reg64	1.230	0.810	1.230	0.811	1.240	0.804	1.350	0.743	1.310	0.764
skilled ratio	1.220	0.819	1.220	0.817	1.230	0.812	1.310	0.764	1.300	0.769
manufactu	1.220	0.823	1.210	0.826	1.210	0.824	1.250	0.799	1.280	0.781
occuphd_3	1.100	0.906	1.100	0.908	1.100	0.913	1.220	0.819	1.230	0.812
occuphd_2	1.050	0.950	1.060	0.946	1.090	0.915	1.200	0.837	1.220	0.819
occuphd_8	1.050	0.952	1.060	0.948	1.080	0.929	1.180	0.846	1.190	0.842
occuphd_5	1.040	0.961	1.050	0.949	1.070	0.936	1.160	0.864	1.120	0.893
occuphd_1	1.040	0.963	1.050	0.953	1.060	0.943	1.150	0.866	1.100	0.907
occuphd_6	1.040	0.966	1.050	0.955	1.050	0.954	1.060	0.942	1.050	0.949
remittance	1.030	0.972	1.030	0.972	1.040	0.965	1.040	0.962	1.050	0.954
saving	1.030	0.973	1.030	0.973	1.030	0.968	1.040	0.966	1.050	0.954
occuphd_4	1.020	0.983	1.020	0.976	1.020	0.981	1.030	0.967	1.040	0.959
occuphd_10	1.010	0.989	1.010	0.993	1.010	0.989	1.010	0.995	1.000	0.997
Mean VIF	5.520		5.640		5.680		4.860		5.160	

Table A5.41: Tests of Models for the Whole Country with Panel Data (2004- 2006)

(i) Tests for Household Expenditure Model (Fixed or Random)

Hausman test

	Coefficients (b) fe_lexp	(B) re_lexp	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
labour	.1532346	.2611558	-.1079212	.0328459
lfixedca	.009876	.0060296	.0038464	.0013933
skilled ratio	.3278507	.8880787	-.560228	.0382241
hhsize	-.1179852	-.0929548	-.0250304	.0056463
agehead	.0488605	.0305047	.0183558	.0054369
$agehead^2$	-.0004296	-.000255	-.0001747	.0000498
pelderly	-.0270166	-.0359748	.0089582	.0507812
pchild	.1005098	-.0380235	.1385333	.0285038
pfemale	-.1166443	-.1005434	-.0161009	.0460168
manufactu	.0971102	.1868295	-.0897193	.0242832

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg
Test: Ho: difference in coefficients not systematic

chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 311.74
Prob>chi2 = 0.0000

(ii) Tests for Household Expenditure Model (Heteroscedasticity)

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: sigma (i) ^2 = sigma^2 for all i

chi2 (3724) = 3.1e+35

Prob>chi2 = 0.0000

(iii) Tests for Household Income Model (Fixed or Random)

Hausman test

	Coefficients			
	(b) fe_lincome	(B) re_lincome	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
labour	.2239494	.3251634	-.101214	.0375163
lfixedca	.0122655	.0119651	.0003005	.0015887
skilled ratio	.5091074	1.037655	-.5285476	.0435799
hhsize	-.1281183	-.0988925	-.0292257	.0064418
agehead	.063592	-.0988925	.0280899	.0062006
$agehead^2$	-.0005498	-.0002941	-.0002557	.0000568
pelderly	.0229995	-.0326272	.0556267	.0579739
pchild	.2316321	.0702871	.161345	.0325727
pfemale	-.1038004	-.1287186	.0249182	.0524987
manufactu	.2065585	.2893027	-.0827442	.0276925

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg
Test: Ho: difference in coefficients not systematic

chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 247.59
Prob>chi2 = 0.0000

(iv) Tests for Household Income Model (Heteroscedasticity)

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (2750) = 1.8e+38

Prob>chi2 = 0.0000

Table A5.42: Tests of Models for Rural Areas with Panel Data (2004- 2006)

(i) Tests for Household Expenditure Model (Fixed and Random)

Hausman test

	——— Coefficients ———			
	(b) fe_lexp_ru	(B) re_lexp_ru	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
labour	.2573063	.2662711	-.0089648	.03779264
lfixedca	.0117275	.0125702	-.0008427	.0016335
skilled ratio	.2006262	.7044627	-.5038365	.0501691
hhsize	-.1156502	-.0931384	-.0225118	.0067142
agehead	.0417487	.0254154	.0163333	.006476
agehead^2	-.0003651	-.0002099	-.0001552	.0000604
pelderly	.006026	-.0330013	.0390273	.0606034
pchild	.0650736	-.0939791	.1590528	.0331371
pfemale	-.1114769	-.1174758	.0059989	.0546872
manufactu	.1048524	.1494537	-.0446014	.0302679

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg
Test: Ho: difference in coefficients not systematic

chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 154.33
Prob>chi2 = 0.0000

(ii) Tests for Household Expenditure Model (Heteroscedasticity)

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (2750) = 2.5e+36

Prob>chi2 = 0.0000

(iii) Tests for Household Income Model (Fixed and Random)

Hausman test

	Coefficients			
	(b) fe_lincome_ru	(B) re_lincome_ru	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
labour	.2830218	.3153049	-.0322831	.0431027
lfixedca	.0144073	.0179283	-.0035209	.0018617
skilled ratio	.4331455	.9215549	-.4884094	.0573142
hhsize	-.1326383	-.1031014	-.0295368	.007698
agehead	.0546762	.0306121	.0240641	.0074322
$agehead^2$	-.0004585	-.0002472	-.0002113	.0000694
pelderly	.0089039	-.0481957	.0570996	.0694712
pchild	.2016286	.0293451	.1722834	.0376556
pfemale	-.1181402	-.1624336	.0442934	.0626941
manufactu	.2579916	.2980446	-.040053	.0345305

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg
Test: Ho: difference in coefficients not systematic

chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 139.35
Prob>chi2 = 0.0000

(iv) Tests for Household Income Model (Heteroscedasticity)

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (2750) = 7.0e+34

Prob>chi2 = 0.0000

Table A5.43: Tests of Models for Urban Area

(i) Tests for Household Expenditure Model (Fixed or Random)

Hausman test

	Coefficients (b) fe_lexp_ur	(B) fe_lexp_ru	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
labour	-.1047648	.1349959	-.2397607	.0755458
lfixedca	.0074821	.0073479	.0001342	.0029473
skilled ratio	.4425246	.7542991	-.3117745	.0621738
hhsize	-.1111979	-.0781691	-.0330289	.0114219
agehead	.0654226	.0304045	.035018	.0114192
$agehead^2$	-.0005501	-.0002736	-.0002765	.0001022
pelderly	-.1021345	.0452787	-.1474132	.1015154
pchild	.2345143	.1257363	.108778	.0702759
pfemale	-.1827663	-.1142899	-.0684764	.0961084
manufactu	.0949418	.091095	.0038468	.0466666

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg
Test: Ho: difference in coefficients not systematic
chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 60.09
Prob>chi2 = 0.0000

(ii) Tests for Household Expenditure Model (Heteroscedasticity)

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (994) = 1.3e+36

Prob>chi2 = 0.0000

(iii) Tests for Household Income Model (Fixed or Random)

Hausman test

	Coefficients (b) fe_lincome_ur	(B) re_lincome_ur	(b-B) re_lincome_ur	sqrt(diag(V_b-V_B)) S.E.
labour	.1172839	.261002	-.1437181	.0843671
lfixedca	.0082916	.0141003	-.0058088	.00329
skilled ratio	.5661717	.8439717	-.2778	.0694067
hhsize	-.1023614	-.0709978	-.0313636	.0127593
agehead	.0792992	.0322641	.0470351	.0127509
agehead^2	-.0006835	-.0002951	-.0003884	.0001141
pelderly	.0581039	.0898729	-.0317691	.1133526
pchild	.3272708	.1966503	.1306205	.0785183
pfemale	-.128469	-.0930979	-.035371	.107496
manufactu	.1156706	.1129017	.0027689	.052092

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg
Test: Ho: difference in coefficients not systematic
chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 48.85
Prob>chi2 = 0.0000

(iv) Tests for Household Income Model (Heteroscedasticity)

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (994) = 5.7e+35

Prob>chi2 = 0.0000

Table A5.44: Tests of Models for the Whole Country with Panel Data (2006- 2008)

(i) Tests for Household Expenditure Model (Fixed or Random)

Hausman test

	Coefficients			
	(b) fe_lexp	(B) re_lexp	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
labour	.1539901	.0281754	.1258146	.2628037
lfixedca	-.0007321	.005845	-.0065772	.0098102
skilled ratio	1.115202	1.110953	.0042492	.2613744
hhsize	-.274256	-.1002238	-.1740322	.039128
agehead	.4220122	.0509193	.371093	.0382394
$agehead^2$	-.0033245	-.0004273	-.0028972	.0003527
pelderly	-.3819709	-.3025048	-.0794661	.3545681
pchild	-1.947892	-.537229	-1.410663	.3552142
pfemale	.384957	.0088726	.3760844	.3246561
manufactu	.0721244	.2505827	-.1784583	.1927445

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg
Test: Ho: difference in coefficients not systematic
chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 261.65
Prob>chi2 = 0.0000

(ii) Tests for Household Expenditure Model (Heteroscedasticity)

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (3724) = 2.8e+33

prob>chi2 = 0.0000

(iii) Tests for Household Income Model (Fixed or Random)

Hausman test

	Coefficients			
	(b) fe_lincome	(B) re_lincome	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
labour	.0838867	.1076548	-.023768	.0413931
lfixedca	.0132058	.0141595	-.0009537	.0016327
skilled ratio	.4838681	1.103508	-.6196395	.0479837
hhsize	-.1113212	-.0893927	-.0219285	.0072556
agehead	.0591282	.0292458	.0298824	.0074547
$agehead^2$	-.000487	-.0002516	-.0002354	.0000684
pelderly	-.246675	-.2909303	.0442553	.0634748
pchild	-.5091428	-.4342199	-.0749229	.0605619
pfemale	-.1884927	-.1295603	-.0589323	.0624062
manufactu	.1616987	.3242044	-.1625058	.0343995

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg
Test: Ho: difference in coefficients not systematic
chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 244.71
Prob>chi2 = 0.0000

(iv) Tests for Household Income Model (Heteroscedasticity)

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (2750) = 6.7e+36

Prob>chi2 = 0.0000

Table A5.45: Tests of Models for Rural Areas with Panel Data (2006- 2008)

(i) Tests for Household Expenditure Model (Fixed or Random)

Hausman test

	Coefficients (b) fe_lexp_ru	(B) re_lexp_ru	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
labour	.3921007	.0434762	.3486245	.2966205
lfixedca	-.0046609	.0122705	-.0169315	.0116081
skilled ratio	1.463875	.9067494	.5571256	.3565032
hhsize	-.2988595	-.1057176	-.193142	.0444942
agehead	.520079	.049934	.470145	.0457117
$agehead^2$	-.0041904	-.0004254	-.003765	.000422
pelderly	-.3697383	-.2633155	-.1064228	.4079986
pchild	-1.789394	-.5800419	-1.209352	.4094153
pfemale	.4428885	.0015371	.4413514	.3769678
manufactu	.3478542	.2713955	.0764587	.2350196

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 253.02

Prob>chi2 = 0.0000

(ii) Tests for Household Expenditure Model (Heteroscedasticity)

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (2750) = 1.3e+34

Prob>chi2 = 0.0000

(ii) Tests for Household Income Model (Fixed or Random)

Hausman test

	Coefficients			
	(b) fe_lincome_ru	(B) re_lincome_ru	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
labour	.3921007	.1128827	.2792179	.3231583
lfixedca	-.0046609	.019234	-.0238949	.0124115
skilled ratio	1.463875	.910533	.5533419	.373152
hhsize	-.2988595	-.087568	-.2112915	.0461866
agehead	.520079	.0272196	.4928593	.0468116
$agehead^2$	-.0041904	-.0002428	-.0039476	.0004328
pelderly	-.3697383	-.2555055	-.1142327	.429166
pchild	-1.789394	-.485491	-1.303903	.4355586
pfemale	.4428885	-.1293022	.5721907	.3876468
manufactu	.3478542	.3451323	.0027219	.2466007

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 273.64

Prob>chi2 = 0.0000

(iii) Tests for Household Income Model (Heteroscedasticity)

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (2750) = 3.9e+34

Prob>chi2 = 0.0000

Table A5.46: Tests of Models for Urban Area with Panel Data (2006- 2008)

(i) Tests for Household Expenditure Model (Fixed or Random)

Hausman test

	Coefficients			
	(b) fe_lexp_ur	(B) re_lexp_ur	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
labour	-.7121002	-.1075561	-.6045441	.5794467
lfixedca	.0043859	.0121462	-.0077603	.0185371
skilled ratio	.7285635	.862205	-.1336416	.3849114
hhsize	-.2005608	-.085439	-.1151218	.0829512
agehead	.2039297	.0323625	.1715672	.07019
$agehead^2$	-.0014298	-.0002794	-.0011505	.0006451
pelderly	-.0491017	-.2216488	.1725471	.7519094
pchild	-2.406607	-.4465906	-1.960016	.7346592
pfemale	.2804083	.0333801	.2470282	.6523131
manufactu	-.3619215	.001527	-.3634485	.3419432

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 39.08

Prob>chi2 = 0.0000

(ii) Tests for Household Expenditure Model (Heteroscedasticity)

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (994) = 2.4e+32

Prob>chi2 = 0.0000

(iii) Tests for Household Income Model (Fixed or Random)

Hausman test

	Coefficients			
	(b) fe_lincome_ur	(B) re_lincome_ur	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
labour	-.7121002	.0429917	-.755092	.6255768
lfixedca	.0043859	.0203136	-.0159276	.0198216
skilled ratio	.7285635	.9307374	-.2021739	.4010249
hhsize	-.2005608	-.0926195	-.1079413	.0860827
agehead	.2039297	.0116735	.1922562	.0727045
$agehead^2$	-.0014298	-.0001015	-.0013283	.0006677
pelderly	-.0491017	-.1871185	.1380168	.7876276
pchild	-2.406607	-.2684838	-2.138123	.7828745
pfemale	.2804083	-.1114558	.391864	.6704576
manufactu	-.3619215	.125495	-.4874165	.3568753

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg
Test: Ho: difference in coefficients not systematic
chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 42.59
Prob>chi2 = 0.0000

(iv) Tests for Household Income Model (Heteroscedasticity)

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (994) = 3.3e+34

Prob>chi2 = 0.0000

Table A5.47: Tests of Models for the Whole Country with Panel Data (2010- 2012)

(i) Tests for Household Expenditure Model (Fixed or Random)

Hausman test

	Coefficients			
	(b) fe_lexp	(B) re_lexp	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
labour	.0043099	-.071961	.0762709	.0769629
lfixedca	.1690402	.263695	-.0946548	.0059213
skilled ratio	.2359251	.6030937	-.3671686	.0563343
hhsize	-.1260441	-.1533496	.0273055	.0089541
agehead	.0282557	.0455514	-.0172958	.0139341
$agehead^2$	-.0001241	-.000482	.0003578	.0001594
pelderly	-.0192327	-.0591867	.039954	.0835566
pchild	-.4852011	-.4882187	.0030176	.0736331
pfemale	-.0754887	.049936	-.1254247	.0694662
manufactu	.0056077	.0825886	-.0769809	.0338172

