Health insurance in Lao PDR: Examining enrolment, impacts, and the prospects for expansion

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Abstract

As in many low- and middle-income countries, out-of-pocket payments by households account for a large share of health care spending in Lao PDR. These payments can deter use of services and increase the risk of financial catastrophe and impoverishment. Consequently, the Government of Laos is attempting to expand health insurance and risk-protection coverage through four different schemes. This thesis examined two of those schemes: community-based health insurance (CBHI) and social health insurance (SHI). Using a conceptual framework that was developed based on the theoretical and empirical literature, three sub-studies were designed and implemented to explore: the determinants of household enrolment in CBHI; the determinants of enrolment of firms in SHI; and the impacts of CBHI enrolment on utilisation and financial protection.

Data for the CBHI studies were collected using household and village surveys with 3000 households (14,804 individuals) in 87 villages, and six focus group discussions with members and non-members. In the SHI study, a survey was administered to 130 private firms. The CBHI and SHI studies employed a cross-sectional, case-comparison design and used a variety of econometric and qualitative methods in the analysis, including propensity score matching.

The findings from the two enrolment studies identified various factors that drive and hinder enrolment in health insurance. The impact evaluation showed that CBHI had a positive effect on utilisation and financial protection, but given the low coverage of the scheme and low utilisation, the impacts on a population level are negligible. Moreover, the poor are the least likely to enrol and the poor who are enrolled incur higher out-of-pocket expenditures than the uninsured. The policy implications for Laos are discussed in the context of the international debate regarding the potential contributions of CBHI and SHI in national health financing strategies as countries progress towards universal coverage.

Table of Contents

List of appendices

List of tables

List of Figures

Acronyms and Abbreviations

AFD	Agence Française de Développement
ANC	Antenatal care
ATT	Average treatment effect on the treated
ATE	Average treatment effect
CBHI	Community-based health insurance
CSMBS	Civil Servant Medical Benefit Scheme (Thailand)
CSS	Civil Servants' Scheme
EU	Expected utility
FGDs	Focus group discussions
HEF	Health equity fund
HH	Household
ILO	International Labour Organization
IRL	Indochina Research Laos
IP	Inpatient
ITT	Intention to treat
IV	Instrumental variable
LAK	Lao Kip
LECS	Lao Expenditure and Consumption Survey
LSHTM	London School of Hygiene and Tropical Medicine
LSMS	Living Standards Measurement Study (survey)
MCH	Maternal and child health
MDGs	Millennium Development Goals
MOH	Ministry of Health
MOLSW	Ministry of Labour and Social Welfare
NCMS	New Cooperative Medical Scheme (China)
NGO	Non-governmental organisation
NHA	National health accounts
NT2	Nam Theun 2 (hydropower project in Lao PDR)
OLS	Ordinary least squares
OOPs	Out-of-pocket payments for health care
OP	Outpatient
OR	Odds ratio
PCA	Principal components analysis
PSM	Propensity score matching
RCMS	Rural Cooperative Medical Scheme (China)
RCT	Randomised control trial
UC	Universal coverage
SASS	State Authority of Social Security
S.E.	Standard error
SHI	Social health insurance
SOE	State-owned enterprise
SRC	Swiss Red Cross
SS	Social security
SSO	Social Security Organization
EU	Expected utility
WDI	World development indicators
WHO	World Health Organization
WB	World Bank

Acknowledgements

Chapter 1. Introduction

1.1 Background

Many low- and middle-income countries rely heavily on out-of-pocket payments from households to finance health care. There is now widespread recognition that out-of-pocket payments can deter households from seeking health care when needed, and that those who do seek care may face financial catastrophe and impoverishment (World Bank 2004; WHO 2010b). Given that illness is often unpredictable, households are often poorly prepared to meet the costs associated with health care. This is especially true for the poor (Preker *et al.* 2004; van Doorslaer *et al.* 2006).

A key question facing all countries is how their health financing systems can promote access to services and increase financial protection. This question is particularly pertinent in the current climate, where countries are striving to achieve the Millennium Development Goals (MDGs) and other development and poverty reduction targets. Recognising the importance of developing the health financing system, the member states of the World Health Organization (WHO) in 2005, endorsed a resolution encouraging countries to introduce health financing reforms in order to progress towards (or maintain) universal coverage of health services. Universal coverage is defined as *"access to key promotive, preventive, curative and rehabilitative health interventions for all at an affordable cost" (WHO 2005)*. To achieve this goal, many countries are adopting, or have already adopted, a model of health care that focuses on extending health insurance and risk-pooling mechanisms to cover the entire population.[1]

Although there is no blueprint for moving towards universal coverage, many countries that have successfully expanded coverage have, to some extent, used general taxation, social health insurance or a mix of both (Carrin *et al.* 2005a). Given that the move to universal coverage is a long process, a pluralistic health financing system usually evolves during the transition period, whereby a mix of health insurance and risk-protection schemes are targeted at distinct socio-economic groups. Community-based health

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[1] In this document, the term health insurance includes schemes in which contributions are explicitly linked to a health insurance fund, as well as schemes whereby financing is more implicit, such as in systems financed by general government revenues.

insurance (CBHI) and/or other types of voluntary insurance are often introduced to serve segments of the population that are left uncovered (usually the informal sector). However, the literature has shown that, with a few exceptions, the vast majority of CBHI and other voluntary schemes fail to reach a large proportion of their target population, and in the absence of subsidies most schemes exclude the poor (Bennett *et al.* 1998; Ekman 2004; De Allegri *et al.* 2006b; Schneider and Hanson 2006; Jowett and Hsiao 2007; Lieberman and Wagstaff 2009). In some countries, separate risk-protection schemes specifically target the poor, with varying success; in others, the poor are left without coverage.

In Lao People's Democratic Republic (Lao PDR), out-of-pocket payments by households accounted for an estimated 62 percent of total health care expenditures in 2007 (WHO 2007). These payments include user fees for services and drugs in public health facilities, as well as expenditures in the private sector (i.e., pharmacies, clinics, drug vendors, private providers, and traditional providers), and facilities outside the country (e.g., Thailand and Vietnam). As in other countries, the Government of Laos is trying to expand coverage of health insurance and risk protection schemes in order to increase access to health services, increase financial protection, and generate resources for the health sector. The ultimate goal is achievement of universal coverage (MOH Lao PDR 2010). Currently, four main schemes operate in Lao PDR: a mandatory Civil Servants' Scheme (CSS) for government employees; a mandatory Social Health Insurance (SHI) scheme for private and state-owned enterprises[2]; voluntary community-based health insurance for the informal sector and self-employed workers; and health equity funds (HEFs)[3] for households living in extreme poverty. However, outside the CSS, which covers approximately 6.3 percent of the population and reaches approximately 90 percent of its target group, the schemes reach a small segment of the population, with approximately 1.7 percent of the population enrolled in CBHI, 1.5 percent enrolled in SHI and 2.1 percent enrolled in HEFs in 2009. Thus, just over one tenth of the

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[2] The SHI scheme is part of a larger social security programme that includes a comprehensive package of health care and other benefits, including medical care, paid sick leave, paid maternity leave, death benefits, employment injury or occupational disease benefits, retirement pensions, life insurance, and disability insurance.

[3] Health equity funds are social protection schemes in which a third part pays for services on behalf of the poor. In Laos, HEFs are usually funded by a donor and implemented by NGOs or local health authorities, which work with the communities to pre-identify the poorest people in the district and provide health cards to them to obtain free services (Thomé and Pholsena 2009).

population is currently covered by risk-pooling schemes. Although part of the reason for low coverage of health insurance in the population is that the schemes are not yet operating nationally, coverage remains low even in areas that have been targeted. The government is considering various options for scaling up to achieve universal coverage by 2025.[4]

Although some of the reasons for low coverage can be inferred from the international literature and a few small studies in Laos, there has been no systematic attempt to understand the factors affecting enrolment in health insurance in Laos. Moreover, very little is known about whether the schemes are meeting the government's objectives of promoting increased utilisation and financial protection. As the Government of Laos considers various options for expanding health insurance and progressing towards universal coverage, a number of key questions require answers. For example, why is enrolment in CBHI so low after nearly a decade of piloting? What are the factors most likely to influence whether or not households enrol in CBHI? What has been the impact of CBHI on members' utilisation of services and out-of-pocket expenditures? Why do so few private sector firms enrol in SHI despite the fact that the scheme is mandatory? What are the opportunities and challenges related to expanding enrolment in health insurance? What steps can be taken to progress towards universal coverage? These questions inspired the research design for this thesis and will be addressed in this document.

1.2 Knowledge gaps in the health financing literature

Given the focus on expanding enrolment of health insurance globally, many researchers have examined the determinants of enrolment in health insurance at the household level in different country contexts. There has been particular interest in exploring the determinants of enrolment in CBHI, likely because most CBHI schemes fail to achieve high coverage rates and therefore understanding the factors affecting enrolment can help to inform strategies for increasing coverage. For the most part, these studies reach agreement on the factors affecting enrolment, although findings differ across contexts

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[4] The relative sizes of the target groups are as follows: civil servants and their dependents account for approximately 7% of the population; the target group for SHI (private sector firms and their dependents) comprises approximately 8% of the population; CBHI targets the informal sector and the unemployed (approximately 52% of the population), and HEFs serve the poor (approximately 33% of the population). More details on coverage are given in Chapter 3.

and the studies show inconsistencies regarding whether or not health status is a significant determinant.[5] Moreover, only a few small qualitative studies have examined the determinants of enrolment in Lao PDR. Country-specific evidence from Laos will help the government to understand better why enrolment remains so low, and what factors are likely to facilitate CBHI expansion.