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic
chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 318.88
Prob>chi2 = 0.0000

(ii) Tests for Household Expenditure Model (Heteroscedasticity)

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (3724) = 8.0e+34

Prob>chi2 = 0.0000

(iii) Tests for Household Income Model (Fixed or Random)

Hausman test

	Coefficients			
	(b) fe_lincome	(B) re_lincome	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
labour	-.1248259	-.10312	-.0217059	.0653443
lfixedca	.1411058	.2170094	-.0759036	.0050628
skilled ratio	.3500163	.7154566	-.3654403	.0486449
hhsize	-.1150525	-.1263482	.0112957	.0077244
agehead	.0134541	.0194787	-.0060245	.012117
agehead^2	.0001712	-.000166	.0003372	.0001387
pelderly	-.0801502	-.1514707	.0713205	.0719631
pchild	-.3553256	-.3863809	.0310554	.0634996
pfemale	-.0696037	-.0264046	-.0431991	.0600711
manufactu	.0527508	.1735609	-.1208101	.0290131

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic
chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 384.17
Prob>chi2 = 0.0000

(iv) Tests for Household Income Model (Heteroscedasticity)

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (3724) = 1.7e+35

Prob>chi2 = 0.0000

Table A5.48: Tests of Models for Rural Area with Panel Data (2010- 2012)

(i) Tests for Household Expenditure Model (Fixed or Random)

Hausman test

	Coefficients			
	(b) fe_lexp_ru	(B) re_lexp_ru	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
labour	.0559641	-.0816012	.1375653	.0907411
lfixedca	.1594482	.2471637	-.0877154	.0067003
skilled ratio	.1546951	.4838569	-.3291618	.0753349
hhsize	-.1143627	-.1490886	.0347259	.0103084
agehead	.0374539	.0450149	-.007561	.0177213
$agehead^2$	-.0001785	-.0004731	.0002946	.0002035
pelderly	.063277	-.0155488	.0788258	.1010022
pchild	-.5186751	-.5384514	.0197763	.0877573
pfemale	-.0626619	.0659689	-.1286308	.0899728
manufactu	.013952	.0853184	-.0713664	.0407012

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 208.80

Prob>chi2 = 0.0000

(ii) Tests for Household Expenditure Model (Heteroscedasticity)

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (2750) = 1.0e+36

Prob>chi2 = 0.0000

(iii) Tests for Household Income Model (Fixed or Random)

Hausman test

	Coefficients			
	(b) fe_lincome_ru	(B) re_lincome_ru	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
labour	-.112253	-.1151718	.0029188	.0785495
lfixedca	.1348479	.2056203	-.0707724	.0058238
skilled ratio	.3930629	.677835	-.2847721	.0659189
hhsize	-.1126797	-.1218278	.009148	.0090379
agehead	.0371818	.0244299	.012752	.0156864
$agehead^2$	.0000366	-.000218	.0002546	.0001802
pelderly	-.053279	-.1422316	.0889526	.0885053
pchild	-.3562043	-.4131501	.0569458	.0769405
pfemale	-.1206622	-.0433862	-.077276	.0792307
manufactu	.0234913	.1650779	-.1415866	.035512

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg
Test: Ho: difference in coefficients not systematic

chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 284.93
Prob>chi2 = 0.0000

(iv) Tests for Household Income Model (Heteroscedasticity)

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (2750) = 5.3e+34

Prob>chi2 = 0.0000

Table A5.49: Tests of Models for Urban Area with Panel Data (2010- 2012)

(i) Tests for Household Expenditure Model (Fixed or Random)

Hausman test

	Coefficients			
	(b) fe_lexp_ur	(B) re_lexp_ur	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
labour	-.1858911	-.3126659	.1267749	.1493802
lfixedca	.2048737	.2942243	-.0893506	.013757
skilled ratio	.3011364	.4065656	-.1054292	.0841418
hhsize	-.1545682	-.1468803	-.0076879	.0193362
agehead	.0081488	.0260525	-.0179037	.0235043
$agehead^2$	.0000553	-.0002966	.0003519	.0002667
pelderly	-.1919041	-.1203978	-.0715062	.1533242
pchild	-.3541376	-.3903109	.0361733	.1421723
pfemale	-.0936753	-.0344734	-.0592019	.1134125
manufact|	-.0245905	.0404833	-.0650738	.0647507

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic
chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 58.99
Prob>chi2 = 0.0000

(ii) Tests for Household Expenditure Model (Heteroscedasticity)

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (994) = 5.3e+33

Prob>chi2 = 0.0000

(iii) Tests for Household Income Model (Fixed or Random)

Hausman test

	Coefficients			
	(b) fe_lincome_ur	(B) re_lincome_ur	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
labour	-.1269303	-.2827618	.1558315	.1151033
lfixedca	.1589397	.2212613	-.0623216	.0108104
skilled ratio	.2964129	.453513	-.1571001	.0669743
hhsize	-.1043778	-.1201551	.0157773	.0154078
agehead	-.0460851	-.0198298	-.0262553	.0188033
$agehead^2$	.0006607	.0002337	.000427	.0002135
pelderly	-.1177972	-.159708	.0419109	.1214143
pchild	-.3324437	-.3508404	.0183967	.1131985
pfemale	.0544501	-.0052369	.059687	.0901292
manufactu	.0832714	.1556416	-.0723702	.0512486

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic
chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 64.91
Prob>chi2 = 0.0000

(iv) Tests for Household Income Model (Heteroscedasticity)

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (994) = 5.5e+35

Prob>chi2 = 0.0000

Table A5.50: Results of Household Expenditure Model with Interactive Variable, 2004-2012 (Cross-Sectional Data)

Variables	2004			2006			2008		
	Country lexp	Urban lexp	Rural lexp	Country lexp	Urban lexp	Rural lexp	Country lexp	Urban lexp	Urban lexp
hhland	-0.119***	-0.246***	-0.0663***	-0.0440***	-0.123***	0.0183***	-0.00118***	-0.0536***	0.0416***
	(-0.000335)	(0.000745)	(0.000373)	(0.000325)	(0.000661)	(0.000376)	(0.000313)	(0.000694)	(0.000349)
labour	0.303***	0.349***	0.314***	0.178***	0.261***	0.160***	0.255***	0.142***	0.313***
	(0.000987)	(0.00240)	(0.00105)	(0.000891)	(0.00192)	(0.000989)	(0.000879)	(0.00185)	(0.000977)
lfixedca	0.0187***	0.0124***	0.0217***	0.0147***	0.0141***	0.0146***	0.0160***	0.0171***	0.0158***
	(2.83e-05)	(5.76e-05)	(3.23e-05)	(2.65e-05)	(5.25e-05)	(3.04e-05)	(2.44e-05)	-4.93E-05	(2.77e-05)
skilled ratio	0.734***	0.639***	0.779***	0.685***	0.606***	0.720***	0.649***	0.626***	0.646***
	(0.000699)	(0.00115)	(0.000917)	(0.000613)	(0.000947)	(0.000850)	(0.000556)	(0.000917)	(0.000727)
occuphd_1	0.244***	0.298***	0.234***	0.306***	0.408***	0.256***	0.346***	0.398***	0.301***
	(0.000719)	(0.00144)	(0.000822)	(0.000669)	(0.00124)	(0.000791)	(0.000659)	(0.00118)	(0.000796)
occuphd_2	0.272***	0.257***	0.209***	0.398***	0.416***	0.262***	0.386***	0.353***	0.356***
	(0.000861)	(0.00117)	(0.00177)	(0.000781)	(0.00103)	(0.00155)	(0.000731)	(0.000981)	(0.00157)
occuphd_3	0.180***	0.143***	0.227***	0.281***	0.311***	0.249***	0.165***	0.0707***	0.245***
	(0.000727)	(0.00117)	(0.000973)	(0.000690)	(0.00105)	(0.000964)	(0.000701)	(0.00113)	(0.000920)
occuphd_4	0.206***	0.113***	0.352***	0.288***	0.296***	0.312***	0.266***	0.343***	0.231***
	(0.00101)	(0.00146)	(0.00156)	(0.00105)	(0.00157)	(0.00146)	(0.000977)	(0.00156)	(0.00127)
occuphd_5	0.0886***	0.117***	0.0788***	0.112***	0.101***	0.131***	0.139***	0.0779***	0.194***
	(0.000667)	(0.00105)	(0.000888)	(0.000619)	(0.000962)	(0.000820)	(0.000535)	(0.000868)	(0.000695)
occuphd_6	0.131***	0.303***	0.115***	0.273***	0.280***	0.271***	0.121***	0.202***	0.121***
	(0.000664)	(0.00217)	(0.000671)	(0.000563)	(0.00163)	(0.000582)	(0.000480)	(0.00138)	(0.000494)
occuphd_7	0.0425***	0.0113***	0.0558***	0.0540***	0.0352***	0.0692***	0.0675***	0.00485***	0.0936***
	(0.000441)	(0.000896)	(0.000501)	(0.000396)	(0.000780)	(0.000455)	(0.000369)	(0.000783)	(0.000410)
occuphd_8	0.151***	0.117***	0.169***	0.166***	0.140***	0.175***	0.0720***	-0.00655***	0.146***
	(0.000753)	(0.00119)	(0.00102)	(0.000701)	(0.00106)	(0.000974)	(0.000616)	(0.000974)	(0.000825)
occuphd_10	0.220***	0.269***	0.101***	0.377***	0.291***	0.662***	0.398***	0.306***	0.541***
	(0.00203)	(0.00260)	(0.00374)	(0.00199)	(0.00246)	(0.00385)	(0.00218)	(0.00293)	(0.00357)
occuphd_11	0.0897***	0.133***	0.0519***	0.123***	0.217***	0.0731***	0.109***	0.220***	0.0430***
	(0.000409)	(0.000923)	(0.000461)	(0.000399)	(0.000838)	(0.000465)	(0.000383)	(0.000832)	(0.000445)
hhsize	-0.0726***	-0.0568***	-0.0797***	-0.0640***	-0.0623***	-0.0650***	-0.0709***	-0.0739***	-0.0706***
	(7.53e-05)	(0.000160)	(8.40e-05)	(7.63e-05)	(0.000152)	(8.74e-05)	(7.43e-05)	(0.000154)	(8.35e-05)
gender	-0.0339***	-0.0297***	-0.0386***	0.0107***	-0.00432***	0.0176***	-0.0291***	-0.0431***	-0.0214***
	(0.000345)	(0.000582)	(0.000437)	(0.000325)	(0.000515)	(0.000428)	(0.000311)	(0.000500)	(0.000405)

Variables	2004			2006			2008		
	Country lexp	Urban lexp	Rural lexp	Country lexp	Urban lexp	Rural lexp	Country lexp	Urban lexp	Urban lexp
marital	0.0896***	0.0201***	0.114***	0.0244***	-0.0126***	0.0360***	0.0368***	0.0445***	0.0318***
	(0.000390)	(0.000721)	(0.000470)	(0.000366)	(0.000618)	(0.000464)	(0.000349)	(0.000611)	(0.000435)
agehead	0.0180***	0.00482***	0.0197***	0.0125***	0.00257***	0.0130***	0.00954***	-0.00127***	0.0111***
	(5.45e-05)	(0.000125)	(5.95e-05)	(5.77e-05)	(0.000122)	(6.52e-05)	(5.38e-05)	(0.000107)	(6.19e-05)
agehead^2	-0.000157***	-6.28e-05***	-0.000164***	-0.000129***	-6.04e-05***	-0.000127***	-0.000107***	1.29e-06	-0.000121***
	(5.23e-07)	(1.16e-06)	(5.78e-07)	(5.50e-07)	(1.12e-06)	(6.29e-07)	(5.10e-07)	(9.84e-07)	(5.94e-07)
pelderly	-0.133***	0.0144***	-0.159***	-0.165***	-0.0202***	-0.209***	-0.113***	-0.162***	-0.0934***
	(0.000647)	(0.00141)	(0.000715)	(0.000606)	(0.00122)	(0.000691)	(0.000574)	(0.00121)	(0.000641)
pchild	-0.282***	-0.260***	-0.270***	-0.412***	-0.216***	-0.475***	-0.355***	-0.113***	-0.436***
	(0.000620)	(0.00138)	(0.000680)	(0.000649)	(0.00131)	(0.000740)	(0.000624)	(0.00128)	(0.000702)
pfemale	-0.121***	-0.118***	-0.116***	-0.0672***	-0.0878***	-0.0499***	-0.106***	-0.0936***	-0.0991***
	(0.000582)	(0.00120)	(0.000654)	(0.000552)	(0.00106)	(0.000638)	(0.000527)	(0.00103)	(0.000602)
ethnic	0.221***	0.131***	0.247***	0.233***	0.131***	0.259***	0.240***	0.131***	0.269***
	(0.000382)	(0.00107)	(0.000404)	(0.000360)	(0.000915)	(0.000390)	(0.000355)	(0.000997)	(0.000374)
saving	0.263***	0.267***	0.254***	0.248***	0.225***	0.260***	0.292***	0.310***	0.254***
	(0.000413)	(0.000691)	(0.000518)	(0.000421)	(0.000646)	(0.000562)	(0.000414)	(0.000655)	(0.000544)
headruraln	0.104***	0.0899***	0.143***	0.163***	0.180***	0.201***	0.143***	0.187***	0.167***
	(0.000435)	(0.000820)	(0.000558)	(0.000393)	(0.000735)	(0.000506)	(0.000390)	(0.000760)	(0.000507)
headsalary	-0.0135***	0.0207***	-0.0345***	0.0436***	0.0816***	0.0343***	0.0225***	0.0851***	0.0302***
	(0.000442)	(0.000867)	(0.000542)	(0.000401)	(0.000779)	(0.000492)	(0.000380)	(0.000796)	(0.000451)
remittance	0.0302***	-0.0344***	0.0497***	0.0447***	0.0241***	0.0504***	-0.00961***	-0.0209***	-0.00203***
	(0.000311)	(0.000645)	(0.000348)	(0.000322)	(0.000629)	(0.000370)	(0.000282)	(0.000531)	(0.000328)
manufactu	0.0707***	0.0164***	0.103***	0.0670***	0.00495***	0.0878***	0.00675***	-0.103***	0.0634***
	(0.000514)	(0.000973)	(0.000601)	(0.000484)	(0.000882)	(0.000576)	(0.000453)	(0.000851)	(0.000529)
reg62	-0.0252***	-0.211***	0.0422***	-0.0264***	-0.182***	0.0361***	-0.0846***	-0.252***	-0.0149***
	(0.000405)	(0.000945)	(0.000440)	(0.000392)	(0.000850)	(0.000437)	(0.000381)	(0.000837)	(0.000419)
reg63	-0.0806***	-0.158***	-0.0465***	-0.0909***	-0.135***	-0.0621***	-0.114***	-0.131***	-0.0851***
	(0.000310)	(0.000713)	(0.000338)	(0.000302)	(0.000651)	(0.000335)	(0.000290)	(0.000642)	(0.000318)
reg64	0.0687***	-0.0892***	0.155***	0.0481***	-0.127***	0.138***	0.0398***	-0.125***	0.147***
	(0.000547)	(0.00114)	(0.000615)	(0.000512)	(0.000997)	(0.000593)	(0.000488)	(0.000967)	(0.000559)
reg65	0.480***	0.413***	0.467***	0.456***	0.364***	0.480***	0.418***	0.386***	0.410***
	(0.000392)	(0.000684)	(0.000500)	(0.000370)	(0.000612)	(0.000490)	(0.000351)	(0.000582)	(0.000467)
reg66	0.130***	-0.0959***	0.214***	0.142***	-0.0673***	0.220***	0.0706***	-0.0707***	0.129***
	(0.000335)	(0.000783)	(0.000369)	(0.000320)	(0.000705)	(0.000357)	(0.000306)	(0.000688)	(0.000337)