Several studies and systematic reviews examine the impacts of CBHI on utilisation and out-of-pocket expenditures and there is moderately strong evidence to suggest that CBHI can increase utilisation of health care among beneficiaries and can reduce out-of-pocket health care expenditures for its members, although this protection effect may be marginal (Preker *et al.* 2002; Ranson 2002; Jowett *et al.* 2003; Ekman 2004; Jütting 2004b; Devadasan *et al.* 2007). However, as noted by systematic reviews, most studies examining the *impact* of CBHI suffer from methodological weaknesses (Ekman 2004; Palmer *et al.* 2004). One of the main concerns with the studies is the failure to account adequately for differences in risk/health status between members and non-members that leads to selection bias (ILO 2002; Palmer *et al.* 2004). The broader body of literature on voluntary health insurance (i.e., schemes not defined as "CBHI") and more recent CBHI studies use several econometric techniques, including propensity score matching, to overcome this "selection problem" but good quality impact evaluations of CBHI are still relatively rare. Moreover, some of the better studies still fail to control for a number of factors expected to affect selection into insurance.

While a considerably large body of literature examines the household-level determinants of enrolment, very little is known about the determinants of *firms'* enrolment in SHI or social security. The dearth of research on this topic is mainly due to the mandatory nature of SHI, which theoretically eliminates the enrolment decision-making process. However, in reality, most developing countries face difficulty getting the formal sector to enrol in SHI: compliance is low, enforcement is weak, and several evasion tactics are commonly used (Bailey and Turner 2001; McGillivray 2001). Therefore, despite the

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[5] Studies from Senegal, Thailand[5], India and China (Jakab *et al.* 2001; Wang *et al.* 2005; Wang *et al.* 2006; Chankova *et al.* 2008; Zhang and Wang 2008) found evidence of adverse selection in the schemes, while a second study from Senegal (Jütting 2004b), and studies from Burkina Faso, Rwanda, and the school health insurance programme in Vietnam (Nguyen and Knowles 2010) found no relationship between illness and enrolment.

mandatory nature of SHI for the formal sector, firms do make a choice to enrol or not to enrol in insurance, but the literature provides little insight into the determinants of enrolment at the firm level. Understanding the factors driving enrolment in SHI will therefore be beneficial to the Government of Lao PDR and governments of other countries attempting to expand SHI as part of an overall strategy to achieve universal coverage.

Although specific studies on enrolment and impact evaluations of CBHI and SHI are important and would help to fill gaps in the health financing literature, there is also a need for evidence to inform the broader debate regarding the most effective and efficient approaches to extending coverage, raising revenues, and pooling resources in low-income, low-capacity environments.

1.3 Purpose and outline of thesis

The purpose of this thesis is to generate new knowledge about the factors affecting enrolment in health insurance and the impacts of insurance on utilisation and financial protection. The specific objectives, which will be revisited in Chapter 4, are as follows:

1. To explore the household and village-level determinants and barriers related to enrolment in CBHI in Lao PDR;
2. To measure the extent to which enrolment in CBHI facilitates access to health care services and offers financial protection to insured individuals by using a robust methodological approach;
3. To explore the firm-level determinants and barriers related to enrolment in social health insurance;
4. To identify the opportunities for, and challenges of, expanding health insurance to the informal and formal sectors in Lao PDR and internationally.

This thesis is expected to fill gaps in the international health financing literature by providing country-specific information about the determinants of CBHI enrolment; adding methodologically robust evidence regarding the impacts of CBHI on access to health services and financial protection; and generating new evidence about the *firm-*

level determinants of enrolment in SHI.[6] The evidence generated through this study is also expected to contribute to the ongoing dialogue regarding options for expanding health insurance and progressing towards universal coverage in Laos and in other country settings. Specifically, the thesis informs the debate regarding the effectiveness and efficiency of using contributory schemes to extend coverage, raise revenues, and pool resources in low-income, low-capacity environments.

The thesis begins with a literature review on five major topics that are relevant to the study (Chapter 2). The first section of the literature review summarises the trends in health financing and the movement towards universal coverage. The second section covers the theoretical underpinnings of the demand for health and health insurance — information that is required for conceptualising the decision-making processes of enrolling in and using health insurance. A synopsis of the empirical literature on the determinants and impacts of enrolment in CBHI is given in the third section, along with a discussion of the methodological limitations of many of the existing CBHI impact evaluations. The broader body of literature on the impacts of voluntary health insurance is also brought into this discussion. In the fourth section, literature that offers insight into the decision of firms to enrol in SHI is presented. The final section focuses on the programme evaluation literature, and describes various econometric approaches that have been used to evaluate the impact of social programmes. This understanding was necessary for guiding the methodology used for one of the sub-studies in the thesis and for locating the sub-study within the body of empirical research on impact evaluations. Following the literature review, Chapter 3 presents background information about Laos, describes the structure and financing of the health care system, and gives an overview of the schemes studied in this thesis (i.e., CBHI and SHI).

Building upon the literature review and knowledge of the health system and financing arrangements in Laos, Chapter 4 presents a conceptual framework that highlights how economic theory and evidence from the empirical literature have shaped the research questions and methodology of the thesis. Next, the overall methodology is presented, followed by a description of the specific quantitative and qualitative methods employed

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[6] SHI is the largest benefit in the social security scheme and is the focus of this study. However, because SHI is part of a larger social security scheme, the study will actually look at the determinants of enrolment in social security. The terms "social security" and "SHI" will be used interchangeably throughout this thesis.

across three sub-studies. For each of the sub-studies, the study design, sampling, description of the data, and field procedures are presented. The limitations of the study designs are also discussed.

Three results chapters follow, each of which presents findings from one of the three sub-studies (Chapters 5 through 7). The first results chapter presents the findings from the first sub-study on the determinants of household-level enrolment in CBHI and also examines the factors affecting village level enrolment rates. The next results chapter presents findings about the impact of CBHI on utilisation, out-of-pocket expenditures, source of care, and other outcomes of interest. Next, the findings from the third sub-study examine the determinants of firm-level enrolment in SHI. Each results chapter describes the methods used in the analysis, presents the descriptive findings and results, and discusses the findings in relation to the health financing literature. Although the policy implications of the study are also highlighted, a more detailed discussion of the policy implications is reserved for the final chapter. In each results chapter, the limitations of the analytical approach are discussed, followed by concluding remarks.

The final chapter (Chapter 8) first synthesises the findings from the three results chapters, summarises the limitations and strengths of the methodology, and discusses the overall contribution to the literature. The remainder of the chapter focuses on the policy implications for expanding CBHI and SHI and presents recommendations for expanding coverage, raising revenues, and pooling resources as Lao PDR progresses towards universal coverage. Although these recommendations are specific to Laos, the discussion has relevance for other low- and middle-income countries striving to achieve universal coverage. The chapter then closes with some recommendations for further research and concluding remarks.

Chapter 2. Literature Review

2.1 Introduction

There is now widespread recognition that out-of-pocket payments for health care can have serious consequences on access to services and financial protection for the uninsured. Consequently, many countries are moving towards a model of health financing that reduces out-of-pocket expenditures by pooling risks through health insurance, general revenues, or a combination of approaches. Social health insurance for the formal sector, community-based health insurance for the informal sector and other schemes are therefore playing a more prominent role in health financing systems. As countries attempt to expand health insurance in both the informal and formal sectors, evidence regarding the determinants of enrolment and the impacts of the scheme on access to care and financial protection will help to identify strategies to strengthen and expand the schemes, and will help governments understand the extent to which health insurance is offering protection to their citizens.

Before undertaking a study on enrolment in and impact of health insurance, it was necessary to understand the overall health financing context in which health insurance schemes operate, as well as the theoretical frameworks that explain the demand for health care and health insurance. A review of the empirical literature on both CBHI and SHI was also important in identifying the gaps in the literature and informing the study design. Finally, knowledge of econometric techniques that can help to reduce selection bias in programme evaluations was required for one sub-study in this thesis, and therefore the programme evaluation literature was reviewed. After describing the methodology used for the literature review (Section 2.2), the findings are presented: section 2.3 examines the trends in health financing and approaches taken to progress towards universal coverage; section 2.4 considers the theories that explain the demand for health care and health insurance; Section 2.5 and 2.6 explore the empirical literature on CBHI and SHI, respectively; and Section 2.7 reviews the programme evaluation literature. Finally, section 2.8 discusses the relevance of the literature, highlights the knowledge gaps and limitations identified by the review, and explains how these gaps and limitations have shaped the research questions addressed in this thesis.

2.2 Methodology

Various approaches were used for identifying the relevant literature. Several keywords, titles, and subject headings were used to search the following databases: PubMed, Embase, Econlit, and ISI Web of Science. Published and unpublished literature from Google Scholar was also searched. The searches were limited to articles published in English but no specific time limits were imposed.

Search terms:

- *"Community based health insurance"* or *"community health insurance"*. All retrieved records were reviewed to identify articles that were related to enrolment, willingness to join, willingness to pay, and impacts on several different outcomes, including utilisation, out-of-pocket expenditures, and equity.
- *"Social health insurance"* and *"social security"* and *"employer-based insurance"* and *"private insurance"*, combined with *("developing countries"* or *"low income countries"* or *"middle income countries")*.
- *"Social security"* combined with *("compliance"* or *"evasion")*.
- *"Health insurance"* and *"universal coverage"* and *("developing countries"* or *"low income countries"* or *"middle income countries")*.
- *"Evaluation"* combined with *"selection bias"* or *"econometric"* or *"propensity score matching"*.

Following the electronic searches, reference lists of all selected papers (including several systematic reviews on CBHI and reviews on econometric methods for programme evaluation) were checked manually to identify additional relevant papers. Health economics text-books and materials from health economics and health policy courses at LSHTM and London School of Economics and Political Science (LSE) were also reviewed to better understand demand theory, while materials from a policy evaluation course at University College London provided useful summaries of various econometric techniques that can be used to reduce selection bias in programme evaluations. The World Bank, WHO, ILO and USAID-funded Partnerships for Health Care Reform Plus (PHRPlus) websites, the University Senate House library, and the World Bank online library, were also important sources for various aspects of the review.

2.3 Trends in Health Financing

2.3.1 Trends in health financing and the goal of universal coverage

Many developing countries have relied heavily on households' out-of-pocket payments to finance their health care systems. These payments are to some extent a consequence of health sector reforms in the late 1980s, which focused on promoting user fees for public health services and increasing the role of the private sector in health care provision (McIntyre et al. 2006). Although many countries are considering a shift away from user fees, or have already done so, the burden of health care payments continues to fall on individuals. However, there is now widespread recognition that out-of-pocket payments contribute to low utilisation of health care and substantial financial barriers (Xu 2002; James et al. 2006; McIntyre et al. 2006; Meessen et al. 2006; van Doorslaer et al. 2007), and that health insurance and other risk-pooling schemes can contribute to achievement of broader development and poverty reduction goals.[7] As a result, many countries have focused efforts on extending health insurance coverage to the entire population.

In 2005, the Member States of WHO adopted a resolution encouraging countries to develop their health financing systems in order to progress towards (or maintain) universal coverage of health services. Universal coverage in the health sector is defined as *"access to key promotive, preventive, curative and rehabilitative health interventions for all at an affordable cost"* (WHO 2005). The movement towards universal coverage is not only being undertaken in developing countries: many middle-income countries are grappling with the best way to extend coverage to their population and policymakers in the US are in an active debate over how to (or whether or not to) provide coverage to approximately 50 million uninsured people. This movement towards universal coverage has been driven by the awareness that improved access to health care and protection against losses due to illness and unforeseen medical expenditures can make a positive contribution to a country's social and economic development (Mills 1998). Moreover, many countries recognise affordable access to health care as a fundamental human right that should not be denied (Garrett et al. 2009). To achieve universal coverage, international agencies and donors are currently supporting governments in low- and

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[7] Developing prepayment and risk-pooling schemes facilitates achievement of the MDGs by preventing medical-related impoverishment and increasing access for all (including women, children, people living with HIV/AIDS, etc.).

middle-income countries in the development of prepayment and risk-pooling schemes, the path taken by most countries that have come close to achieving universal coverage (WHO 2005; Carrin *et al.* 2008; WHO 2010b). As noted in the 2010 World Health Report, it is only through risk-pooling and prepayment that the goal of universal coverage can be achieved (WHO 2010b).

2.3.2 Approaches to extending coverage: SHI vs. taxation

Most countries that have achieved universal coverage have done so over a period of several decades, using either taxation or SHI as the *principle* mode of financing (Carrin and James 2004), although several countries have used a mix of approaches, especially more recently. The tax-based system (the Beveridge model) uses general government revenue to pay for health services. In contrast, SHI (the Bismarck model) uses mandatory payroll contributions from formal sector workers, with contributions shared by employees and employers and contributions earmarked for health care services (Nitayarumphong 1998). Although traditionally SHI has covered formal sector workers, it has also been extended to cover the informal sector in several countries using various models (discussed below). In a system that is entirely tax-financed, all members of the population receive a common level of coverage, usually under a single delivery system. Service delivery for SHI can be offered in the same system as those who are not covered, or in separate systems (as in many Latin American countries)(Wagstaff 2010b). However, both taxation and SHI models share the following common features: 1) payments are compulsory and are usually set according to income; 2) people contribute whether or not they are ill (although people on very low incomes or other vulnerable groups may be exempted from SHI); and 3) low-risk individuals are not permitted to opt-out of the scheme, thereby increasing risk-pooling from the healthy to the sick (Carrin *et al.* 2008).

Both SHI and taxation have merits and demerits and a country's decision about which to implement will depend on economic, social and political factors. Wagstaff suggests that the choice between the models influences the extent to which a health system can carry out its three functions: collecting revenues; pooling revenues across different groups; and purchasing health care services (Wagstaff 2010b). The evidence suggests that taxation performs relatively better in achieving high coverage rates (and larger risk pools) and that universal coverage can be achieved relatively faster through a system financed

through general tax revenues (Wagstaff 2009). However, in many low- and middle-income countries, especially in South-East Asia, a model based on SHI is more commonly implemented. The drawbacks of a mandated SHI are that even when it covers its target population, it leaves the informal sector — which is often a substantial proportion of the workforce in developing countries — uninsured (Bennett *et al.* 1998; Carrin *et al.* 2005b). Evidence also suggests that SHI, relative to systems funded out of general revenues, result in higher per capita total health expenditures (Wagstaff 2009). Although taxation also has its disadvantages, implementation of SHI creates challenges in low- and middle- income countries due to a small formal sector, a predominantly rural population, low technical capacity to administer schemes, and weak regulatory capacity (Carrin and James 2004), which leads to high rates of evasion and therefore loss of revenues (Wagstaff 2010b).

2.3.3 Extending coverage to the informal sector and the poor: country experiences

The transition to universal coverage is gradual and a large share of the population usually remains uncovered during the transition period. For example, in systems where SHI dominates, the formal sector is usually covered first (with or without dependents) and coverage is then gradually expanded to other groups (Carrin *et al.* 2008). One of the most pressing challenges in extending coverage of health insurance is reaching the informal sector. Informal sector workers are difficult to identify, do not have formal employer-employee relationships that are conducive to collecting contributions (either through social security or taxation), and many have irregular incomes that lead to defaults on contributions. Although countries are still grappling with how to expand coverage to this "hard-to-reach" population, various mechanisms have become somewhat institutionalised and offer some important lessons.

One approach to targeting the informal sector has been through the extension of SHI. Vietnam and the Philippines have extended SHI to this group on a voluntary basis, while the poor are covered through general taxation.[8] In Vietnam, the voluntary SHI scheme targets not only the non-poor informal sector, but also students and family members of formal sector workers. As with many voluntary schemes, coverage rates have been low

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[8] Colombia has a similar programme except that enrolment for the non-poor is mandatory. However, evasion of contributions remains a problem (Pinto and Hsiao 2007).

under this model, with the exception of school children in Vietnam, whose enrolment is practically mandatory[9] (Lieberman and Wagstaff 2009). Moreover, adverse selection in both countries is generally a problem among this population (Banzon 2009; Wagstaff 2010b). Both countries have made more progress covering the poor through general revenues, with 66 percent of the target group covered in 2004 in the Philippines (Jowett and Hsiao 2007) and 75 percent of the poor covered in Vietnam in 2009 (Lieberman and Wagstaff 2009). However, there are inclusion and exclusion problems with this targeting approach: many households fail to apply for the scheme while government revenues are often leaked to the non-poor (Wagstaff 2010b).

Another approach to covering the informal sector is through a separate subsidised, health insurance scheme that exists alongside the formal sector. For example, in the government's Rural Cooperative Medical System (RCMS) in China, the non-poor informal sector pay subsidised flat-rate contributions while the poor are covered by general revenues. China has achieved high levels of coverage (approximately 80 percent) through the RCMS. However, adverse selection and shallow coverage remain problematic (Wagstaff et al. 2009). In Mexico's Seguro Popular scheme, the premiums for the non-poor are subsidised on a sliding scale (according to ability to pay) and the poorest 20 percent of the population are fully subsidised by a mix of federal and state taxes (Frenk et al. 2006).

In an effort to circumvent political, organisational, and economic barriers, CBHI has been introduced to provide coverage for the informal sector. CBHI is increasingly recognised as an important component of a national health financing strategy, although there is disagreement over whether or not it can facilitate the transition to universal coverage (WHO 2001; Carrin et al. 2005b). The vast majority of schemes fail to reach the poor and fail to achieve high coverage, leading to meagre levels of risk-pooling and low sustainability of schemes (Bennett et al. 1998; WHO 2001; Bennett 2004; Ekman 2004; Carrin et al. 2005b). However, it is likely that during the transition to universal coverage, CBHI, implemented alongside other schemes, holds some promise by serving the informal sector that is not easily reached by formal insurance schemes. Rwanda is perhaps the most-widely cited example of a country that has achieved relatively high

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[9] Insurance agents market various schemes at schools and colleges and enrol students in groups: approximately three quarters of the target group are now insured.

coverage through a voluntary CBHI scheme. (The scheme became mandatory in 2007 but even prior to the mandatory law, much progress had been made in increasing coverage). The success in Rwanda can be largely attributed to strong financial backing (e.g., linkages with donors, microfinance institutions and formal health insurance schemes), which has provided sufficient subsidies to stimulate uptake of insurance by the poor and allow gradual expansion of the benefit package (Diop et al. 2007). With this support, mutuelles[10] have been able to focus on their goals of achieving equity and high coverage levels without the pressure of being self-sustainable. Government stewardship of expansion has also been strong. In 2004 a national policy for mutuelles was adopted and expansion of mutuelles has been a key element in poverty reduction strategies. This focused policy framework has allowed donor funding to be channelled to the mutuelle programme and has strengthened the entire health system (Logie et al. 2008; De Allegri et al. 2009). Other factors affecting successful scale-up include a focus on primary health care and cost-containment.