Variables	2004			2006			2008		
	Country lexp	**Urban lexp**	**Rural lexp**	**Country lexp**	**Urban lexp**	**Rural lexp**	**Country lexp**	**Urban lexp**	**Urban lexp**
urban	0.302*** (0.000313)			0.304*** (0.000301)			0.305*** (0.000286)		
manufactu *skilled ratio	-0.249*** (0.00185)	-0.225*** (0.00266)	-0.176*** (0.00305)	-0.128*** (0.00173)	-0.0942*** (0.00231)	-0.0117*** (0.00323)	-0.134*** (0.00167)	0.0927*** (0.00252)	-0.236*** (0.00245)
Constant	5.217*** (0.00160)	6.183*** (0.00378)	5.023*** (0.00173)	5.551*** (0.00168)	6.365*** (0.00365)	5.400*** (0.00188)	8.651*** (0.00159)	9.326*** (0.00328)	8.516*** (0.00181)
Observations	17,316,862	4,359,738	12,957,124	19,620,539	5,394,330	14,226,209	20,948,835	5,870,289	15,078,546
R-squared	0.512	0.426	0.373	0.516	0.425	0.381	0.496	0.414	0.373

Source: Author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.50: (continued)

Variables	2010			2012		
	Country lexp	Urban lexp	Rural lexp	Country lexp	Urban lexp	Rural lexp
hhland	-0.0138***	-0.0816***	0.0195***	-0.000619*	-0.0552***	0.0396***
	(4.02E-04)	(7.87E-04)	(4.75E-04)	(3.67E-04)	(7.16E-04)	(4.38E-04)
labour	0.108***	-0.0261***	0.165***	0.556***	0.525***	0.563***
	(1.02E-03)	(1.90E-03)	(1.21E-03)	(8.03E-04)	(1.49E-03)	(9.53E-04)
lfixedca	0.204***	0.234***	0.192***	0.265***	0.283***	0.256***
	(8.42E-05)	(1.66E-04)	(9.79E-05)	(9.74E-05)	(1.92E-04)	(1.14E-04)
skilled ratio	0.463***	0.393***	0.538***	0.307***	0.238***	0.347***
	(6.86E-04)	(9.83E-04)	(9.87E-04)	(6.27E-04)	(8.90E-04)	(8.98E-04)
occuphd_1	0.346***	0.415***	0.212***	0.274***	0.414***	0.175***
	(1.01E-03)	(1.54E-03)	(1.38E-03)	(9.37E-04)	(1.55E-03)	(1.19E-03)
occuphd_2	0.391***	0.353***	0.273***	0.262***	0.264***	0.265***
	(8.01E-04)	(1.07E-03)	(1.60E-03)	(7.13E-04)	(9.39E-04)	(1.42E-03)
occuphd_3	0.254***	0.171***	0.303***	0.167***	0.233***	0.106***
	(8.08E-04)	(1.18E-03)	(1.17E-03)	(7.60E-04)	(1.07E-03)	(1.13E-03)
occuphd_4	0.251***	0.204***	0.267***	0.149***	0.0788***	0.235***
	(1.05E-03)	(1.61E-03)	(1.39E-03)	(8.89E-04)	(1.26E-03)	(1.27E-03)
occuphd_5	0.166***	0.0830***	0.227***	0.133***	0.101***	0.163***
	(5.22E-04)	(8.46E-04)	(6.87E-04)	(4.80E-04)	(7.85E-04)	(6.24E-04)
occuphd_6	0.0484***	0.0223***	0.0491***	0.0612***	0.0683***	0.0548***
	(4.71E-04)	(1.37E-03)	(5.04E-04)	(4.16E-04)	(1.19E-03)	(4.51E-04)
occuphd_7	0.0868***	0.0249***	0.107***	0.0497***	0.0426***	0.0603***
	(4.45E-04)	(9.28E-04)	(5.11E-04)	(4.09E-04)	(8.10E-04)	(4.79E-04)
occuphd_8	0.227***	0.157***	0.249***	0.119***	0.0677***	0.152***
	(6.59E-04)	(1.03E-03)	(8.93E-04)	(6.17E-04)	(9.92E-04)	(8.02E-04)
occuphd_10	0.548***	0.443***	0.609***	0.0199***	0.129***	-0.273***
	(3.56E-03)	(4.67E-03)	(5.38E-03)	(3.21E-03)	(3.55E-03)	(6.89E-03)

Variables	2010			2012		
	Country lexp	Urban lexp	Rural lexp	Country lexp	Urban lexp	Rural lexp
occuphd_11	0.0925***	0.0672***	0.0941***	0.0806***	0.158***	0.0453***
	(5.10E-04)	(9.91E-04)	(6.26E-04)	(4.63E-04)	(9.40E-04)	(5.62E-04)
hhsize	-0.113***	-0.119***	-0.110***	-0.130***	-0.151***	-0.121***
	(1.03E-04)	(1.93E-04)	(1.22E-04)	(9.48E-05)	(1.71E-04)	(1.14E-04)
gender	-0.0293***	-0.0326***	-0.0196***	-0.00353***	0.00392***	-0.00637***
	(3.79E-04)	(5.65E-04)	(5.12E-04)	(3.51E-04)	(5.12E-04)	(4.78E-04)
marital	0.00933***	-0.0174***	0.0222***	-0.00500***	0.000735	-0.00443***
	(4.31E-04)	(6.79E-04)	(5.64E-04)	(3.95E-04)	(6.00E-04)	(5.24E-04)
agehead	0.00457***	0.000440***	0.00526***	0.0101***	0.00785***	0.0104***
	(6.20E-05)	(1.06E-04)	(7.65E-05)	(5.56E-05)	(9.53E-05)	(6.85E-05)
$agehead^2$	-5.99e-05***	-3.39e-05***	-6.21e-05***	-0.000112***	-9.02e-05***	-0.000116***
	(6.14E-07)	(1.05E-06)	(7.57E-07)	(5.31E-07)	(8.98E-07)	(6.57E-07)
pelderly	0.0201***	-0.0408***	0.0479***	-0.0513***	-0.0487***	-0.0500***
	(9.94E-04)	(1.80E-03)	(1.19E-03)	(6.37E-04)	(1.17E-03)	(7.63E-04)
pchild	-0.439***	-0.542***	-0.399***	-0.370***	-0.253***	-0.430***
	(1.19E-03)	(2.21E-03)	(1.41E-03)	(7.33E-04)	(1.23E-03)	(9.07E-04)
pfemale	0.00488***	-0.0238***	0.0273***	-0.0517***	-0.149***	-0.00886***
	(6.50E-04)	(1.10E-03)	(8.03E-04)	(5.99E-04)	(9.98E-04)	(7.44E-04)
ethnic	0.321***	0.197***	0.356***	0.288***	0.158***	0.330***
	(4.29E-04)	(9.51E-04)	(4.90E-04)	(3.95E-04)	(8.63E-04)	(4.54E-04)
saving	0.306***	0.353***	0.224***	0.182***	0.163***	0.176***
	(4.93E-04)	(6.81E-04)	(7.18E-04)	(4.11E-04)	(5.54E-04)	(6.06E-04)
headruraln	0.110***	0.126***	0.117***	0.0565***	0.0997***	0.0565***
	(5.30E-04)	(9.43E-04)	(6.96E-04)	(5.02E-04)	(8.86E-04)	(6.61E-04)
headsalary	-0.0504***	-0.0331***	-0.0586***	-0.0335***	-0.0144***	-0.0298***
	(4.64E-04)	(9.09E-04)	(5.65E-04)	(4.24E-04)	(8.16E-04)	(5.25E-04)
remittance	0.00222***	-0.0358***	0.0272***	0.0552***	0.0993***	0.0297***
	(3.33E-04)	(5.62E-04)	(4.18E-04)	(3.16E-04)	(5.42E-04)	(3.91E-04)

Variables	2010			2012		
	Country lexp	Urban lexp	Rural lexp	Country lexp	Urban lexp	Rural lexp
manufactu	0.0141***	0.130***	-0.0141***	0.0253***	0.0463***	0.0170***
	(4.74E-04)	(8.98E-04)	(5.61E-04)	(4.63E-04)	(8.47E-04)	(5.54E-04)
reg62	-0.0637***	-0.109***	-0.0331***	-0.0330***	-0.126***	0.00525***
	(4.81E-04)	(9.51E-04)	(5.63E-04)	(4.38E-04)	(8.48E-04)	(5.16E-04)
reg63	-0.113***	-0.150***	-0.0948***	-0.166***	-0.200***	-0.150***
	(3.80E-04)	(7.04E-04)	(4.53E-04)	(3.44E-04)	(6.42E-04)	(4.11E-04)
reg64	-0.0212***	-0.0518***	0.00142*	-0.00916***	-0.0745***	0.0328***
	(6.12E-04)	(1.08E-03)	(7.45E-04)	(5.56E-04)	(9.70E-04)	(6.79E-04)
reg65	0.0667***	0.00170***	0.0749***	0.0264***	-0.0499***	0.0835***
	(4.29E-04)	(6.50E-04)	(5.98E-04)	(3.93E-04)	(5.80E-04)	(5.50E-04)
reg66	-0.118***	-0.238***	-0.0726***	-0.188***	-0.231***	-0.163***
	(3.99E-04)	(7.60E-04)	(4.75E-04)	(3.64E-04)	(6.88E-04)	(4.36E-04)
urban	0.181***			0.195***		
	(3.41E-04)			(3.09E-04)		
manufactu * skilled ratio	-0.320***	-0.417***	-0.458***	-0.112***	-0.0627***	-0.220***
	(1.71E-03)	(2.28E-03)	(2.84E-03)	(1.62E-03)	(2.15E-03)	(2.64E-03)
Constant	6.608***	7.053***	6.497***	6.206***	6.504***	6.179***
	(1.88E-03)	(3.48E-03)	(2.28E-03)	(1.73E-03)	(3.17E-03)	(2.11E-03)
Observations	2.23E+07	6.79E+06	1.55E+07	2.32E+07	6.97E+06	1.63E+07
R-squared	0.545	0.526	0.462	0.552	0.523	0.489

Source: Author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.51: Results of Household Income Model with Interactive Variable, 2004-2012 (Cross- Sectional Data)

Variables	2004			2006			2008		
	Country lincome	Urban lincome	Rural lincome	Country lincome	Urban Income	Rural lincome	Country lincome	Urban lincome	Rural lincome
hhland	-0.143*** (0.000384)	-0.273*** (0.000793)	-0.0907*** (0.000441)	-0.0332*** (0.000371)	-0.0817*** (0.000709)	0.0203*** (0.000443)	-0.00335*** (0.000390)	-0.0799*** (0.000833)	0.0611*** (0.000442)
labour	0.193*** (0.00113)	0.199*** (0.00255)	0.203*** (0.00124)	0.0741*** (0.00102)	0.0687*** (0.00206)	0.0738*** (0.00116)	-0.0653*** (0.00109)	0.0547*** (0.00222)	-0.0817*** (0.00124)
lfixedca	0.0302*** (3.25e-05)	0.0218*** (6.13e-05)	0.0341*** (3.81e-05)	0.0214*** (3.02e-05)	0.0203*** (5.62e-05)	0.0213*** (3.57e-05)	0.0269*** (3.04e-05)	0.0293*** (5.91e-05)	0.0267*** (3.51e-05)
skilled ratio	0.845*** (0.000803)	0.718*** (0.00123)	0.907*** (0.00108)	0.826*** (0.000701)	0.692*** (0.00101)	0.906*** (0.000999)	0.954*** (0.000692)	0.821*** (0.00110)	0.984*** (0.000921)
occuphd_1	0.265*** (0.000825)	0.379*** (0.00153)	0.228*** (0.000970)	0.349*** (0.000765)	0.521*** (0.00133)	0.263*** (0.000930)	0.406*** (0.000820)	0.544*** (0.00142)	0.307*** (0.00101)
occuphd_2	0.338*** (0.000989)	0.329*** (0.00124)	0.282*** (0.00209)	0.397*** (0.000893)	0.431*** (0.00110)	0.318*** (0.00182)	0.392*** (0.000909)	0.405*** (0.00118)	0.386*** (0.00198)
occuphd_3	0.186*** (0.000834)	0.146*** (0.00125)	0.237*** (0.00115)	0.260*** (0.000788)	0.288*** (0.00113)	0.239*** (0.00113)	0.207*** (0.000872)	0.129*** (0.00136)	0.299*** (0.00116)
occuphd_4	0.310*** (0.00116)	0.198*** (0.00155)	0.485*** (0.00184)	0.239*** (0.00120)	0.304*** (0.00168)	0.199*** (0.00172)	0.290*** (0.00122)	0.295*** (0.00188)	0.338*** (0.00161)
occuphd_5	0.137*** (0.000765)	0.127*** (0.00112)	0.158*** (0.00105)	0.112*** (0.000707)	0.0430*** (0.00103)	0.186*** (0.000964)	0.171*** (0.000666)	0.125*** (0.00104)	0.233*** (0.000880)
occuphd_6	0.217*** (0.000762)	0.461*** (0.00231)	0.191*** (0.000792)	0.211*** (0.000643)	0.207*** (0.00174)	0.208*** (0.000685)	0.182*** (0.000598)	0.251*** (0.00166)	0.179*** (0.000626)
occuphd_7	0.0637*** (0.000506)	-0.0103*** (0.000953)	0.0905*** (0.000591)	0.0478*** (0.000453)	0.0425*** (0.000836)	0.0566*** (0.000535)	0.0639*** (0.000459)	0.00208** (0.000940)	0.0920*** (0.000519)