Ghana has also had considerable success implementing CBHI: according to one estimate, coverage reached 55 percent by 2009 (Jehu-Appiah et al. 2011). However, until the launch of the National Health Insurance Scheme (NHIS), which introduced CBHI schemes in every district and made the scheme mandatory by law, CBHI schemes operated on a very small scale and were highly fragmented in that there was no risk-pooling or coordination across schemes. The NHIS represents a concerted effort to achieve universal coverage and this effort is backed by political stewardship and government (and donor) financial backing. Between 2004 and 2006 the health sector share of the budget increased from 8.2 percent to 15 percent (McIntyre et al. 2008). The Ghanaian CBHI schemes function at the district level and are managed by the National Health Insurance Fund (NHIF) at the central level. The NHIF provides a re-insurance mechanism for district schemes, which consists of both cross-subsidies from the civil servants' social security fund and government subsidies to cover the premiums of the poor and vulnerable groups. However, introducing risk-equalisation measures between districts would help to increase risk-pooling (McIntyre et al. 2008). Despite the progress

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[10] In Francophone Africa the term "Mutuelle de Santé" or simply "mutuelles" is the equivalent of Mutual Health Organisation — a synonym for CBHI.

in Ghana, there have been challenges in getting the poor to enrol (Jehu-Appiah *et al.* 2011) and cost-escalation is a concern (Soors *et al.* 2010).[11]

Even though in most countries CBHI fails to achieve high coverage rates, when implemented alongside other schemes CBHI can serve as a stepping stone to achieving universal coverage. This is no more apparent than in Thailand where CBHI served the informal sector for decades and over time was able to bring about relatively high coverage rates (but only after government subsidies were introduced). However, problems due to adverse selection and low financial viability persisted (Supakankunti 2000). As part of a larger agenda to achieve universal coverage, the scheme was eventually rolled into a tax-financed scheme that covers the informal sector, the poor, and those not covered by formal sector schemes (See Section 2.3.4).

In summary, there are a number of approaches for covering the population outside the formal sector during the transition to universal coverage. Figure 2.1 shows how the health financing typically evolves during this transition.

Figure 2.1 Health financing options during the transition to universal coverage

Universal coverage

Tax-based financing
Social health insurance
Mix of tax-based and
social health insurance

Intermediate stages of coverage

Mixes of community-,
cooperative- and enterprise-
based health insurance
and other private insurance,
social health insurance-type
coverage for specific groups
and limited tax-based financing

Absence
of financial
protection

Health expenditure
dominated by
out-of-pocket spending

Source: (Carrin *et al.* 2005a)

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[11] The experience of Ghana discussed in this review is based on evidence from the published literature prior to March 2011. However, a recent report by Oxfam suggests that coverage of the National Health Insurance Scheme (NHIS) has been exaggerated and could be as low as 18% (Oxfam International 2011). This report has caused much controversy over the reported success in Ghana, although the quality and reliability of the evidence used in the Oxfam report is yet to be determined.

2.3.4 Achieving universal coverage through a pluralistic financing system: the experience of Thailand

Targeting distinct populations through different schemes has become more commonplace as countries strive to increase coverage across groups that generally differ by socioeconomic status. Thailand is one of the only lower middle income countries to have achieved universal coverage of health care and did so using a pluralistic financing approach. The first two schemes to exist in Thailand were the government schemes: the tax-financed Medical Welfare Scheme (the Low-Income Scheme) for low-income people, and the Civil Servant Medical Benefit Scheme (CSMBS) for government workers and their families (Hanvoravongchai and Hsiao 2007). The voluntary scheme was introduced in 1983, and went through several reforms over a period of two decades. In the early 1990s, a separate social security scheme was successfully introduced to cover employees in the formal private sector, using a mix of employee, employer and government contributions (Tangcharoensathien *et al.* 2004). However, even with these four schemes in place in 2001, a substantial share of the population remained uninsured and targeting problems were evident in the Low-Income Scheme (due to both inclusion and exclusion problems). The informal sector, which is largely engaged in agricultural production, did not have regular cash income for premium payments. Moreover, enforcing compliance among the informal sector was projected to be difficult and expensive (Tangcharoensathien *et al.* 2007). Thus, the government created the "Universal Coverage" (UC) scheme, also known as the "30 Baht Scheme"[12], which brought beneficiaries of the Voluntary Health Card, the Low-Income Scheme and the 30 percent of the population that was uninsured, under one mandatory scheme that is financed through taxation. The UC scheme has been shown to be equitable, administratively more efficient than the old system, and sustainable for the long term. Together with the SHI and the CSMBS schemes, almost all Thai citizens are now covered by health insurance and the scheme has been shown to provide financial protection, reduce the incidence of catastrophic expenditures, and improve equity between the poor and the rich (Prakongsai *et al.* 2009).

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[12] The scheme was known as the 30 Baht scheme because beneficiaries who are non-poor and non-elderly pay a fixed user fee of 30 Thai baht (USU$0.86) for each visit or admission (Towse *et al.* 2004). However, the initial co-payment of 30 baht per visit or admission was discontinued in 2006 and there is no longer a deductible, nor a ceiling on coverage (Prakongsai *et al.* 2009).

The experience of gradually bringing together different insurance schemes under one universal coverage policy is not unique to the countries covered in this review. In a review of other countries in Asia that achieved universal coverage earlier on, Mills notes that Japan, Korea and Taiwan all used multiple schemes but that over time, different schemes were standardised and eventually brought under one umbrella (Mills 1998). In contrast to a single health insurance fund, this "piecemeal" approach can be effective in reaching distinct population groups, when the strategy for increasing coverage is well articulated through a cohesive strategy and guided by political stewardship at the central government level, as was done in Thailand. However, McIntyre et al (2008) warn that in trying to achieve universal coverage, the schemes not become fragmented: the size of the risk pools should be maximised, and strong income and risk-equalisation mechanisms should be introduced within the overall system. Moreover, many low-income countries will be unable to finance expansions in coverage unless investments to the health sector are increased dramatically. In most countries, there is scope for increasing government funding to the health sector — a sector that is usually underfunded. This can be achieved by increasing the percentage of funds allocated to the Ministry of Health, and by raising revenues through innovative financing mechanisms, such as value-added taxes or excise taxes and insurance premiums (WHO 2010b). However, in the poorest countries increases in external donor funding (both in the amount and the predictability of funding), will be needed to supplement resources raised domestically (Carrin et al. 2008; WHO 2010b).

To achieve universal coverage, a myriad of conditions are required. While there is no blueprint for moving towards greater health insurance coverage, it is clear that ensuring political stewardship, increasing investments in the health sector (to subsidise premiums and improve the quality and supply of health care), harmonising schemes, implementing risk-equalisation mechanisms and cross-subsidies, increasing efficiencies, and mandating coverage (or subsidising coverage through taxation), all have important roles to play. The path chosen will depend on the country context and the existing systems, but regardless of the approach, countries need to recognise the trade-offs of increasing coverage across the following three areas: the breadth of coverage (the proportion of the population covered by insurance schemes); the depth of coverage (the overall benefit package that is covered); and the height of coverage (the level of financial protection) (WHO 2010b).

2.4 Theoretical underpinnings of the demand for health care and health insurance

2.4.1 The demand for health care

Health care helps individuals achieve or maintain a desired health status. Thus, the demand for health care is derived from the demand for health (Grossman, 1972). Grossman used the Human Capital Theory to explain the demand for health and health care, proposing that health is both an investment good (individuals invest in themselves through health care, healthy behaviour, and education, as a way of producing good health), and a consumption good (good health increases productivity, lifetime earnings, and time spent in activities that maximise utility) (Grossman 1972). Consumers invest in health by utilising medical care, but also through diet, exercise, and time: these investments help to maintain or improve the consumers' health stock, which provides individuals with "good health" (Folland *et al.* 2007).

Like other commodities, health care is considered a "normal good" with a positive income elasticity of demand, explaining why the poor are less likely to use health services. However, this theory assumes that consumers have perfect information when in reality, individuals cannot predict the timing of illness, future health care, or the financial implications of illness. Insurance reduces this uncertainty by protecting against unforeseen losses and expenditures (Folland *et al.* 2007).

2.4.2 The demand for health insurance

The demand for health insurance is often explained using theories of decision-making under uncertainty, with expected utility (EU) theory being the most common (Marquis and Holmer 1996). According to this theory, individuals maximise utility by reducing financial uncertainty and risk caused by possible illness and/or medical expenditures. Thus, in deciding whether or not to enrol, households weigh the expected utility of having health insurance with the expected utility of not having insurance. If the expected utility to be derived from enrolling is higher than that derived from not enrolling, the household will opt to enrol (Cutler and Zeckhauser 2000). Given the uncertainty of health care needs in the future, risk-averse individuals (or households) will be more likely to enrol in health insurance due to the desire to protect themselves from unforeseen health-related financial loss in the future (Arrow 1963). Insurance also lowers

the price of health care at the point of use, resulting in a higher demand for health care for the insured relative to the uninsured, all other factors being equal.

Despite its wide application, authors have criticised EU theory for failing to account for the association between income and insurance choice (Schneider 2004), societal context (Schoemaker 1982), expected pay-offs of insurance (Manning and Marquis 1996), the status quo bias (Salkeld *et al.* 2000), prospects of gains or losses (Kahneman and Tversky 1979; Marquis and Holmer 1996), and the long-term implications of risk management (Dercon 2004). Most of these theories are summarised by Schneider (2004b), who explains that theories other than EU may explain better the demand for health insurance in low-income contexts and among the poor. For example, the theory of *expected pay-offs* (Manning and Marquis 1996) suggests that households will insure only if they perceive the benefits of enrolment to be higher than the costs, relative to being uninsured. However, the expected benefits are assessed not in terms of risk but in terms of the advantages of being enrolled, i.e., access to better quality care, reduced waiting times, lower costs of care, etc. (Schneider 2004). If individuals are uncertain about whether or not insurance will bring about these better outcomes, they will fail to insure. In addition, the *status quo bias* suggests that consumers prefer the status quo to something new and unknown, especially when alternatives become more complicated (Salkeld *et al.* 2000). This theory suggests that the decision for poor and illiterate groups to enrol may be influenced by the extent to which these groups have clear information about a health insurance scheme, especially if the concept of insurance is new (Schneider 2004).

The poverty literature explains that households are expected to become more risk averse as they move closer to poverty. In this situation, individuals may become risk-averse to "risky investments" that could push them into — or further into — poverty. The decision to enrol will also depend on differences in the ability to finance insurance, the relative values of current or future protection, and the ability to smooth consumption in the face of unexpected illness (e.g., by selling assets, borrowing, accessing savings, diversifying income etc.) (Wagstaff 2000; Schneider 2004). Moreover, Dercon (2007) notes that insurance is a difficult concept to grasp and that purchasing insurance may actually increase uncertainty in low-income contexts. The upfront costs of insurance may also explain the reluctance of the poor to insure (Dercon 2007).

2.4.3 Distortions in the health care market: asymmetries of information

One of the biggest concerns about voluntary health insurance is adverse selection. Adverse selection results from asymmetric information with regard to individuals' need for health services because individuals often have better information about their health status and expected need for services than do insurers. This asymmetry of information leads individuals with high-risk characteristics (e.g., chronic illness) to enrol in health insurance at a given premium when they have a known future need for health care services (Folland *et al.* 2007). If premiums are not risk-rated, but are rather priced to cover the cost of the average household, a disproportionate number of ill members in a scheme will drive up the cost of premiums over time and can result in healthier individuals leaving the scheme (because their expected utility with insurance becomes less than the expected utility without insurance). Given that the objective of insurance is to pool risks — allowing transfers from healthy to sick members and from wealthier to poorer members — adverse selection can lead to inadequate risk pooling and can threaten the financial viability of an insurance scheme (Morris *et al.* 2007). Approaches that minimise adverse selection include risk-rated premiums (mainly in high income countries), household or group enrolment, minimum coverage requirements, waiting periods, exclusions for pre-existing conditions, and mandatory enrolment.

The second problem stemming from asymmetric information is *moral hazard*. This arises because health insurance weakens the price effect of health care, thereby changing the demand for health care. Although the insurance effect has positive consequences in that it increases access and provides financial protection, insurance can also lead to changes in incentives on the demand and supply side that result in excess use of services (Morris *et al.* 2007). This occurs because with the protection of insurance, individuals increase consumption levels beyond that which would prevail if they faced the full cost of their consumption (McGuire *et al.* 1989). Given that increased consumption of health services is a desirable policy objective in many developing countries, some authors argue that an optimal amount of moral hazard can have positive efficiency gains when it increases the quantity of care consumed (Nyman 1999; Zweifel and Manning 2000; Jowett *et al.* 2004).

A third distortion caused by asymmetric information is due to the principal-agent relationship (Arrow 1963). Physicians, who have informational advantages about a

patient's need for health services, act as agents on behalf of insured patients and in this respect can influence the amount and type of health care used by the patient. Depending on the mode of reimbursement to the physician, the physician may have an incentive to induce demand for a higher volume of services and more expensive care. This phenomenon is referred to as *supplier-induced demand* (Folland *et al.* 2007).

2.5 Review of empirical literature on CBHI

Before reviewing the CBHI literature, the definition of CBHI should be clarified. Community-based health insurance is also referred to as community health insurance (CHI), and to a lesser extent as Mutual Health Organisations (MHOs) or *mutuelles de santé* in French. The term CBHI is used throughout this thesis. Although the term CBHI encompasses a variety of models, Soors et al (2010) in a WHO report explain that CBHI schemes usually share the following five features: 1) risk-pooling at the level where the schemes are organised by and for individuals who share common characteristics; 2) solidarity: premiums are independent of individual or household health risks (and are usually flat-rate); 3) participatory decision-making and management; 4) non-profit character; and 5) voluntary affiliation. The non-profit nature differentiates CBHI from private voluntary health insurance, whereas the other five characteristics differentiate CBHI from SHI, which is also non-profit in nature. However, the authors of the WHO report note that in practice, not all CBHI schemes are consistent with these five principles. For example, schemes organised by the government within an overarching strategy towards universal coverage may maintain voluntary affiliation, as in Laos, or may opt for mandatory enrolment, as in Ghana and Rwanda (Soors *et al.* 2010). Given that CBHI and voluntary insurance fall along a continuum and share several common features, this CBHI literature review incorporates, where appropriate, voluntary insurance schemes that are not specifically identified as "CBHI".

2.5.1 Enrolment in CBHI

The problem of low enrolment in community based health insurance has been a topic of policy debates for decades. In an effort to understand these low enrolment levels, several studies have examined the factors affecting enrolment, either to understand enrolment on its own or as part of a larger impact evaluation within which factors affecting enrolment need to be measured to reduce bias in impact findings. Although the majority of studies

have been conducted on mainly small-scale CBHI schemes in sub-Saharan Africa, there are numerous studies on enrolment from larger schemes in Asia. Many of these studies use econometric analysis and identify the following as determinants of enrolment: higher education of the household head; better access to social networks; religious affiliation; ethnicity; favourable perceptions related to scheme factors (e.g., benefits and convenience of scheme administration, location and timeliness of collection); a higher proportion of children in the household; living in a female-headed household; and distance to the health facility (Jütting 2003; Schneider and Diop 2004; De Allegri et al. 2006a; Chankova et al. 2008; Gnawali et al. 2009; Jehu-Appiah et al. 2011). However, the association between socioeconomic status and enrolment — which indicates equality of the schemes — is inconsistent across studies: some studies show no significant difference in enrolment between the poor and the wealthiest group (Schneider and Diop 2001; Polonsky et al. 2009), while others find that the poor are significantly less likely to enrol (Bennett et al. 1998; Ekman 2004; Gnawali et al. 2009; Jehu-Appiah et al. 2011). The demand for CBHI is also positively associated with higher perceptions of quality of care (Dong et al. 2009; Gnawali et al. 2009; Jehu-Appiah et al. 2011).

Although illness is expected to influence enrolment in insurance, the evidence regarding this relationship is mixed. Studies from Senegal, Thailand[13], India and China found evidence of adverse selection in the schemes (Jakab et al. 2001; Wang et al. 2005; Wang et al. 2006; Chankova et al. 2008; Zhang and Wang 2008), while a second study from Senegal (Jütting 2004b), and studies from Burkina Faso (De Allegri et al. 2006a), Rwanda (Schneider and Diop 2001), Ghana[14] (Jehu-Appiah et al. 2011), and the school health insurance programme in Vietnam (Nguyen and Knowles 2010) found no relationship between illness and enrolment. Some of the inconsistent findings on the relationship between enrolment and health status are likely to stem, at least in part, from differences in measurement. For example, there is wide variation in the indicators used to measure health status. Moreover, some indicators may not adequately capture variation in health status or may not serve as valid measures. Of course, details of the schemes can also determine whether adverse selection is a determinant of enrolment. For example, in

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[13] The evaluation of the Thailand scheme was conducted when Thailand had a community-based scheme.
[14] The Ghana study found a positive association between ill health and *current* enrolment in the third income quintile only but not overall; the study also found a positive association between ill health and *previous* enrolment in the first and second income quintiles.

some countries the requirement to enrol all household members or impose a waiting time may prevent or minimise adverse selection (Atim 1998).