Variables	2004			2006			2008		
	Country lincome	**Urban lincome**	**Rural lincome**	**Country lincome**	**Urban Income**	**Rural lincome**	**Country lincome**	**Urban lincome**	**Rural lincome**
occuphd_8	0.186*** (0.000865)	0.0892*** (0.00126)	0.259*** (0.00121)	0.188*** (0.000801)	0.132*** (0.00113)	0.236*** (0.00115)	0.0927*** (0.000766)	0.0188*** (0.00117)	0.177*** (0.00104)
occuphd_10	0.284*** (0.00233)	0.300*** (0.00277)	0.234*** (0.00441)	0.376*** (0.00227)	0.377*** (0.00263)	0.498*** (0.00453)	0.401*** (0.00272)	0.334*** (0.00351)	0.571*** (0.00452)
occuphd_11	0.0851*** (0.000470)	0.164*** (0.000983)	0.0250*** (0.000544)	0.102*** (0.000456)	0.174*** (0.000898)	0.0541*** (0.000547)	0.0888*** (0.000477)	0.227*** (0.000998)	0.00154*** (0.000564)
hhsize	-0.0777*** (8.64e-05)	-0.0544*** (0.000170)	-0.0867*** (9.91e-05)	-0.0612*** (8.72e-05)	-0.0641*** (0.000163)	-0.0603*** (0.000103)	-0.0600*** (9.24e-05)	-0.0745*** (0.000184)	-0.0558*** (0.000106)
gender	-0.0708*** (0.000397)	-0.0379*** (0.000620)	-0.0890*** (0.000516)	-0.0408*** (0.000371)	-0.0467*** (0.000552)	-0.0472*** (0.000503)	-0.0348*** (0.000387)	-0.0509*** (0.000600)	-0.0332*** (0.000514)
marital	0.150*** (0.000448)	0.0556*** (0.000767)	0.187*** (0.000554)	0.0868*** (0.000419)	0.0452*** (0.000662)	0.107*** (0.000545)	0.0583*** (0.000434)	0.0449*** (0.000733)	0.0670*** (0.000551)
agehead	0.0138*** (6.25e-05)	0.00677*** (0.000133)	0.0130*** (7.02e-05)	0.0106*** (6.60e-05)	0.00137*** (0.000130)	0.0112*** (7.66e-05)	0.00672*** (6.69e-05)	0.00228*** (0.000128)	0.00534*** (7.83e-05)
$agehead^2$	-0.000110*** (6.01e-07)	-8.60e-05*** (1.23e-06)	-8.73e-05*** (6.82e-07)	-0.000108*** (6.29e-07)	-3.26e-05*** (1.20e-06)	-0.000112*** (7.40e-07)	-7.53e-05*** (6.35e-07)	-1.96e-05*** (1.18e-06)	-6.15e-05*** (7.51e-07)
pelderly	-0.200*** (0.000743)	0.00410*** (0.00150)	-0.248*** (0.000844)	-0.149*** (0.000693)	-0.0773*** (0.00131)	-0.164*** (0.000813)	-0.232*** (0.000714)	-0.167*** (0.00146)	-0.246*** (0.000812)
pchild	-0.304*** (0.000713)	-0.253*** (0.00147)	-0.298*** (0.000803)	-0.417*** (0.000742)	-0.242*** (0.00140)	-0.476*** (0.000869)	-0.469*** (0.000776)	-0.166*** (0.00153)	-0.578*** (0.000888)
pfemale	-0.147*** (0.000668)	-0.135*** (0.00128)	-0.149*** (0.000772)	-0.141*** (0.000630)	-0.119*** (0.00114)	-0.144*** (0.000750)	-0.171*** (0.000655)	-0.164*** (0.00124)	-0.154*** (0.000762)

Variables	2004			2006			2008		
	Country lincome	**Urban lincome**	**Rural lincome**	**Country lincome**	**Urban Income**	**Rural lincome**	**Country lincome**	**Urban lincome**	**Rural lincome**
ethnic	0.247*** (0.000439)	0.0910*** (0.00113)	0.278*** (0.000477)	0.284*** (0.000412)	0.161*** (0.000980)	0.309*** (0.000459)	0.302*** (0.000442)	0.196*** (0.00120)	0.323*** (0.000474)
saving	0.301*** (0.000474)	0.289*** (0.000735)	0.306*** (0.000612)	0.281*** (0.000481)	0.219*** (0.000692)	0.329*** (0.000660)	0.337*** (0.000515)	0.322*** (0.000786)	0.308*** (0.000689)
headruraln	0.118*** (0.000499)	0.124*** (0.000873)	0.141*** (0.000658)	0.208*** (0.000449)	0.211*** (0.000787)	0.246*** (0.000595)	0.153*** (0.000486)	0.197*** (0.000912)	0.183*** (0.000642)
headsalary	-0.0132*** (0.000507)	0.0162*** (0.000923)	-0.0139*** (0.000640)	0.0288*** (0.000458)	0.0265*** (0.000835)	0.0449*** (0.000579)	0.0383*** (0.000472)	0.0929*** (0.000956)	0.0661*** (0.000571)
remittance	-0.0187*** (0.000357)	-0.0956*** (0.000686)	0.00737*** (0.000410)	-0.0384*** (0.000368)	-0.101*** (0.000674)	-0.0152*** (0.000435)	-0.0769*** (0.000350)	-0.130*** (0.000637)	-0.0483*** (0.000416)
manufactu	0.161*** (0.000591)	0.0424*** (0.00104)	0.219*** (0.000710)	0.193*** (0.000553)	0.0615*** (0.000944)	0.243*** (0.000677)	0.143*** (0.000563)	-0.0415*** (0.00102)	0.236*** (0.000669)
reg62	-0.0580*** (0.000465)	-0.195*** (0.00101)	0.00375*** (0.000520)	-0.0562*** (0.000448)	-0.194*** (0.000911)	-0.000302 (0.000514)	-0.119*** (0.000474)	-0.261*** (0.00100)	-0.0544*** (0.000531)
reg63	-0.124*** (0.000356)	-0.158*** (0.000759)	-0.0973*** (0.000399)	-0.129*** (0.000345)	-0.139*** (0.000697)	-0.110*** (0.000394)	-0.141*** (0.000360)	-0.204*** (0.000770)	-0.0932*** (0.000402)
reg64	0.107*** (0.000628)	-0.0861*** (0.00121)	0.212*** (0.000726)	0.0647*** (0.000586)	-0.180*** (0.00107)	0.179*** (0.000698)	0.0347*** (0.000607)	-0.138*** (0.00116)	0.139*** (0.000708)
reg65	0.549*** (0.000451)	0.525*** (0.000728)	0.502*** (0.000590)	0.498*** (0.000423)	0.403*** (0.000656)	0.518*** (0.000576)	0.515*** (0.000437)	0.423*** (0.000699)	0.543*** (0.000591)

Variables	2004			2006			2008		
	Country lincome	**Urban lincome**	**Rural lincome**	**Country lincome**	**Urban Income**	**Rural lincome**	**Country lincome**	**Urban lincome**	**Rural lincome**
reg66	0.162*** (0.000385)	-0.0678*** (0.000834)	0.249*** (0.000435)	0.167*** (0.000366)	-0.0614*** (0.000756)	0.245*** (0.000420)	0.147*** (0.000380)	-0.0750*** (0.000826)	0.230*** (0.000427)
urban_	0.263*** (0.000360)			0.289*** (0.000344)			0.312*** (0.000356)		
manufactu * skilled ratio	-0.418*** (0.00212)	-0.278*** (0.00284)	-0.365*** (0.00359)	-0.273*** (0.00197)	-0.0741*** (0.00248)	-0.342*** (0.00380)	-0.407*** (0.00208)	-0.0892*** (0.00303)	-0.463*** (0.00310)
Constant	5.497*** (0.00183)	6.335*** (0.00402)	5.355*** (0.00205)	5.838*** (0.00192)	6.686*** (0.00391)	5.683*** (0.00221)	6.288*** (0.00198)	6.921*** (0.00394)	6.161*** (0.00229)
Observations	17,311,132	4,356,588	12,954,544	19,617,980	5,394,330	14,223,650	20,942,637	5,866,962	15,075,675
R-squared	0.490	0.454	0.371	0.488	0.422	0.366	0.477	0.411	0.375

Source: Author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.51: (continued)

Variables	2010			2012		
	Country lincome	**Urban lincome**	**Rural lincome**	**Country lincome**	**Urban lincome**	**Rural lincome**
hhland	-0.0739*** (0.000345)	-0.0958*** (0.000640)	-0.0482*** (0.000416)	-0.0321*** (0.000334)	-0.0761*** (0.000599)	0.00101** (0.000408)
labour	0.0604*** (0.000875)	0.0214*** (0.00154)	0.0769*** (0.00105)	0.0567*** (0.000730)	0.0251*** (0.00125)	0.0586*** (0.000889)
lfixedca	0.153*** (7.23e-05)	0.161*** (0.000135)	0.148*** (8.57e-05)	0.201*** (8.86e-05)	0.209*** (0.000161)	0.194*** (0.000106)
skilled ratio	0.547*** (0.000589)	0.457*** (0.000799)	0.627*** (0.000864)	0.526*** (0.000570)	0.398*** (0.000745)	0.614*** (0.000838)
occuphd_1	0.421*** (0.000870)	0.599*** (0.00125)	0.253*** (0.00121)	0.310*** (0.000852)	0.448*** (0.00129)	0.230*** (0.00111)
occuphd_2	0.352*** (0.000687)	0.386*** (0.000866)	0.276*** (0.00140)	0.268*** (0.000648)	0.301*** (0.000786)	0.225*** (0.00133)
occuphd_3	0.210*** (0.000693)	0.178*** (0.000958)	0.239*** (0.00102)	0.121*** (0.000691)	0.151*** (0.000896)	0.105*** (0.00105)
occuphd_4	0.205*** (0.000897)	0.173*** (0.00131)	0.256*** (0.00122)	0.204*** (0.000808)	0.154*** (0.00105)	0.271*** (0.00119)
occuphd_5	0.184*** (0.000448)	0.143*** (0.000688)	0.220*** (0.000602)	0.158*** (0.000437)	0.0965*** (0.000657)	0.196*** (0.000582)
occuphd_6	0.0903*** (0.000404)	0.0814*** (0.00111)	0.0886*** (0.000441)	0.0919*** (0.000379)	0.131*** (0.000998)	0.0872*** (0.000421)
occuphd_7	0.101*** (0.000382)	0.0103*** (0.000754)	0.139*** (0.000447)	0.126*** (0.000372)	0.0482*** (0.000678)	0.152*** (0.000447)

Variables	2010			2012		
	Country lincome	**Urban lincome**	**Rural lincome**	**Country lincome**	**Urban lincome**	**Rural lincome**
occuphd_8	0.196*** (0.000565)	0.0928*** (0.000836)	0.280*** (0.000782)	0.115*** (0.000561)	0.0346*** (0.000831)	0.166*** (0.000748)
occuphd_10	0.251*** (0.00305)	0.258*** (0.00379)	0.215*** (0.00471)	0.171*** (0.00292)	0.179*** (0.00297)	0.296*** (0.00642)
occuphd_11	0.0841*** (0.000437)	0.127*** (0.000806)	0.0476*** (0.000548)	0.0595*** (0.000421)	0.122*** (0.000787)	0.0229*** (0.000524)
hhsize	-0.0892*** (8.82e-05)	-0.0885*** (0.000157)	-0.0894*** (0.000107)	-0.0855*** (8.62e-05)	-0.0956*** (0.000143)	-0.0827*** (0.000107)
gender	-0.0447*** (0.000326)	-0.0206*** (0.000459)	-0.0532*** (0.000448)	-0.0127*** (0.000319)	-0.0283*** (0.000429)	0.00138*** (0.000446)
marital	0.0570*** (0.000370)	0.0395*** (0.000552)	0.0689*** (0.000494)	-0.000834** (0.000360)	0.00107** (0.000502)	-0.00480*** (0.000489)
agehead	0.00273*** (5.32e-05)	-0.00587*** (8.65e-05)	0.00540*** (6.70e-05)	0.00286*** (5.05e-05)	-0.00136*** (7.98e-05)	0.00491*** (6.39e-05)
$agehead^2$	-2.63e-05*** (5.27e-07)	4.88e-05*** (8.56e-07)	-4.88e-05*** (6.62e-07)	-3.10e-05*** (4.82e-07)	8.23e-06*** (7.51e-07)	-5.01e-05*** (6.13e-07)
pelderly	-0.0335*** (0.000853)	-0.0248*** (0.00146)	-0.0326*** (0.00104)	-0.143*** (0.000579)	-0.0461*** (0.000977)	-0.167*** (0.000712)
pchild	-0.375*** (0.00102)	-0.326*** (0.00180)	-0.394*** (0.00123)	-0.425*** (0.000666)	-0.387*** (0.00103)	-0.441*** (0.000846)
pfemale	-0.0721*** (0.000558)	-0.0700*** (0.000896)	-0.0672*** (0.000703)	-0.0860*** (0.000544)	-0.0694*** (0.000835)	-0.0871*** (0.000694)

Variables	2010			2012		
	Country lincome	Urban lincome	Rural lincome	Country lincome	Urban lincome	Rural lincome
ethnic	0.244*** (0.000368)	0.202*** (0.000773)	0.248*** (0.000429)	0.246*** (0.000359)	0.0998*** (0.000722)	0.292*** (0.000424)
saving	0.294*** (0.000423)	0.297*** (0.000553)	0.278*** (0.000628)	0.194*** (0.000374)	0.185*** (0.000463)	0.192*** (0.000566)
headruraln	0.131*** (0.000454)	0.173*** (0.000766)	0.103*** (0.000610)	0.119*** (0.000457)	0.190*** (0.000741)	0.108*** (0.000617)
headsalary	0.0214*** (0.000398)	-0.000606 (0.000739)	0.0609*** (0.000495)	0.0342*** (0.000385)	0.0668*** (0.000683)	0.0505*** (0.000490)
remittance	-0.0208*** (0.000286)	-0.0919*** (0.000457)	0.0104*** (0.000366)	0.0356*** (0.000287)	0.0321*** (0.000453)	0.0317*** (0.000365)
manufactu	0.103*** (0.000407)	0.128*** (0.000729)	0.0942*** (0.000491)	0.107*** (0.000421)	0.116*** (0.000709)	0.0999*** (0.000517)
reg62	-0.149*** (0.000413)	-0.165*** (0.000773)	-0.127*** (0.000493)	-0.0817*** (0.000399)	-0.159*** (0.000710)	-0.0421*** (0.000481)
reg63	-0.159*** (0.000326)	-0.170*** (0.000572)	-0.145*** (0.000396)	-0.135*** (0.000313)	-0.139*** (0.000538)	-0.123*** (0.000383)
reg64	0.0437*** (0.000525)	-0.0800*** (0.000878)	0.106*** (0.000652)	0.0875*** (0.000506)	-0.0346*** (0.000812)	0.160*** (0.000633)
reg65	0.251*** (0.000368)	0.178*** (0.000528)	0.276*** (0.000523)	0.222*** (0.000357)	0.158*** (0.000486)	0.264*** (0.000513)

Variables	2010			2012		
	Country lincome	**Urban lincome**	**Rural lincome**	**Country lincome**	**Urban lincome**	**Rural lincome**
reg66	0.0126*** (0.000342)	-0.0844*** (0.000617)	0.0549*** (0.000416)	-0.0400*** (0.000331)	-0.0412*** (0.000576)	-0.0287*** (0.000406)
urban	0.165*** (0.000292)			0.142*** (0.000281)		
manufactu * skilled ratio	-0.0727*** (0.00147)	-0.0416*** (0.00185)	-0.129*** (0.00249)	-0.0773*** (0.00147)	-0.0529*** (0.00180)	-0.0700*** (0.00247)
Constant	5.596*** (0.00161)	6.100*** (0.00283)	5.473*** (0.00200)	5.442*** (0.00158)	5.818*** (0.00265)	5.356*** (0.00197)
Observations	22,272,724	6,793,194	15,479,530	23,221,218	6,966,033	16,255,185
R-squared	0.595	0.573	0.493	0.565	0.555	0.480