In addition to using econometric methods to understand enrolment, other studies have used contingent valuation to estimate the demand for health insurance as a function of premiums, subsidies, copayments, economic status, geographic location, and other factors (Dong *et al.* 2004; Zhang *et al.* 2006; Ying *et al.* 2007; Onwujekwe *et al.* 2010a). Qualitative studies have also allowed researchers to move beyond identification of the characteristics associated with enrolment to reach an in-depth understanding of the features of the scheme design and management and the ways in which these influence enrolment. Focus group discussions in Burkina Faso, Uganda and Nigeria revealed that affordability of premiums, technical arrangements of the scheme (e.g., unit of membership, attractiveness of benefit package), timing and frequency of premium collection, community involvement, and understanding of the concepts of CBHI are important factors affecting enrolment (De Allegri *et al.* 2006b; De Allegri *et al.* 2006c; Basaza *et al.* 2007; Basaza *et al.* 2008; Onwujekwe *et al.* 2010b). Another qualitative study from Guinea-Conakry found that failure to understand the concepts and principles underlying insurance was *not* a factor affecting enrolment (Criel and Waelkens 2003). Poor quality of care (Criel and Waelkens 2003; Basaza *et al.* 2008; Mathauer *et al.* 2008) and limited trust in the management of the scheme (Schneider 2005; Basaza *et al.* 2007; Mathauer *et al.* 2008; Ozawa and Walker 2009) were also noted as reasons for low enrolment in Rwanda, Uganda, Kenya and Cambodia, underscoring the importance of supply-side factors — both within the health system and within the scheme — in determining whether or not a household will purchase insurance.

Given that enrolment decisions tend to vary by scheme and across contexts, understanding the factors affecting enrolment in a particular CBHI scheme requires country-specific evidence. In Lao PDR, only a few small qualitative studies have investigated the factors affecting enrolment (IHPP and NIOPH 2007; Burnet Institute 2008). One study found that people are willing to pay for a mandatory health tax, but would be unlikely to join a voluntary CBHI scheme if they were healthy (Patcharanarumol 2008). Another study found that community factors are the strongest drivers of enrolment: where village leaders are supportive of schemes others are willing to enrol (Jacobs 2007). A third qualitative study in Vientiane province cites a number of reasons for non-enrolment: poor understanding of the concept of health insurance, poor

information about CBHI scheme details (i.e., where to make payments, benefit package, etc.), lack of confidence in the scheme, poor geographical access to health services, and poor quality of care in government services (Burnet Institute 2008). However, many questions about the reasons that households enrol, or do not enrol, in CBHI remain unanswered.

2.5.2 The impacts of CBHI and voluntary insurance on utilisation and financial protection

This section of the review first presents a summary of findings and then describes the evaluation approaches.

Summary of the findings

Several systematic reviews examine the impact of CBHI on utilisation and financial protection (Atim 1998; Bennett et al. 1998; Jakab and Krishnan 2001; ILO 2002; Preker et al. 2002; Ekman 2004; Palmer et al. 2004; Carrin et al. 2005b). The evidence suggests that CBHI increases utilisation of health care among beneficiaries[15] (Ekman 2004; Gnawali et al. 2009; Aggarwal 2010). This is particularly important in developing countries because CBHI can increase access to modern care and therefore help to change health-seeking behaviour (Schneider and Diop 2001). There is also evidence that CBHI can reduce out-of-pocket health care expenditures for its members, although this protection effect may be marginal (Preker et al. 2002; Ranson 2002; Jowett et al. 2003; Ekman 2004; Jütting 2004b; Devadasan et al. 2007). Another study from India found that although out-of-pocket expenditures overall are not lower for the insured relative to the uninsured, the extent of borrowing and selling assets is significantly lower among the insured, indicating financial protection (Aggarwal 2010). In contrast, out-of-pocket payments were found to be higher among the insured in urban areas of China (but no significant difference was found between the insured and uninsured in rural areas). This lack of financial protection in China is likely due to restrictive benefit packages, high co-payments, supplier-induced demand (as a result of fee-for-service plans) and a

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[15] A study from Burkina Faso found that the number of outpatient visits in insured households was 40% higher than among the uninsured but this difference was only significant among the highest quintile. There was no significant difference in utilisation of inpatient visits between the insured and uninsured (Gnawali et al. 2009).

demand for expensive care among the insured (Wagstaff and Lindelow 2008; Wagstaff *et al.* 2009).

Despite the protection effect for its members in most settings, the vast majority of CBHI schemes fail to reach a large proportion of their target population, and in the absence of subsidies most schemes exclude the poor (Bennett *et al.* 1998; Ekman 2004; De Allegri *et al.* 2006b; Schneider and Hanson 2006). There is also evidence that the increased access brought about by health insurance in developing countries may not be uniform due to other "costs" of using care: barriers due to distance to facilities (Bennett *et al.* 1998; Criel *et al.* 1999; Ranson *et al.* 2006; Sinha *et al.* 2006); features of the scheme design (Ranson *et al.* 2006; Sinha *et al.* 2006); transportation costs (Ranson *et al.* 2006); poor quality of care (Ekman 2004); and restrictions on benefit packages limit both utilisation and financial protection (Ranson 2002; Devadasan *et al.* 2007).

Summary of approaches

As noted by systematic reviews, most studies examining the *impact* of CBHI suffer from methodological weaknesses (ILO 2002; Ekman 2004; Palmer *et al.* 2004). Some common criticisms of reviews are the small sample sizes, lack of baseline data or time-series data, weak data sources, limited use of control groups, and the failure to control for confounding variables and selection bias. Moreover, many evaluations are based on pilot projects and/or schemes with very few members, thereby limiting the external validity of findings (ILO 2002; Palmer *et al.* 2004). However, since these reviews were conducted, the quality of the literature has improved, due to a few methodologically robust studies. Moreover, when the larger body of literature on voluntary health insurance is considered, the quality of the evidence increases substantially.

One of the main concerns of CBHI studies with respect to selection bias is the failure to adequately account for differences in risk/health status between members and non-members (ILO 2002; Palmer *et al.* 2004). People with a greater need for health services are more likely to self-select into an insurance scheme, creating a positive correlation between insurance status and out-of-pocket health expenditures. This need is not usually observed and is a latent variable; the latent variable produces selection into insurance as well as affecting the outcome of interest, while the entry into insurance is affected by anticipated benefits from insurance. Thus, measuring the impact of insurance on a

specific outcome of interest (e.g., utilisation) must take into account that the outcome and the variable capturing enrolment status into insurance may be endogenous.

The broader literature on voluntary health insurance is of much higher quality than the CBHI literature. Recognition of the selection problem has shaped much of this literature. Authors address the selection problem using two-part models (Waters 1999; Yip and Berman 2001; Wang *et al.* 2005); instrumental variable (IV) methods (Galarraga *et al.* 2010), IV models combined with fixed effects (Wagstaff and Lindelow 2008); and the Heckman selection model (Jowett *et al.* 2003). Propensity score matching (PSM) has also been used in the voluntary health insurance literature as well as in some more recent CBHI studies and these studies are discussed below. While these econometric studies represent an improvement over the (older) CBHI literature there are still methodological limitations. First, most of these studies are conducted using secondary data and therefore a number of variables expected to influence enrolment in insurance are not observed. Thus, most studies control for health status but with a limited set of variables (usually self-assessed health status).[16] Moreover, few studies control for preferences for different types of care, resulting in selection bias. Third, most studies conducted using IVs assume that the instruments are valid (many without offering theoretical justifications or proper statistical tests), and that unobserved heterogeneity has been accounted for in the analysis (Deaton 2010; Wagstaff 2010a).

More recently, authors examining the impacts of voluntary health insurance (and more recently CBHI) on utilisation, out-of-pocket expenditures (and health status[17]) have used propensity score matching (PSM). This method was pioneered by Rubin and Rosenbaum (1983) and has been used to evaluate the impact of a range of social programmes (Rosenbaum and Rubin 1983; Guo *et al.* 2006), including job training programmes (Heckman *et al.* 1997 ; Dehejia and Wahba 1999; Purdon 2002; Smith and Todd 2005), medical trials (Reeve *et al.* 2008), education programmes (Blundell 2005), health interventions (Jalan and Ravallion 2003) and health insurance schemes (Trujillo *et al.*

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[16] Self-assessed health status is usually the variable of choice for these studies, and although there is evidence of a strong correlation between self-perceived health status and other more objective measures (Wang *et al.* 2009), this variable may fail to capture variation in health status within the sample. O'Donnell et al. (2008) recommend using measures from three categories (i.e., medical, functional, and subjective) to obtain a better picture of the distribution of health in a sample population.

[17] Health status was not an observed outcome in this thesis but the methodology of these studies is relevant to this review.

2005; Wagstaff 2007; Wagstaff and Yu 2007; Gnawali *et al.* 2009; Wagstaff *et al.* 2009; Wang *et al.* 2009; Aggarwal 2010; Mensah *et al.* 2010; Wagstaff 2010a).

PSM has advantages over IV methods and Ordinary Least Squares (OLS) in that it imposes fewer restrictions on the data (Section 2.72 discusses the advantages of PSM over other methods in more detail). Despite the advantages of using matching, many of the health insurance studies employing PSM are based on secondary data and relevant factors such as preferences for care, and multiple measures of health status are not usually available. Furthermore, none of the studies focus on Laos specifically.

2.6 Review of empirical literature on the determinants of enrolment in SHI

The discussion above in Section 2.5.1 illustrates that there is a substantial body of literature on *household-level* enrolment in CBHI. Several studies also examine the determinants of *household-level* enrolment in employer-based insurance (Abraham *et al.* 2002; Monheit and Primoff Vistnes 2006), SHI (Balabanova *et al.* 2003; Mathauer *et al.* 2008; Nguyen and Knowles 2010), and social security (Auerbach *et al.* 2007; Thornton *et al.* 2010). However, very little is known about the determinants of *firms'* enrolment in SHI or social security. The dearth of research on this topic is mainly due to the mandatory nature of SHI, which theoretically eliminates the enrolment decision-making process. However, in reality, most developing countries face difficulty getting the formal sector to enrol in SHI: compliance is low, enforcement is weak, and several evasion tactics are commonly used (Bailey and Turner 2001; McGillivray 2001). For example, in the Philippines' Employed Program (a mandatory SHI scheme for all government and private sector employees), evasion is a problem: only about 30 percent of those who should be contributing are doing so (Jowett and Hsiao 2007). In one region of Russia, only 2 percent of private enterprises enrolled in the country's obligatory SHI scheme (Twigg 1999). Therefore, despite the mandatory nature of the programme, firms *do* make a choice to enrol or not enrol in social security. However, the literature provides little insight into the determinants of enrolment at the firm level.

Although no studies found in the literature explicitly examine the determinants of enrolment in SHI, there are a few bodies of literature that are relevant to the study of firm enrolment in insurance, the first being the social security and SHI compliance literature. However, it is important to note the differences between the determinants of

enrolment and the determinants of *compliance*. As explained by McGillivray (2001) *"enrolment (coverage) measures the extent to which persons who by law or regulation are participants in a social security scheme and are generally obliged to contribute to (the scheme)"*....while *"compliance....refers to the extent to which covered persons meet their contribution obligations."* Therefore, the extent to which the compliance literature can offer insight into the determinants of enrolment is limited, but nonetheless relevant. Most often, the problems of non-compliance are typically explored from a regulatory or administrative standpoint, but a smaller body of literature focuses on reasons for evasion. Insights into *how* and *why* firms evade contributions are therefore discussed. Some of the most common evasion strategies include underreporting the number of permanent employees; reclassifying job descriptions — in order to hire temporary workers instead of permanent ones; underreporting earnings; and failing to remit (or delaying remitting) employee contributions which they have withheld from their employees (Bailey and Turner 2001; McGillivray 2001; Wagstaff 2009). A few discussion papers shed light on *why* evasion occurs. One main reason is the desire to maximise profits (McGillivray 2001). For example, firms feel that they can offer a more competitive compensation package (Bailey and Turner 2001), or can maintain lower labour costs in the absence of social security (Nyland *et al.* 2006; World Bank 2010b). Other reasons for evasion are that administration of social security is too complex for firms to take on (McGillivray 2001), and the value attached to social security among employees is low (Bailey and Turner 2001). Other studies show that the extent to which firms evade their social security contributions is related to government tolerance (i.e., weak government enforcement, perceived likelihood of getting caught, and extent of penalties (Bailey and Turner 2001; McGillivray 2001; Nyland *et al.* 2006)). Another study shows that evasion of social security is related to external and political forces such as economic growth, trust in social institutions and regulations, differing social values of regime types, and institutional inertia (Ramia *et al.* 2008). Corruption also plays a role in the motivation to evade payments: some firms collect contributions but keep them or delay payment to the social security scheme (Nyland *et al.* 2006; Ramia *et al.* 2008). Finally, one study from Shanghai uses a dataset of 2,200 firms to explore the relationship between firm characteristics and compliance with social security. The findings show that larger firms and firms in real estate or construction are less likely to comply with social security obligations, but that a firm's risk profile, i.e., how dangerous the business is, is not associated with compliance. The Shanghai study adds value by identifying the types of

firms that are least likely to comply with their social security obligations: these findings can be used to assist the policing process (Nyland *et al.* 2006).

A second body of literature on private employer-based health care in the United States (US) offers insight into firms' preferences for employer-based health insurance, although the mechanism for insuring these firms is voluntary. A review by Glied and Graff Zivin (2004) summarises much of the literature in this area (Glied and Graff Zivin 2004). The evidence suggests that unionised firms and firms in the manufacturing sector are more likely to offer health insurance (Buchmueller *et al.* April 2001). Larger firms, firms with higher wage workers, and firms in which employees demand health insurance are also more likely to provide insurance (Gruber and Lettau 2004). In addition, lower staff turnover rates and age heterogeneity are associated with a firm's enrolment in insurance (Ellis 2005). Other studies look at the price elasticity of enrolment and find varying results (Thorpe *et al.* 1992; Feldman *et al.* 1997; Marquis and Long 2001; Gruber and Lettau 2004) but there is some evidence that smaller firms are much more responsive to changes in price than are larger firms (Gruber and Lettau 2004).

Finally, a third body of literature looks at the factors that cause informal sector firms to transition to more formal arrangements. In most developing countries many businesses operate in the informal sector and therefore do not usually participate in formal societal institutions, e.g., national and local treasuries, banking systems, trade organisations, and governmental programmes such as social security (Jäckle and Li 2006). However, if firms want to grow and survive, becoming more formal is usually a prerequisite: firms need to ensure property rights, enforce contracts, and have access to capital (Jäckle and Li 2006). Levenson and Maloney (1988) offer a framework for explaining when and how informal firms will participate in societal institutions (i.e., become more formal). Using data from urban firms in Mexico they show that larger (measured by revenues) and older firms are more likely to register with the federal treasury, the social security administration (IMSS), and to be enumerated in the Census of firms. A study by Jackle and Li from Peru supports these findings, although does not specifically examine participation in social security (Levenson and Maloney 1998; Jäckle and Li 2006).

2.7 Programme evaluation literature

As described in the literature review methodology (Section 2.1), the programme evaluation literature includes some useful reviews on various econometric methods and these were used extensively in this review (Blundell and Costa Dias 2000; Bryson *et al.* 2002; Ravallion *et al.* 2007; Imbens and Wooldridge 2008; Caliendo and Kopeinig May 2005). Materials from an econometrics course in policy evaluation also informed this section of the review.[18] Unless otherwise stated, the concepts discussed below were taken from the IFS course materials.

2.7.1 The evaluation problem

Much of the impact evaluation literature is based on the Rubin Causal Model, also referred to as the Neyman-Rubin Causal Model or the Neyman-Rubin-Holland model of causal inference (Imbens and Wooldridge 2008). The notation from Imbens and Wooldridge (2008) will be used throughout this section.

N (indexed by $i=1,......N$) represents the number of individuals observed. Treatment status is given by w, such that $w=1$ if the individual receives treatment and $w=0$ otherwise. $Y_i(1)$ and $Y_i(0)$ denote the potential outcomes for individual i with and without treatment[19], respectively. The effect of the treatment on individual i is τ_i and is calculated as the difference between the potential outcomes, such that:

$$\tau_i = Y_i(1) - Y_i(0)$$

According to the Rubin Causal Model, the inherent problem of evaluation is one of missing data. In the equation above, an individual (or observation) cannot be in the "treated" and "untreated" group at the same time. Thus, if individual i receives treatment, the observed outcome for individual i had she not received treatment (the *counterfactual outcome*) can never be observed. Similarly, if individual j is observed without treatment, it will not be possible to observe the outcome for individual j had he received treatment. The inability to observe two individuals in two states simultaneously is referred to as the

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[18] The course was led by Barbara Sianesi at the Institute for Fiscal Studies (IFS), University of College London, and was held in July 2010.

[19] The term treatment is conventionally used in the evaluation literature to indicate participation in a programme.

"evaluation problem", or the "fundamental problem of causal inference" Because the *counterfactual outcome* can never be observed, programme evaluations attempt to estimate the counterfactual in order to measure treatment effects (Imbens and Wooldridge 2008).

Given the missing data problem, an alternative for estimating the counterfactual outcome is to identify a comparison group that is as similar as possible to the treatment group and then compare outcomes between the treated and untreated. However, the problem with this approach is that programmes are not usually randomly assigned, and are instead placed according to the needs of the population, who in turn self-select into programmes (Khandker *et al.* 2010). Therefore, programme participants are likely to be very different from non-participants in ways that affect treatment outcomes, especially when the programme is voluntary. Individuals may enrol in the programme due to an underlying need for the programme or due to the expected gains that will be generated from participation (e.g., chronically ill individuals enrol in health insurance due to a known need for health services while healthy individuals do not participate; highly motivated individuals enrol in a labour market training programme because they expect to gain from it, whereas those who are less motivated and do not expect to gain do not participate). This phenomenon is known as selection bias and results when a factor affecting participation is associated with the outcome variable (Imbens and Wooldridge 2008). Thus, measuring the impact of insurance on a specific outcome of interest must take into account that outcomes and enrolment may be endogenous. A number of econometrics approaches have been used to address the problem of selection bias and these are described in the next section.

2.7.2 Approaches to overcoming selection bias

The second element of the Rubin Causal Model is the assignment mechanism. Individuals are assigned to, or self-select, a programme in one of four ways: 1) randomisation; 2) selection on observable covariates (observables); 3) selection on unobservable covariates (unobservables); 4) selection on both observables and unobservables (Imbens and Wooldridge 2008; Khandker *et al.* 2010). A selection of methods used to estimate the treatment effects of a programme, and the assumptions, strengths, and weaknesses of the approaches, are described under the four main headings below. Table 2.1 at the end of this section also summarises this information.