Source: Author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.52: Results of Household Poverty Status Models (MOLISA) with Interactive Variable (2004- 2012)

Variables	2004			2006			2008		
	Country MOLISA	Urban MOLISA	Rural MOLISA	Country MOLISA	Urban MOLISA	Rural MOLISA	Country MOLISA	Urban MOLISA	Rural MOLISA
hhland	-0.0363 (0.0630)	0.0837 (0.151)	-0.0714 (0.0703)	-0.191*** (0.0584)	-0.156 (0.140)	-0.231*** (0.0658)	-0.117** (0.0593)	0.106 (0.144)	-0.201*** (0.0659)
labour	-0.171 (0.200)	0.244 (0.545)	-0.258 (0.216)	0.273* (0.161)	0.202 (0.445)	0.275 (0.176)	0.421** (0.169)	-0.0527 (0.487)	0.464** (0.182)
lfixedca	-0.0756*** (0.00545)	-0.0564*** (0.0145)	-0.0792*** (0.00591)	-0.0583*** (0.00474)	-0.0741*** (0.0133)	-0.0568*** (0.00517)	-0.0476*** (0.00471)	-0.0606*** (0.0134)	-0.0465*** (0.00510)
skilled ratio	-2.113*** (0.280)	-2.754*** (0.613)	-1.806*** (0.320)	-1.613*** (0.195)	-1.246*** (0.319)	-1.884*** (0.262)	-2.116*** (0.215)	-1.827*** (0.404)	-2.146*** (0.259)
occuphd_1	-0.668*** (0.231)	-	-0.643*** (0.236)	-0.593*** (0.195)	-0.504 (0.444)	-0.592*** (0.216)	-0.671*** (0.199)	-0.540 (0.442)	-0.682*** (0.224)
occuphd_2	-	-	-	-	-	-	-	-	-
occuphd_3	-0.709** (0.292)	-0.0472 (0.366)	-	-0.578*** (0.210)	-0.694* (0.415)	-0.481* (0.251)			
occuphd_4	-1.029** (0.440)	-	-0.892* (0.486)	-1.158*** (0.412)	-	-0.993** (0.440)	-0.896*** (0.341)	-	-0.779** (0.365)
occuphd_5	-0.326* (0.174)	-0.283 (0.283)	-0.312 (0.222)	-0.0922 (0.129)	0.150 (0.201)	-0.263 (0.177)	-0.320*** (0.123)	-0.161 (0.208)	-0.401*** (0.155)
occuphd_6	-0.362** (0.146)	-	-0.321** (0.150)	-0.299*** (0.104)	-0.702* (0.371)	-0.257** (0.109)	-0.335*** (0.0998)	-0.336 (0.305)	-0.337*** (0.106)
occuphd_7	-0.297*** (0.103)	-0.154 (0.210)	-0.342*** (0.121)	-0.171** (0.0777)	-0.0951 (0.175)	-0.172* (0.0878)	-0.388*** (0.0764)	-0.0405 (0.167)	-0.489*** (0.0873)
occuphd_8	-1.131*** (0.391)	-	-0.919** (0.420)	-0.635*** (0.218)	-0.868* (0.461)	-0.548** (0.257)	-0.512*** (0.181)	-0.194 (0.288)	-0.631*** (0.233)
occuphd_10	-0.114 (0.525)	-	0.185 (0.630)		-		-0.589 (0.608)	-	-0.314 (0.704)
occuphd_11	-0.0283 (0.0731)	0.0594 (0.185)	-0.0332 (0.0811)	-0.162** (0.0698)	-0.667*** (0.175)	-0.0789 (0.0781)	-0.0581 (0.0704)	-0.328* (0.182)	0.00934 (0.0782)

Variables	2004			2006			2008		
	Country MOLISA	**Urban MOLISA**	**Rural MOLISA**	**Country MOLISA**	**Urban MOLISA**	**Rural MOLISA**	**Country MOLISA**	**Urban MOLISA**	**Rural MOLISA**
hhsize	0.0389***	0.0412	0.0406***	0.00852	0.0387	0.00233	0.000570	0.0482	-0.00792
	(0.0136)	(0.0366)	(0.0149)	(0.0132)	(0.0332)	(0.0145)	(0.0134)	(0.0348)	(0.0147)
gender	0.0643	0.0723	0.0500	0.0244	-0.0184	0.0431	0.0334	-0.0927	0.0829
	(0.0728)	(0.156)	(0.0838)	(0.0639)	(0.129)	(0.0752)	(0.0641)	(0.127)	(0.0754)
marital	-0.515***	-0.471***	-0.516***	-0.426***	-0.324**	-0.449***	-0.417***	-0.454***	-0.427***
	(0.0740)	(0.173)	(0.0837)	(0.0667)	(0.144)	(0.0771)	(0.0667)	(0.138)	(0.0775)
agehead	0.00974	-0.00659	0.0122	0.0165*	0.0941***	0.0108	0.000152	0.0218	-0.00203
	(0.00965)	(0.0283)	(0.0105)	(0.00962)	(0.0322)	(0.0103)	(0.00958)	(0.0272)	(0.0104)
$agehead^2$	-0.000106	6.94e-05	-0.000135	-0.000173*	-0.000815***	-0.000121	-1.79e-05	-0.000253	7.00e-06
	(9.17e-05)	(0.000247)	(0.000101)	(9.28e-05)	(0.000291)	(0.000101)	(9.19e-05)	(0.000250)	(0.000101)
pelderly	0.330***	0.0307	0.359***	0.295***	0.682**	0.211*	0.186*	0.436	0.119
	(0.117)	(0.315)	(0.128)	(0.107)	(0.271)	(0.118)	(0.106)	(0.277)	(0.116)
pchild	0.598***	0.538*	0.595***	0.837***	0.900***	0.840***	0.814***	0.269	0.892***
	(0.115)	(0.322)	(0.124)	(0.114)	(0.310)	(0.124)	(0.113)	(0.303)	(0.123)
pfemale	-0.0434	0.144	-0.0685	0.190**	0.0396	0.224**	-0.00623	-0.471**	0.0890
	(0.107)	(0.270)	(0.118)	(0.0962)	(0.248)	(0.106)	(0.0959)	(0.236)	(0.106)
ethnic	-0.444***	-0.142	-0.493***	-0.500***	-0.359**	-0.500***	-0.526***	-0.343*	-0.522***
	(0.0604)	(0.198)	(0.0653)	(0.0540)	(0.178)	(0.0579)	(0.0554)	(0.186)	(0.0594)
saving	-0.973***	-	-0.850***	-0.996***	-	-0.887***	-0.746***	-0.949***	-0.681***
	(0.185)		(0.194)	(0.164)		(0.173)	(0.139)	(0.368)	(0.153)
headruraln	-0.261**	-0.195	-0.322**	-0.426***	-0.560***	-0.497***	-0.0648	-0.0150	-0.173
	(0.105)	(0.193)	(0.138)	(0.0839)	(0.162)	(0.108)	(0.0829)	(0.163)	(0.108)
headsalary	0.142	-0.0173	0.218**	-0.155**	-0.422**	-0.109	0.186**	0.134	0.180**
	(0.0890)	(0.202)	(0.103)	(0.0777)	(0.172)	(0.0906)	(0.0747)	(0.171)	(0.0875)
remittance	-0.00810	-0.0507	-0.00481	0.0352	0.223	0.0141	0.0340	-0.0168	0.0429
	(0.0565)	(0.143)	(0.0621)	(0.0558)	(0.173)	(0.0596)	(0.0515)	(0.127)	(0.0568)
manufactu	-0.228**	-0.489**	-0.135	-0.146	-0.0704	-0.116	-0.0763	-0.354*	0.0386
	(0.109)	(0.239)	(0.125)	(0.0914)	(0.190)	(0.106)	(0.0876)	(0.195)	(0.100)
reg62	0.0579	0.328	0.00950	0.253***	-0.167	0.307***	0.264***	0.242	0.258***
	(0.0783)	(0.215)	(0.0852)	(0.0685)	(0.197)	(0.0746)	(0.0701)	(0.213)	(0.0758)

Variables	2004			2006			2008		
	Country MOLISA	**Urban MOLISA**	**Rural MOLISA**	**Country MOLISA**	**Urban MOLISA**	**Rural MOLISA**	**Country MOLISA**	**Urban MOLISA**	**Rural MOLISA**
reg63	0.167***	0.0303	0.185***	0.366***	-0.131	0.439***	0.370***	0.454***	0.354***
	(0.0645)	(0.190)	(0.0694)	(0.0571)	(0.156)	(0.0621)	(0.0576)	(0.168)	(0.0622)
reg64	0.0560	0.373*	-0.0351	0.242***	0.345*	0.210**	0.0702	0.311	0.0349
	(0.0922)	(0.225)	(0.103)	(0.0831)	(0.192)	(0.0932)	(0.0875)	(0.226)	(0.0961)
reg65	-0.305***	-0.161	-0.357***	-0.385***	-0.363**	-0.452***	-0.201**	0.150	-0.324***
	(0.0928)	(0.206)	(0.109)	(0.0886)	(0.173)	(0.108)	(0.0856)	(0.182)	(0.104)
reg66	-0.0690	0.124	-0.120	0.0222	-0.0642	0.0259	0.0122	0.391**	-0.0661
	(0.0696)	(0.193)	(0.0761)	(0.0620)	(0.159)	(0.0681)	(0.0626)	(0.174)	(0.0687)
urban	-0.235***		-	-0.312***		-	-0.411***		-
	(0.0644)			(0.0588)			(0.0604)		
manufactu* skilled ratio	1.170	2.862***	-1.847	0.536	0.278	0.446	1.236**	1.957**	0.129
	(0.722)	(0.987)	(1.957)	(0.676)	(0.946)	(1.052)	(0.562)	(0.819)	(0.947)
Constant	-0.518*	-0.918	-0.449	-0.558**	-3.149***	-0.379	-0.126	-1.046	-0.0588
	(0.288)	(0.887)	(0.311)	(0.282)	(0.962)	(0.302)	(0.284)	(0.801)	(0.309)
Observations	9,017	1,627	6,782	8,980	1,881	6,832	8,772	2,028	6,685

Source: Author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.52: (continued)

Variables	2010			2012		
	Country MOLISA	Urban MOLISA	Rural MOLISA	Country MOLISA	Urban MOLISA	Rural MOLISA
hhland	-0.214***	-0.211	-0.218***	-0.344***	-0.129	-0.386***
	(0.0661)	(0.164)	(0.0732)	(0.0661)	(0.203)	(0.0714)
labour	-0.0914	-0.0709	-0.0911	0.0402	-0.336	0.0819
	(0.157)	(0.391)	(0.172)	(0.151)	(0.501)	(0.161)
lfixedca	-0.227***	-0.215***	-0.228***	-0.310***	-0.531***	-0.287***
	(0.0109)	(0.0262)	(0.0122)	(0.0152)	(0.0531)	(0.0162)
skilled ratio	-1.211***	-1.097***	-1.244***	-1.324***	-0.739*	-1.422***
	(0.207)	(0.365)	(0.255)	(0.216)	(0.419)	(0.257)
occuphd_1	-0.982**	-	-0.951**	-0.613**	-	-0.605**
	(0.388)		(0.397)	(0.289)		(0.294)
occuphd_2	-	-	-	-	-	-
occuphd_3	-0.983***		-0.798**			-
	(0.377)		(0.396)			
occuphd_4	-0.319	-0.0131	-0.444	-1.255***	-0.313	
	(0.251)	(0.459)	(0.306)	(0.449)	(0.521)	
occuphd_5	-0.293***	-0.0738	-0.411***	-0.314***	-0.266	-0.321**
	(0.107)	(0.188)	(0.138)	(0.106)	(0.218)	(0.127)
occuphd_6	-0.122	0.171	-0.142*	-0.234***	-0.405	-0.218***
	(0.0765)	(0.243)	(0.0809)	(0.0746)	(0.297)	(0.0775)
occuphd_7	-0.267***	-0.162	-0.271***	-0.425***	-0.682**	-0.381***
	(0.0778)	(0.196)	(0.0856)	(0.0818)	(0.272)	(0.0872)
occuphd_8	-0.718***	-0.356	-0.873***	-0.363**	0.220	-0.547***
	(0.180)	(0.291)	(0.239)	(0.142)	(0.275)	(0.178)
occuphd_10		-			-	
occuphd_11	0.0953	-0.106	0.155*	-0.0223	-0.239	-0.00250
	(0.0796)	(0.194)	(0.0887)	(0.0782)	(0.235)	(0.0850)

Variables	2010			2012		
	Country MOLISA	Urban MOLISA	Rural MOLISA	Country MOLISA	Urban MOLISA	Rural MOLISA
hhsize	0.0486***	0.0699	0.0441***	0.0442***	0.106**	0.0322*
	(0.0155)	(0.0434)	(0.0167)	(0.0164)	(0.0459)	(0.0177)
gender	-0.0640	0.0346	-0.0977	-0.0445	-0.212	0.00396
	(0.0700)	(0.154)	(0.0801)	(0.0709)	(0.165)	(0.0808)
marital	-0.252***	-0.330**	-0.236***	-0.250***	0.112	-0.325***
	(0.0725)	(0.162)	(0.0824)	(0.0720)	(0.180)	(0.0812)
agehead	-0.000436	0.0244	-0.00207	-0.00338	0.0380	-0.00840
	(0.00927)	(0.0254)	(0.0101)	(0.00898)	(0.0276)	(0.00973)
$agehead^2$	-6.09e-05	-0.000259	-5.43e-05	-3.72e-05	-0.000351	6.90e-06
	(9.15e-05)	(0.000241)	(0.000101)	(8.59e-05)	(0.000247)	(9.39e-05)
pelderly	0.327**	0.393	0.345**	0.498***	0.451	0.484***
	(0.160)	(0.394)	(0.175)	(0.109)	(0.329)	(0.117)
pchild	0.437**	0.283	0.473**	0.629***	0.996***	0.601***
	(0.188)	(0.475)	(0.206)	(0.129)	(0.367)	(0.140)
pfemale	-0.132	-0.171	-0.138	-0.00424	-0.0143	0.0159
	(0.106)	(0.262)	(0.117)	(0.104)	(0.296)	(0.113)
ethnic	-0.597***	-0.394**	-0.611***	-0.596***	-0.217	-0.644***
	(0.0574)	(0.170)	(0.0622)	(0.0582)	(0.190)	(0.0625)
saving	-0.472***	-0.545*	-0.442**	-0.823***	-	-0.719***
	(0.158)	(0.325)	(0.182)	(0.179)		(0.187)
headruraln	-0.0708	-0.0734	-0.197	-0.144	-0.208	-0.236*
	(0.107)	(0.208)	(0.139)	(0.113)	(0.252)	(0.142)
headsalary	0.108	-0.0466	0.141	-0.0574	-0.475**	0.0271
	(0.0789)	(0.192)	(0.0884)	(0.0805)	(0.231)	(0.0886)
remittance	0.0314	-0.0995	0.0454	0.0655	0.109	0.0565
	(0.0561)	(0.141)	(0.0616)	(0.0549)	(0.184)	(0.0583)
manufactu	0.0736	-0.0258	0.0974	-0.0122	-0.0849	-0.000684
	(0.0727)	(0.197)	(0.0794)	(0.0802)	(0.233)	(0.0871)

Variables	2010			2012		
	Country MOLISA	Urban MOLISA	Rural MOLISA	Country MOLISA	Urban MOLISA	Rural MOLISA
reg62	0.251***	0.406	0.238***	0.226***	0.231	0.222***
	(0.0793)	(0.248)	(0.0854)	(0.0782)	(0.256)	(0.0832)
reg63	0.194***	0.494**	0.160**	0.289***	0.582***	0.245***
	(0.0717)	(0.212)	(0.0777)	(0.0696)	(0.218)	(0.0745)
reg64	0.116	0.0606	0.129	0.0336	-1.005*	0.0787
	(0.0968)	(0.298)	(0.105)	(0.0966)	(0.532)	(0.102)
reg65	0.0267	0.374*	-0.0328	-0.0144	0.202	-0.0602
	(0.0920)	(0.225)	(0.107)	(0.0930)	(0.237)	(0.107)
reg66	0.0158	0.440**	-0.0350	0.0956	0.314	0.0592
	(0.0759)	(0.220)	(0.0827)	(0.0730)	(0.228)	(0.0784)
urban	-0.361***		-	-0.471***		-
	(0.0635)			(0.0642)		
manufactu *skilled ratio	0.722	-0.137	1.073*	0.447	0.0250	0.570
	(0.524)	(1.208)	(0.604)	(0.609)	(1.223)	(0.731)
Constant	1.599***	0.0910	1.720***	2.615***	2.030**	2.685***
	(0.292)	(0.772)	(0.319)	(0.288)	(0.885)	(0.311)
Observations	9,093	2,184	6,680	8,844	1,972	6,463

Source: Author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.53: Results of Household Poverty Status Models (GSO) with Interactive Variable (2004- 2012)

Variables	2004			2006			2008		
	Country GSO	Urban GSO	Rural GSO	Country GSO	Urban GSO	Rural GSO	Country GSO	Urban GSO	Rural GSO
hhland	0.220*** (0.0709)	0.546*** (0.152)	0.0525 (0.0807)	-0.0392 (0.0659)	0.326** (0.159)	-0.139* (0.0732)	0.0966 (0.0702)	0.418*** (0.145)	-0.0341 (0.0814)
labour	-0.434* (0.225)	0.852 (0.558)	-0.671*** (0.250)	-0.0870 (0.188)	-0.231 (0.621)	-0.107 (0.199)	-0.136 (0.229)	-0.906 (0.677)	0.00828 (0.246)
lfixedca	-0.0677*** (0.00569)	-0.0338** (0.0144)	-0.0763*** (0.00628)	-0.0597*** (0.00519)	-0.0734*** (0.0165)	-0.0579*** (0.00555)	-0.0466*** (0.00536)	-0.0130 (0.0133)	-0.0556*** (0.00596)
skilled ratio	-3.001*** (0.371)	-2.954*** (0.716)	-2.769*** (0.448)	-2.964*** (0.311)	-2.371*** (0.561)	-3.296*** (0.389)	-2.172*** (0.254)	-1.869*** (0.422)	-2.372*** (0.343)
occuphd_1	-0.697*** (0.228)	-	-0.655*** (0.232)	-0.821*** (0.244)	-	-0.784*** (0.248)	-1.225*** (0.382)	-	-1.175*** (0.397)
o.occuphd_2	-	-	-	-	-	-	-0.663 (0.470)	-	-0.186 (0.583)
occuphd_3	-0.915** (0.383)	-	-0.857** (0.404)	-1.199*** (0.429)	-	-1.122** (0.442)	-0.956** (0.402)	-	-0.883** (0.433)
occuphd_4	-1.276** (0.557)	-	-1.179* (0.611)		-		-0.456 (0.359)	0.0364 (0.484)	-0.937* (0.548)
occuphd_5	-0.431** (0.197)	-0.628* (0.340)	-0.322 (0.249)	-0.412** (0.177)	-0.549 (0.401)	-0.382* (0.203)	-0.300* (0.159)	-0.622* (0.375)	-0.154 (0.182)
occuphd_6	-0.0759 (0.134)	-	0.0441 (0.138)	-0.656*** (0.126)	-	-0.573*** (0.129)	-0.203* (0.114)	-0.323 (0.322)	-0.206* (0.124)
occuphd_7	-0.206* (0.106)	-0.343 (0.218)	-0.192 (0.124)	-0.319*** (0.0902)	-0.612** (0.295)	-0.283*** (0.0964)	-0.335*** (0.0984)	0.204 (0.179)	-0.601*** (0.128)
occuphd_8	-0.700** (0.296)	-	-0.412 (0.324)	-0.727*** (0.259)	-0.515 (0.424)	-0.919*** (0.356)	-0.276 (0.208)	0.127 (0.292)	-0.617* (0.327)
o.occuphd_10	-	-	-	-	-	-	-	-	-
occuphd_11	-0.0464 (0.0804)	-0.201 (0.202)	0.0239 (0.0893)	-0.110 (0.0753)	-0.341 (0.210)	-0.0925 (0.0826)	0.0624 (0.0782)	-0.0482 (0.185)	0.116 (0.0885)

Variables	2004			2006			2008		
	Country GSO	**Urban GSO**	**Rural GSO**	**Country GSO**	**Urban GSO**	**Rural GSO**	**Country GSO**	**Urban GSO**	**Rural GSO**
hhsize	0.175***	0.124***	0.189***	0.181***	0.209***	0.184***	0.107***	0.0816**	0.119***
	(0.0140)	(0.0389)	(0.0153)	(0.0143)	(0.0425)	(0.0154)	(0.0148)	(0.0373)	(0.0164)
gender	0.0568	0.258	-0.0122	0.0662	0.259	0.0212	0.00134	-0.172	0.0698
	(0.0800)	(0.179)	(0.0918)	(0.0743)	(0.188)	(0.0830)	(0.0750)	(0.140)	(0.0908)
marital	-0.421***	-0.583***	-0.367***	-0.201***	-0.295	-0.175**	-0.0480	-0.120	-0.0470
	(0.0832)	(0.197)	(0.0945)	(0.0779)	(0.207)	(0.0865)	(0.0805)	(0.162)	(0.0953)
agehead	-0.0261***	-0.00976	-0.0252**	-0.0193*	0.00982	-0.0227**	-0.0263**	0.0180	-0.0318***
	(0.00998)	(0.0302)	(0.0108)	(0.00997)	(0.0363)	(0.0106)	(0.0104)	(0.0293)	(0.0115)
$agehead^2$	0.000158*	4.07e-05	0.000150	0.000198**	-3.50e-05	0.000229**	0.000266***	-0.000156	0.000320***
	(9.62e-05)	(0.000270)	(0.000106)	(9.51e-05)	(0.000315)	(0.000103)	(9.78e-05)	(0.000259)	(0.000110)
pelderly	0.769***	1.187***	0.640***	0.601***	0.877**	0.559***	0.694***	0.854***	0.609***
	(0.126)	(0.334)	(0.139)	(0.119)	(0.346)	(0.128)	(0.119)	(0.295)	(0.134)
pchild	0.670***	1.329***	0.573***	1.147***	1.074***	1.149***	1.101***	0.741**	1.136***
	(0.118)	(0.347)	(0.128)	(0.126)	(0.411)	(0.134)	(0.133)	(0.351)	(0.146)
pfemale	0.252**	0.207	0.238*	0.246**	0.273	0.236**	0.210*	-0.130	0.301**
	(0.115)	(0.287)	(0.128)	(0.109)	(0.344)	(0.116)	(0.113)	(0.267)	(0.127)
ethnic	-0.633***	-0.202	-0.682***	-0.772***	-0.438**	-0.808***	-0.490***	-0.156	-0.521***
	(0.0609)	(0.205)	(0.0662)	(0.0561)	(0.207)	(0.0597)	(0.0610)	(0.199)	(0.0666)
saving	-0.817***	-1.198***	-0.700***	-0.546***	0.0243	-0.758***	-0.712***	-0.667**	-0.708***
	(0.165)	(0.432)	(0.180)	(0.132)	(0.238)	(0.164)	(0.161)	(0.306)	(0.193)
headruraln	-0.137	-0.0562	-0.223	-0.556***	-0.472**	-0.589***	-0.0395	0.00127	-0.232
	(0.113)	(0.197)	(0.154)	(0.105)	(0.223)	(0.125)	(0.102)	(0.175)	(0.152)
headsalary	-0.0815	0.141	-0.164	-0.189**	-0.197	-0.173*	-0.0565	-0.0362	-0.0422
	(0.107)	(0.213)	(0.130)	(0.0918)	(0.228)	(0.103)	(0.0973)	(0.194)	(0.120)
remittance	-0.207***	-0.202	-0.208***	-0.116**	0.267	-0.140**	-0.209***	-0.157	-0.223***
	(0.0545)	(0.146)	(0.0597)	(0.0578)	(0.223)	(0.0607)	(0.0546)	(0.137)	(0.0607)
manufactu	-0.956***	-0.595**	-1.019***	-0.560***	-0.792**	-0.519***	-0.593***	-0.290	-0.764***
	(0.150)	(0.272)	(0.181)	(0.113)	(0.311)	(0.124)	(0.124)	(0.215)	(0.158)
reg62	-0.0762	-0.00193	-0.102	0.176**	0.214	0.161**	0.315***	0.896***	0.189**
	(0.0776)	(0.205)	(0.0855)	(0.0731)	(0.222)	(0.0783)	(0.0793)	(0.219)	(0.0882)

Variables	2004			2006			2008		
	Country GSO	**Urban GSO**	**Rural GSO**	**Country GSO**	**Urban GSO**	**Rural GSO**	**Country GSO**	**Urban GSO**	**Rural GSO**
reg63	0.120* (0.0632)	-0.281 (0.175)	0.171** (0.0689)	0.256*** (0.0606)	-0.369* (0.208)	0.313*** (0.0642)	0.310*** (0.0667)	0.607*** (0.197)	0.241*** (0.0730)
reg64	-0.346*** (0.0944)	-0.206 (0.220)	-0.431*** (0.107)	0.0962 (0.0884)	0.325 (0.227)	0.0165 (0.0972)	0.257*** (0.0925)	0.573** (0.237)	0.137 (0.104)
reg65	-1.050*** (0.127)	-0.993*** (0.254)	-1.093*** (0.150)	-0.924*** (0.117)	-1.271*** (0.342)	-0.874*** (0.127)	-0.677*** (0.129)	-0.0287 (0.237)	-0.953*** (0.181)
reg66	-0.498*** (0.0751)	-0.203 (0.179)	-0.629*** (0.0853)	-0.291*** (0.0684)	-0.0954 (0.196)	-0.343*** (0.0739)	-0.0846 (0.0741)	0.422** (0.205)	-0.214*** (0.0826)
urban_	0.144** (0.0657)	-	-	-0.346*** (0.0691)	-	-	0.00301 (0.0674)	-	-
manufactu* skilled ratio	2.552** (1.144)	2.552* (1.390)	0.450 (2.739)	0.226 (1.561)	0.213 (2.996)	0.584 (1.841)	1.603** (0.815)	0.634 (1.168)	1.721 (1.327)
Constant	-0.0869 (0.297)	-1.110 (0.933)	0.123 (0.322)	-0.448 (0.299)	-2.467** (1.127)	-0.227 (0.317)	-0.819*** (0.316)	-2.404*** (0.902)	-0.541 (0.350)
Observations	8,991	1,704	6,893	8,891	1,852	6,786	9,163	1,984	6,824

Source: Author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.53: Results of Household Expenditure Models with Interactive Variable (2004- 2012)

Variables	2004-2006			2006-2008			2010-2012		
	Country	**Urban**	**Rural**	**Country**	**Urban**	**Rural**	**Country**	**Urban**	**Rural**
labour	0.153*** (0.058)	-0.105 (0.141)	0.257*** (0.060)	0.154 (0.302)	-0.712 (0.630)	0.392 (0.351)	0.00431 (0.122)	-0.186 (0.190)	0.056 (0.147)
lfixedca	0.010*** (0.002)	0.007* (0.005)	0.012*** (0.002)	-0.001 (0.011)	0.004 (0.021)	-0.005 (0.013)	0.169*** (0.011)	0.205*** (0.032)	0.159*** (0.012)
skilled ratio	0.328*** (0.055)	0.443*** (0.088)	0.201*** (0.067)	1.115*** (0.280)	0.729* (0.402)	1.464*** (0.382)	0.236*** (0.067)	0.301*** (0.107)	0.155* (0.086)
hhsize	-0.118*** (0.008)	-0.111*** (0.020)	-0.116*** (0.009)	-0.274*** (0.044)	-0.201** (0.092)	-0.299*** (0.050)	-0.126*** (0.011)	-0.155*** (0.022)	-0.114*** (0.012)
gender	0.049*** (0.008)	0.065*** (0.015)	0.042*** (0.009)	0.422*** (0.065)	0.204** (0.104)	0.520*** (0.083)	0.0283* (0.017)	0.00815 (0.030)	0.0375* (0.021)
marital	-0.000*** 0.000	-0.001*** 0.000	-0.000*** 0.000	-0.003*** (0.001)	-0.001 (0.001)	-0.004*** (0.001)	-0.000124 (0.000)	0.0000553 (0.000)	-0.000178 (0.000)
agehead	-0.027 (0.074)	-0.102 (0.155)	0.006 (0.082)	-0.382 (0.433)	-0.049 (0.906)	-0.37 (0.512)	-0.0192 (0.110)	-0.192 (0.204)	0.0633 (0.131)
$agehead^2$	0.101** (0.050)	0.235** (0.114)	0.065 (0.055)	-1.948*** (0.382)	-2.407*** (0.787)	-1.789*** (0.437)	-0.485*** (0.086)	-0.354** (0.156)	-0.519*** (0.102)
pelderly	-0.117* (0.068)	-0.183 (0.148)	-0.111 (0.070)	0.385 (0.388)	0.28 (0.770)	0.443 (0.452)	-0.0755 (0.090)	-0.0937 (0.160)	-0.0627 (0.111)
manufactu	0.097*** (0.037)	0.095 (0.071)	0.105** (0.042)	0.072 (0.208)	-0.362 (0.348)	0.348 (0.260)	0.00561 (0.043)	-0.0246 (0.087)	0.014 (0.049)

Variables	2004-2006			2006-2008			2010-2012		
	Country	**Urban**	**Rural**	**Country**	**Urban**	**Rural**	**Country**	**Urban**	**Rural**
manufactu * skilled ratio	0.743* (0.608)	0.246 (0.283)	0.675* (0.470)	0.435 (0.693)	0.468 (0.870)	0.358 (0.834)	0.453 (0.923)	0.224 (0.794)	0.427 (0.821)
Constant	4.978*** (0.202)	4.996*** (0.425)	4.959*** (0.219)	-3.449* (1.776)	3.023 (2.957)	-6.171*** (2.227)	6.632*** (0.396)	7.363*** (0.699)	6.226*** (0.493)
Observations	7858	1935	5923	8250	2027	6223	7243	1895	5348
R-squared	0.11	0.11	0.11	0.08	0.05	0.1	0.188	0.213	0.183
Number of id	3932	984	2978	4127	1026	3125	3724	994	2750

Source: Author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.53: (continued)

Variables	2004-2006			2006-2008			2010-2012		
	Country	**Urban**	**Rural**	**Country**	**Urban**	**Rural**	**Country**	**Urban**	**Rural**
labour	0.224*** (0.069)	0.117 (0.160)	0.283*** (0.075)	0.084 (0.068)	-0.14 (0.151)	0.142* (0.076)	-0.125 (0.100)	-0.127 (0.203)	-0.112 (0.119)
lfixedca	0.012*** (0.003)	0.008 (0.005)	0.014*** (0.003)	0.013*** (0.003)	0.018*** (0.006)	0.011*** (0.003)	0.141*** (0.010)	0.159*** (0.023)	0.135*** (0.011)
skilled ratio	0.509*** (0.059)	0.566*** (0.097)	0.433*** (0.071)	0.484*** (0.065)	0.499*** (0.087)	0.465*** (0.097)	0.350*** (0.062)	0.296*** (0.089)	0.393*** (0.083)
hhsize	-0.128*** (0.009)	-0.102*** (0.020)	-0.133*** (0.010)	-0.111*** (0.010)	-0.122*** (0.024)	-0.109*** (0.012)	-0.115*** (0.010)	-0.104*** (0.019)	-0.113*** (0.012)
gender	0.064*** (0.009)	0.079*** (0.020)	0.055*** (0.010)	0.059*** (0.013)	0.014 (0.018)	0.079*** (0.017)	0.0135 (0.017)	-0.0461** (0.022)	0.0372 (0.023)
marital	-0.001*** 0.000	-0.001*** 0.000	-0.000*** 0.000	-0.000*** 0.000	0 0.000	-0.001*** 0.000	0.000171 (0.000)	0.000661** (0.000)	3.66E-05 (0.000)
agehead	0.023 (0.089)	0.058 (0.171)	0.009 (0.105)	-0.247** (0.098)	-0.18 (0.202)	-0.255** (0.115)	-0.0802 (0.095)	-0.118 (0.195)	-0.0533 (0.106)
$agehead^2$	0.232*** (0.058)	0.327*** (0.126)	0.202*** (0.065)	-0.509*** (0.088)	-0.504*** (0.194)	-0.516*** (0.098)	-0.355*** (0.078)	-0.332*** (0.128)	-0.356*** (0.096)
pelderly	-0.104 (0.073)	-0.128 (0.147)	-0.118 (0.082)	-0.188** (0.093)	-0.361* (0.193)	-0.125 (0.107)	-0.0696 (0.081)	0.0545 (0.130)	-0.121 (0.103)
manufactu	0.207*** (0.044)	0.116 (0.075)	0.258*** (0.055)	0.162*** (0.048)	0.105 (0.089)	0.211*** (0.057)	0.0528 (0.039)	0.0833 (0.065)	0.0235 (0.047)

Variables	2004-2006			2006-2008			2010-2012		
	Country	**Urban**	**Rural**	**Country**	**Urban**	**Rural**	**Country**	**Urban**	**Rural**
manufactu *skilled ratio	0.534** (0.249)	0.754 (0.554)	0.463* (0.272)	0.143* (0.343)	0.114 (0.520)	0.128* (0.445)	0.348 (0.923)	0.427 (0.794)	0.469 (0.821)
Constant	4.978*** (0.202)	4.996*** (0.425)	4.959*** (0.219)	-3.449* (1.776)	3.023 (2.957)	-6.171*** (2.227)	5.524*** (0.375)	7.173*** (0.477)	4.712*** (0.524)
Observations	7858	1935	5923	8250	2027	6223	7,243	1,895	5,348
R-squared	0.12	0.12	0.12	0.11	0.11	0.11	0.21	0.212	0.223
Number of id	3932	984	2978	4127	1026	3125	3,724	994	2,750

Source: Author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.54: Results of Household Expenditure Model with Interactive Variable (Panel Data in the Long Term (2004- 2008))

Variables	Country	Urban	Rural
labour	0.596 (0.423)	0.179 (0.994)	0.792* (0.471)
lfixedca	-0.00144 (0.013)	-0.0453* (0.026)	0.0126 (0.015)
skilled ratio	1.086*** (0.324)	1.004* (0.514)	1.176*** (0.404)
hhsize	-0.347*** (0.049)	-0.267*** (0.097)	-0.386*** (0.056)
gender	0.260*** (0.061)	0.105 (0.118)	0.303*** (0.070)
marital	-0.00183*** (0.001)	-0.000533 (0.001)	-0.00219*** (0.001)
agehead	0.129 (0.485)	-0.4 (1.003)	0.332 (0.554)
agehead^2	0.146 (0.302)	0.621 (0.722)	-0.0454 (0.335)
pelderly	0.443 (0.378)	-0.83 (0.812)	0.777* (0.445)
manufactu	0.247 (0.226)	-0.245 (0.386)	0.519* (0.280)
manufactu* skilled ratio	-0.993 (1.245)	-0.621 (0.936)	-0.536 (1.028)
Constant	-0.143 (1.612)	4.931 (3.218)	-1.474 (1.803)
Observations	3307	719	2588
R-squared	0.093	0.073	0.109
Number of id	1103	248	871

Source: Author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.55: Results of Household Income Models with Interactive Variable (Panel Data in the Long Term (2004- 2008))

Variables	Country	Urban	Rural
labour	0.126 (0.116)	0.069 (0.253)	0.149 (0.130)
lfixedca	0.0183*** (0.004)	0.00905 (0.008)	0.0213*** (0.004)
skilled ratio	0.677*** (0.095)	0.805*** (0.184)	0.604*** (0.109)
hhsize	-0.151*** (0.016)	-0.108*** (0.037)	-0.166*** (0.017)
gender	0.0767*** (0.016)	0.0432 (0.032)	0.0837*** (0.017)
marital	-0.000602*** (0.000)	-0.000322 (0.000)	-0.000653*** (0.000)
agehead	-0.132 (0.135)	-0.115 (0.280)	-0.14 (0.153)
agehead^2	-0.0729 (0.094)	0.0298 (0.235)	-0.13 (0.101)
pelderly	-0.0619 (0.116)	-0.402 (0.282)	0.0245 (0.132)
manufactu	0.219*** (0.068)	0.0345 (0.125)	0.323*** (0.082)
manufactu* skilled ratio	-1.045* (0.774)	-0.476 (0.634)	-0.748 (1.193)
Constant	4.620*** (0.419)	5.958*** (0.865)	4.304*** (0.457)
Observations	3,305	719	2,586
R-squared	0.139	0.126	0.153
Number of id	1,103	248	871

Source: Author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.56: Results of Household Poverty Status Models (MOLISA) with Interactive Variable (Panel Data in the Short Term (2004- 2006; 2006- 2008; 2010- 2012) and in the Long Term (2004- 2008))

Variables	2004-2006			2006-2008		
	Country MOLISA	Urban MOLISA	Rural MOLISA	Country MOLISA	Urban MOLISA	Rural MOLISA
labour	0.682 (2.027)	-0.563 (5.128)	-1.780 (9.111)	0.703 (1.751)	-0.614 (4.642)	0.678 (2.009)
lfixedca	-0.0643 (0.0535)	-0.039 (0.128)	-0.0440 (0.212)	-0.00632 (0.0482)	0.009 (0.113)	-0.0153 (0.0544)
skilled ratio	-124.7 (35,073)	-636.961 0.000	-899.5 (0)	-4.230** (2.010)	-3.015 (3.127)	-8.458 (7.033)
hhsize	0.250* (0.134)	0.195 (0.376)	0.300 (0.748)	-0.0156 (0.145)	-0.579 (0.556)	0.0403 (0.143)
gender	0.0964 (0.780)	-1 (1.543)	-6.822** (3.183)	-0.224 (0.731)	1.496 (2.102)	-1.139 (0.926)
marital	0.250 (0.969)	-0.153 (1.736)	0.0365 (2.611)	0.319 (0.876)	1.884 (2.808)	0.762 (1.012)
agehead	0.00705 (0.138)	-0.033 (0.370)	-0.107 (0.571)	0.150 (0.125)	0.498 (0.548)	0.111 (0.128)
$agehead^2$	-0.000135 (0.00132)	0 (0.003)	0.000668 (0.00537)	-0.00142 (0.00118)	-0.004 (0.005)	-0.001000 (0.00121)
pelderly	0.709 (1.520)	-0.335 (3.152)	-0.475 (5.137)	1.972 (1.217)	2.461 (3.193)	1.891 (1.359)
pchild	0.934 (1.466)	-3.27 (4.046)	-4.808 (8.432)	1.771 (1.332)	5.169 (3.817)	1.397 (1.419)
pfemale	0.298 (1.372)	0.81 (2.922)	1.653 (5.433)	0.920 (1.152)	7.124 (5.090)	-0.261 (1.278)
manufactu	-0.859 (1.305)	-2.075 (3.130)	-10.06* (5.707)	-1.096 (1.254)	-1.716 (2.624)	-1.276 (2.352)
manufactu* skilled ratio	2.216 (2.495)	2.273 (2.537)	1.894 (2.084)	2.046 (1.055)	1.515 (1.394)	1.743 (1.327)
Constant	-7.500** (3.763)	2.339*** (0.139)	-6.596 (14.36)	-12.57*** (3.570)	3.219*** (0.115)	-9.157** (3.738)
Observations	1,127	435	692	447	447	755
Number of id	565	219	348	224	224	378

Source: Author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.56: (continued)

Variables	2010-2012			2004-2008		
	Country MOLISA	Urban MOLISA	Rural MOLISA	Country MOLISA	Urban MOLISA	Rural MOLISA
labour	-0.345 (0.394)	-1.236 (1.531)	-0.297 (0.604)	-0.359 (0.397)	-1.06 (1.523)	-0.228 (0.489)
lfixedca	-0.190** (0.0804)	-1.037** (0.405)	-0.161 (0.114)	-0.198** (0.081)	-0.776* (0.413)	-0.11 (0.093)
skilled ratio	-2.348* (1.259)	-4.819 (6.224)	-1.190 (1.999)	-2.325** (1.159)	-4.003 (5.026)	-1.687 (1.792)
hhsize	0.180 (0.116)	0.330 (0.582)	0.410** (0.209)	0.183 (0.116)	0.247 (0.617)	0.250* (0.145)
gender	-0.874* (0.517)	-3.302 (2.346)	-1.822** (0.769)	-0.905* (0.518)	-3.098 (2.177)	-0.898 (0.662)
marital	-0.298 (0.569)	-5.191** (2.350)	0.356 (0.838)	-0.306 (0.572)	-4.306 (3.376)	0.194 (0.744)
agehead	0.0239 (0.0802)	1.213 (0.829)	-0.0750 (0.107)	0.024 (0.081)	1.124 (0.739)	-0.039 (0.092)
agehead^2	-0.000286 (0.000788)	-0.0120 (0.00761)	0.000549 (0.00105)	0 (0.001)	-0.011 (0.007)	0 (0.001)
pelderly	0.198 (1.017)	-5.417 (6.086)	1.999 (1.460)	0.264 (1.015)	-3.678 (5.906)	1.196 (1.249)
pchild	0.907 (0.977)	0.397 (4.646)	1.289 (1.380)	0.984 (0.978)	1.591 (5.258)	1.124 (1.206)
pfemale	-0.894 (0.883)	2.836 (4.618)	-2.781** (1.346)	-0.963 (0.885)	1.689 (5.308)	-1.541 (1.142)
manufactu	-0.0966 (0.564)	-1.200 (3.035)	-0.0670 (0.752)	-0.03 (0.516)	0.644 (2.908)	-0.263 (0.676)
manufactu*skilled ratio	0.919 (2.895)	6.986 (9.606)	-1.901 (2.606)	0.253* (0.268)	1.345 (1.370)	0.637 (0.591)
Constant	-3.834* (2.163)	-29.77 (23.48)	-4.918 (3.036)	-3.792* (2.172)	-29.772* (17.185)	-3.842 (2.550)
Observations	1,585	557	1,028	525	75	450
Number of id	797	281	516	175	25	150

Source: Author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.57: Results of Household Poverty Status Models (GSO) with Interactive Variable (Panel Data in the Short Term (2004- 2006; 2006- 2008; 2010- 2012) and in the Long Term (2004- 2008))

Variables	2004-2006			2006-2008		
	Country GSO	Urban GSO	Rural GSO	Country GSO	Urban GSO	Rural GSO
labour	1.065 (1.654)	-2,989 (2,537)	1.562 (2.278)	0,914 (2,402)	5,654 (5,764)	-0,471 (2,933)
lfixedca	-0.0112 (0.0471)	0,192 (0,126)	-0.0582 (0.0636)	-0,071 (0,061)	-1,456 (2,256)	-0,063 (0,064)
skilled ratio	-124.5 (8,520)	-415,326 0,000	-188.5 (73,169)	-125,432 (317,567)	-1,786 0,000	-117,933 (273,131)
hhsize	0.0817 (0.126)	0,443 (0,312)	0.0324 (0.171)	0,204 (0,174)	2,509 (1,965)	0,22 (0,156)
gender	-0.164 (0.592)	0,548 (1,284)	-0.910 (0.944)	3.684** (1,778)	2,229 (1,273)	2,788 (1,878)
marital	-0.568 (0.670)	-3.527** (1,457)	0.278 (1.037)	-1,875 (1,211)	1,437 (1,300)	-1,569 (1,531)
agehead	-0.00111 (0.113)	0,284 (0,293)	-0.0131 (0.177)	-0,002 (0,142)	2,614 (3,983)	-0,075 (0,147)
$agehead^2$	-0.000174 (0.00109)	-0,003 (0,003)	-5.40e-05 (0.00171)	0 (0,001)	-0,47 (1,599)	0 (0,001)
pelderly	1.404 (1.285)	5.117* (2,635)	1.077 (1.727)	1,863 (1,678)	2,438 0,000	0,681 (1,708)
pchild	1.864 (1.168)	3,321 (2,825)	1.669 (1.605)	-0,294 (1,653)	-3,129 0,000	-0,534 (1,641)
pfemale	-0.472 (1.049)	-0,231 (2,280)	-1.096 (1.437)	3.183* (1,792)	1,132 0,000	2,126 (1,703)
manufactu	-2.104 (1.517)	-1,42 (1,805)	-3.031 (2.228)	-1,846 (2,185)	1,272 (1,254)	-72,41 (79,681)
manufactu* skilled ratio	1,12 (2,247)	1,283 (2,583)	0,945 (1,394)	1,993 (2,834)	1,621 (2,364)	1,253 (1,945)
Constant	-4.782 (3.007)	2.605*** (0.145)	-5.974 (4.648)	-8.585* -4,383	-5812,908 0	-6,601 -4,189
Observations	1,127	435	692	447	447	755
Number of id	565	219	348	224	224	378

Source: Author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

Table A5.57: (Continued)

Variables	2010-2012			2004-2008		
	Country GSO	**Urban GSO**	**Rual GSO**	**Country GSO**	**Urban GSO**	**Rural GSO**
labour	-0.502 (0.432)	-4,368 (3,459)	-0.385 (0.468)	-0,122 (0,959)	0,538 (5,093)	0,685 (1,347)
lfixedca	-0.218*** (0.0817)	-1,13 (1,081)	-0.150 (0.0929)	0,0157 (0,021)	0,0399 (0,216)	0,00736 (0,024)
skilled ratio	-3.800* (1.983)	-110,858 0,000	-2.612 (2.692)	2,504 (1,728)	2,549 (2,836)	0,597 (1,694)
hhsize	0.223* (0.119)	-0,814 (1,328)	0.208 (0.140)	-0,0698 (0,054)	0,0804 (0,509)	-0,0253 (0,059)
gender	0.213 (0.612)	-1,711 (2,899)	0.226 (0.831)	-0.890*** (0,338)	-1,879 (2,529)	-0.945** (0,383)
marital	0.0801 (0.687)	3,694 (3,594)	-0.0899 (0.905)	0,235 (0,321)	-1,592 (2,250)	0,165 (0,359)
agehead	-0.0461 (0.0809)	- 2.325*** (0,749)	-0.0151 (0.0926)	0.109** (0,043)	-0,302 (0,538)	0.0747* (0,045)
$agehead^2$	0.000293 (0.000806)	0.027*** (0,010)	4.75e-05 (0.000934)	- 0.00105*** (0,000)	0,0025 (0,004)	- 0,000662 (0,000)
pelderly	0.117 (1.075)	-276,331 0,000	0.280 (1.267)	-1.026* (0,530)	-0,359 (3,326)	- 1.602*** (0,599)
pchild	0.806 (1.022)	-2,807 (14,848)	0.659 (1.198)	-1.205** (0,491)	1,002 (5,735)	- 2.130*** (0,558)
pfemale	0.960 (0.947)	3,975 (7,667)	0.986 (1.131)	-0,608 (0,462)	2,361 (4,368)	-1.144** (0,506)
manufactu	1.224 (6.149)	-42,191 (69,240)	0.834 (9.709)	0,598 (0,502)	0,0326 (3,357)	0,509 (0,585)
manufactu* skilled ratio	1,224 (0.634)	0,834 (0,975)	1,364 (0.727)	0.634* (0,234)	1,563 (1,025)	1,324 (1,843)
Constant	-4.224* (2.203)	2.724*** (0.103)	-4.641* (2.533)	-4.276* -2,203	49,346 0	-4.651* -2,528
Observations	1,585	557	1,028	554	74	474
Number of id	797	281	516	185	25	159

Source: Author's calculation

Notes: * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level; Standard errors in brackets

APPENDIX TO CHAPTER 6

Table A6.1: The poverty rate at provincial level

#	Code	Name of provinces	2004	2006	2008	2010	2012
Red River Delta							
1	101 (01)	Ha Noi	6.03	8.21	6.62	5.3	1.36
2	104 (26)	Vinh Phuc	9.77	12.6	11.25	10.4	6.31
3	106 (27)	Bac Ninh	4.98	8.6	7.45	6.96	2.59
4	225 (22)	Quang Ninh	8.53	7.9	6.44	7.97	3.99
5	107 (30)	Hai Duong	6.93	12.7	10.11	10.82	3.61
6	103 (31)	Hai Phong	12.98	7.8	6.25	6.54	0.78
7	109 (33)	Hung Yen	14.47	11.5	10.31	11.08	4.97
8	115 (34)	Thai Binh	13.06	11	9.81	10.69	7.23
9	111 (35)	Ha Nam	17.84	12.8	11.57	9.96	4.98
10	113 (36)	Nam Dinh	18.38	12	10.55		4.75
11	117 (37)	Ninh Binh	20.33	14.3	12.97	12.16	2.45
Midland and Northern Mountain Areas							
12	201 (02)	Ha Giang	33.53	41.5	37.59	49.96	46.85
13	203 (04)	Cao Bang	32.82	38	35.56	38.12	31.23
14	207 (06)	Bac Kan	32.65	39.2	36.75	32.11	29.37
15	211 (08)	Tuyen Quang	20.65	22.4	20.61	28.81	18.6
16	205 (10)	Lao Cai	31.68	35.6	33.19	40.06	35.92
17	213 (15)	Yen Bai	19.54	22.1	20.35	26.45	28.24
18	215 (19)	Thai Nguyen	15.34	18.6	16.45	19	6.67
19	209 (20)	Lang Son	19.13	21	19.27	27.53	22.8
20	221 (24)	Bac Giang	20.83	19.3	17.51	19.15	8.07
21	217 (25)	Phu Tho	20.3	18.8	16.68	19.22	11.81
22	302 (11)	Dien Bien	52.92	42.9	39.33	50.84	60.73
23	301 (12)	Lai Chau	64.1	58.2	53.73	50.07	48.64
24	303 (14)	Son La	26.96	39	36.3	37.92	33.97
25	305 (17)	Hoa Binh	33.67	32.5	28.57	30.84	12.22
North Central Area and Central Coastal Area							
26	401(38)	Thanh Hoa	26.3	27.5	24.88	25.36	12.56
27	403 (40)	Nghe An	25.52	26	22.46	24.78	14.64
28	405 (42)	Ha Tinh	33.6	31.5	26.52	26.08	7.67
29	407 (44)	Quang Binh	27.16	26.5	21.85	25.19	11.26
30	409 (45)	Quang Tri	36.25	28.5	25.89	25.09	14.39
31	411 (46)	Thua Thien Hue	24.07	16.4	13.66	12.81	4.58
32	501 (48)	Da Nang	9.41	4	3.52	5.13	1.41
33	503 (49)	Quang Nam	27.61	22.8	19.57	24.03	7.36
34	505 (51)	Quang Ngai	19.77	22.5	19.47	22.77	10.03
35	507 (52)	Binh Dinh	15.82	16	14.23	15.99	8.79
36	509 (54)	Phu Yen	14.36	18.5	16.27	18.97	6.35
37	511 (56)	Khanh Hoa	15.43	11	9.1	9.52	4.73
38	705 (58)	Ninh Thuan	25.05	22.3	19.31	19.03	6.37
39	715 (60)	Binh Thuan	14.04	11	9.19	10.13	3.09

#	Code	Name of provinces	2004	2006	2008	2010	2012
Central Highlands							
40	601 (62)	Kon Tum	22.88	31.2	26.65	31.89	21.27
41	603 (64)	Gia Lai	24.67	26.7	23.72	25.91	18.91
42	605 (66)	Dak Lak	27.37	24.3	21.28	21.92	10
43	606 (67)	Dak Nong	27.99	26.5	23.33	28.3	31.44
44	607 (68)	Lam Dong	19.69	18.3	15.84	13.06	5.7
South East							
45	707 (70)	Binh Phuoc	14.74	10.5	9.05	9.4	12.98
46	709 (72)	Tay Ninh	13.47	7	6.02	6.02	1.83
47	711 (74)	Binh Duong	8.33	0.5	0.38	0.52	0.14
48	713 (75)	Dong Nai	8.78	5	4.32	3.71	0.63
49	717 (77)	Ba Ria- Vung Tau	10.17	7	6.28	6.85	2.42
50	701 (79)	Ho Chi Minh	10.62	0.5	0.32	0.31	0
Mekong River Delta							
51	801 (80)	Long An	15.54	8.7	7.68	7.5	1.59
52	807 (82)	Tien Giang	8.44	13.2	10.58	10.6	2.86
53	811 (83)	Ben Tre	12.78	16.2	14.23	15.42	7.33
54	817 (84)	Tra Vinh	22.86	21.8	19.01	23.24	15.3
55	809 (86)	Vinh Long	13.41	11	9.79	9.53	5.46
56	803 (87)	Dong Thap	15.83	12.1	10.6	14.35	10.19
57	805 (89)	An Giang	10.77	9.7	8.49	9.16	2.38
58	811 (91)	Kien Giang	14.5	10.8	9.32	9.29	3.35
59	815 (92)	Can Tho	19.15	7.5	7.03	7.21	2.21
60	816 (93)	Hau Giang	12.27	15	13.25	17.29	12.99
61	819 (94)	Soc Trang	22.92	19.5	17.89	22.08	7.46
62	821 (95)	Bac Lieu	23.21	15.7	13.86	13.28	7.15
63	823 (96)	Ca Mau	17.4	14	12.65	12.32	4.79

Source: The author's calculation based on VHLSS 2004, 2006, 2008, 2010 and 2012.

Notes: The latest codes of the provinces in parentheses; The list of administrative units in Vietnam in 2010 was issued under the Decision No. 124/2004/QD-TTg dated July 8th, 2004 and the changes have been updated by the General Statistics Office until December 31st, 2010.

Table A6.2: Percentage of labourers in the manufacturing sector

#	Code	Name of provinces	2004	2006	2008	2010	2012
Red River Delta							
1	101 (01)	Ha Noi	35.56	39.4	39.66	45.35	48.33
2	104 (26)	Vinh Phuc	12.54	11.03	13.72	14.87	16.99
3	106 (27)	Bac Ninh	13.32	12.95	13.02	13.16	13.97
4	225 (22)	Quang Ninh	15.97	16.82	18.9	24.54	24.67
5	107 (30)	Hai Duong	13.16	13.43	13.38	12.65	13.77
6	103 (31)	Hai Phong	25.4	26.74	25.71	27.34	31.07
7	109 (33)	Hung Yen	6.82	7.26	7.76	9.09	10.62
8	115 (34)	Thai Binh	12.4	15.66	15.04	15.59	15.06
9	111 (35)	Ha Nam	18.61	15.26	14.58	16.1	14.77
10	113 (36)	Nam Dinh	19.73	18.72	18.68	17.92	18.91
11	117 (37)	Ninh Binh	18.57	17.47	14.28	16.04	15.75
Midland and Northern Mountain Areas							
12	201 (02)	Ha Giang	13.42	17.45	13.7	10.86	12.56
13	203 (04)	Cao Bang	11.86	13.37	16.2	19.6	18.23
14	207 (06)	Bac Kan	13.71	11.37	16.05	17.56	16.3
15	211 (08)	Tuyen Quang	17.46	17.94	18.04	19.87	18.91
16	205 (10)	Lao Cai	22.94	23.13	23.58	24.11	22.22
17	213 (15)	Yen Bai	16.88	17.89	18.05	21.3	23.83
18	215 (19)	Thai Nguyen	19.41	20.92	19.32	20	20.45
19	209 (20)	Lang Son	34.33	27.6	29.08	34.18	31.38
20	221 (24)	Bac Giang	25.17	18.04	16.92	17.09	14.78
21	217 (25)	Phu Tho	13.63	14.05	14.96	16.8	18.43
22	302 (11)	Dien Bien	17	17.32	14.93	13.39	13.68
23	301 (12)	Lai Chau	10.74	13.42	16.12	19.86	20.76
24	303 (14)	Son La	14.68	18.05	16.07	17.75	19.56
25	305 (17)	Hoa Binh	15.48	16.91	10.26	23.76	26.71
North Central Area and Central Coastal Area							
26	401(38)	Thanh Hoa	17.2	20.24	19.8	38.98	19.83
27	403 (40)	Nghe An	23.86	25.11	28.17	28.29	28.94
28	405 (42)	Ha Tinh	16.1	16.76	21.88	25.78	26.89
29	407 (44)	Quang Binh	14.49	20.15	23.91	25.62	29.89
30	409 (45)	Quang Tri	21.18	28.14	25.59	29.04	29.7
31	411 (46)	Thua Thien Hue	28.17	31.08	35.13	32.82	33.58
32	501 (48)	Da Nang	26.03	27.46	29.39	34.16	32.31
33	503 (49)	Quang Nam	13.37	14.94	18.39	18.21	17.76
34	505 (51)	Quang Ngai	16.55	24.02	25.4	27.38	28.07
35	507 (52)	Binh Dinh	16.93	14.62	16.32	19.46	19.82
36	509 (54)	Phu Yen	14.82	38.72	36.25	22.03	28.15
37	511 (56)	Khanh Hoa	26.36	28.87	31.9	35.19	35.84
38	705 (58)	Ninh Thuan	21.02	29.38	25.69	28.69	28.85
39	715 (60)	Binh Thuan	21.46	28.52	33.41	34.23	36.86
Central Highlands							

#	Code	Name of provinces	2004	2006	2008	2010	2012
40	601 (62)	Kon Tum	11.79	15.28	18.34	18.02	20.3
41	603 (64)	Gia Lai	10.63	14.35	21.03	18.73	21.67
42	605 (66)	Dak Lak	16.97	17.2	21.11	21.91	27.47
43	606 (67)	Dak Nong	16.71	23.73	24.03	29.76	30.38
44	607 (68)	Lam Dong	21.49	23.4	28.91	28.37	31.67
South East							
45	707 (70)	Binh Phuoc	4.48	6.12	9.74	13.31	13.27
46	709 (72)	Tay Ninh	8.45	9.87	11.26	13.21	12.35
47	711 (74)	Binh Duong	6.06	7.46	8.89	9.73	10.23
48	713 (75)	Dong Nai	6.56	6.96	8.86	9.97	11.6
49	717 (77)	Ba Ria- Vung Tau	20.69	24.87	27.49	52.21	28.52
50	701 (79)	Ho Chi Minh	25.24	30.69	35.54	41.27	43.21
Mekong River Delta							
51	801 (80)	Long An	6.05	6.18	9.51	11.3	11.52
52	807 (82)	Tien Giang	23.35	21.97	17.43	16.69	15.31
53	811 (83)	Ben Tre	20.27	21.27	18.87	21.58	19.62
54	817 (84)	Tra Vinh	21.36	22.5	19.98	15.99	15.08
55	809 (86)	Vinh Long	21.29	16.52	18.68	17.59	16.82
56	803 (87)	Dong Thap	17.31	21.87	12.68	13.67	14.91
57	805 (89)	An Giang	29.44	27.92	30.61	34.05	34.99
58	811 (91)	Kien Giang	17.13	16.67	21.3	19.8	26.52
59	815 (92)	Can Tho	23.64	22.45	23.04	27.69	30.38
60	816 (93)	Hau Giang	10.7	14.08	18.18	24.59	20.7
61	819 (94)	Soc Trang	11.37	14.17	14.38	20.88	22.55
62	821 (95)	Bac Lieu	17.06	18.24	24.71	24.17	22.73
63	823 (96)	Ca Mau	18.78	18.35	24.15	20.97	22.73

Source: The author's calculation based on ES 2004, 2006, 2008, 2010 and 2012.

Notes: The latest codes of the provinces in parentheses; The list of administrative units in Vietnam in 2010 was issued under the Decision No. 124/2004/QD-TTg dated July 8th, 2004 and the changes have been updated by the General Statistics Office until December 31st, 2010.

Table A6.3: Panel data estimation results with PCI variable

Variables	Poverty Rate
lnK	-1.368**
	(0.583)
Skillrate	-0.244*
	(0.132)
TVrate	-26.291***
	(4.374)
Hcarerate	-0.035
	(0.052)
Labourate	-0.033
	(0.083)
PCI	-0.009
	(0.066)
Constant	66.932***
	(7.180)
Observations	252
R-squared	0.364
Number of province	63

Notes: Standard errors in parentheses; * indicates significance at the 10 per cent level, ** at the 5 per cent level, and *** at the 1 per cent level.
Source: The author's calculation.