Randomisation

One approach to estimating the counterfactual outcome is through randomisation. When individuals are randomised to a treatment, and if randomisation is conducted correctly and sample size is sufficient, differences in the outcomes can be attributed to the programme and not to other confounding variables, thereby eliminating the problem of selection bias (Khandker *et al.* 2010). For these reasons, randomised control trials are considered the gold standard for estimating the counterfactual outcome. However, in reality, experiments are rarely observed in economics (Imbens and Wooldridge 2008). Even when experiments are feasible, problems can arise due to randomisation bias (e.g., selection due to eligibility), compliance issues, and contamination of the control group. Experiments are also costly and are not always practical, or ethical, to implement. More commonly, observational studies *(or "quasi-experimental" studies)* are conducted. However, assignment to the control group in observational studies is usually based on purposive programme placement or, in the case of voluntary programmes such as health insurance, self-selection into the programme. If not adequately accounted for, non-randomised programme placement and attrition leads to bias in the estimate of treatment effects (Blundell and Costa Dias 2000).

Selection on observables

Econometric methods can be used to reduce bias in treatment effects caused by selection but the method of choice should depend on the assumptions about selection into treatment and the available data. Two methods discussed in this review account for selection into treatment based on observables. These two methods share many of the same assumptions, which must be satisfied to estimate unbiased treatment effects. These methods and their assumptions are described below:

1. *Propensity score matching (PSM):* PSM, and other matching methods, mimic an experiment *ex post* by constructing a comparison group from among the untreated observations that is as similar as possible to the treated group in terms of observable characteristics. The use of this method makes two assumptions. First, the assumption of *unconfoundedness* (Rosenbaum and Rubin 1983), also referred to as "exogeneity", or the "conditional independence assumption" (CIA), assumes that selection into the programme can be explained by observable variables. This assumption allows for

selection on unobservables, as long as they do not affect outcomes (Imbens and Wooldridge 2008).

The *overlap assumption,* or "assumption of common support" assumes that any combination of characteristics observed in the treatment group can also be observed in the comparison group. Thus, the distribution of the propensity scores must lie within the same region in both groups to ensure that matched observations are comparable. This assumption also assumes that no covariates perfectly predict enrolment. Together, these two assumptions are commonly referred to as "strong ignorability" (Rosenbaum and Rubin 1983).

The main problem with the unconfoundedness assumption is that it is not testable. It therefore assumes that all factors affecting participation in the programme can be measured. Upholding this assumption therefore requires a rich dataset and good knowledge about the factors affecting participation (Blundell 2005). Other advantages and disadvantages of this method are summarised at the end of this section in Table 2.1

2. *Ordinary Least Squares (OLS): OLS,* or *"multiple linear regression"* is commonly used to estimate treatment effects by regressing the outcome on the covariates (one of which is a dummy variable for treatment status). Like PSM, the method assumes unconfoundedness and common support. However, unlike PSM, the regression model imposes restrictions on the relationship between the covariates and the outcomes by assuming that independent variables have a linear and homogeneous effect on outcomes.

Selection on unobservables

The next 2 methods assume that selection into the programme is based on unobservables. These methods and their assumptions are described below.

1. *Instrumental variables:* This approach assumes that a variable that is related to participation but not to the outcome of interest can be identified. This variable is known as an instrumental variable (IV) or "instrument" and it introduces an element of randomness into treatment assignment, and therefore can approximate the effect of an experiment (Bryson *et al.* 2002). The main drawback of the approach is that it is

difficult to identify a suitable instrument and justify its credibility (Heckman 1995; Blundell and Costa Dias 2000).

2. *Heckman selection estimator:* This approach is similar to the IV approach but is more robust and more demanding about the assumptions of the model structure. For example, it assumes that the unobservable variables that jointly influence participation and outcome are normally distributed (Blundell and Costa Dias 2000). As with the IV method, the drawback is that it is difficult to identify a credible instrument. Moreover, estimates are sensitive to the assumptions about the distribution of the unobserved variables not being met (Bryson *et al.* 2002).

Selection on observables and unobservables

The next 2 methods, described below, assume that selection into the programme is based on either observables, unobservables or both.

1. *Before-after estimators:* The main approach with this method is to compare outcomes of the treated before and after treatment. The main assumption is that the unobservables are specific to an individual (and not to external changes): those unobservables can either be fixed over time or transitory (not fixed over time) but programme-participation is dependent on factors that are fixed over time (Bryson *et al.* 2002). The main drawback to this method is that it does not control for individual time-variant effects or external changes (e.g., a macroeconomic effect; a policy change). Another concern is that if a temporary reduction in outcomes occurs just before the programme is introduced (e.g., unemployment occurs before training programme), the treatment effects will be overestimated. This is known as Ashenfelter's Dip (Heckman *et al.* 1999).

2. *Differences-in-differences estimator (natural experiment):* This approach controls for both observables and unobservables by comparing changes in outcomes of the treated and untreated before and after treatment. In addition to the individual fixed and transitory effects allowed with the before-after estimators, this method also allows for trend effects (effects not specific to individuals) when they affect both the treated and untreated group equally (e.g., a macroeconomic effect; a policy change). The method assumes that the composition of the treatment group

Table 2.1 Overview of econometric methods used to estimate treatment effects

Assignment mechanism	Method	Data requirements/ assumptions	Advantages	Disadvantages
Randomisation	Randomised control trial (RCT)	1. No randomisation bias (i.e., assignment to treatment is independent of all variables. 2. No control group contamination.	-Selection bias is not a problem: if done correctly leads to unbiased treatment effects; -Results are easy to explain to non-econometricians (e.g., policymakers); -Convincing method: leads to consensus.	- Randomisation bias, attrition and control group contamination can bias results; -Difficult to implement in practice due to need for careful monitoring; high costs; ethical considerations; -Not always feasible: many programmes are voluntary and/or purposively placed.
Selection on observables	Propensity score matching	1. Unconfoundedness (or Conditional Independence Assumption (CIA): selection into the programme can be explained by observable variables. 2. Common support (CS): the distribution of p-scores in treated group overlaps with distribution of p-scores in untreated group. 3. Allows for heterogeneity in treatment effects.	-Less restrictive than OLS or IV methods: does not make assumptions about relationship between covariates and outcome and therefore mis-specification is not a problem. -Allows for heterogeneous returns in treatment effects. -Overcomes "curse of dimensionality" (i.e., matching on covariates). - If CIA holds, matching process can approximate experimental results.	-Data hungry: requires rich dataset and good knowledge about participation (not optimal in the absence of limited dataset); -Even with a rich dataset, the CIA is a strong assumption that is difficult to satisfy (and not testable). -Large sample sizes may be required to ensure a large enough pool from which to select control group: this may be costly. -If treatment impact differs across treated, restricting to CS may change parameter being estimated (i.e., ATTs will only hold for the subsample on the common support, therefore external validity is a concern).
Selection on observables	Ordinary least squares regression (OLS)	1. Unconfoundedness (see PSM). 2. Common support (CS): the distribution of Xs in treated group overlaps with distribution of Xs in untreated. 3. Observed variables affect outcomes linearly. 4. Observed variables affect outcomes in the same way (homogeneous effects).	-Easy and fast to implement; -Can be used in combination with other methods	-Extrapolation to unsupported regions leads to mis-specification and bias; -Functional form assumptions of homogeneous additive treatment effects and linearity often not justified; -If omitted variables affect outcome, estimates of impacts will be biased; -Even with rich dataset the CIA is strong and difficult to satisfy (and not testable).

Assignment mechanism	Method	Data requirements/ assumptions	Advantages	Disadvantages
Selection on unobservables	Instrumental variables (IV)	1. Assumes a variable can be identified that is related to treatment but not to outcome(s).	-Controls for selection on unobservables when an instrument is available; -Introduces an element of randomness; approximates experimental results	-Difficult to identify a credible instrument; instruments are often weak; validity of the instrument(s) is untestable.
	Heckman selection estimator	1. Assumes a variable can be identified that is related to treatment but not to outcome(s). 2. Assumes unobservables that influence participation and outcome are normally distributed.	-Obtains reliable estimates of ATT in the presence of selection on unobservables. -More robust than IV estimator.	-Difficult to identify a credible instrument; instruments are often weak; validity of the instrument(s) is untestable; -Can be overly restrictive due to functional form assumptions about distribution of unobservables.
Selection on observables and unobservables	Before-after	1. Participation depends on observed and/or unobserved fixed characteristics. 2. Assumes that unobservables are specific to an individual (not to external changes).	-Controls for fixed individual observables and unobservables; -Allows for heterogeneous effects; -Straightforward to implement; -No need for control group.	-Need longitudinal data, leading to possible time and cost-constraints for primary data; -If baseline is measured at time of "dip" in outcome (i.e., health, earnings, etc.), treatment effects will be overestimated (Ashenfelter's dip); -Does not control for individual time-variant effects or macro effects or trends.
	Differences in differences	1. Participation depends on observed and/or unobserved fixed characteristics. 2. Assumes that treatment and control group are affecting equally by changes over time.	-Controls for fixed individual observables and unobservables; -Allows for heterogeneous effects; -Controls for time/macro effects as long as they affect both groups; -Best approach to minimising selection bias in the absence of RCT.	- Need longitudinal data, leading to possible time and cost-constraints for primary data; -Ashenfelter's dip (see above) can lead to overestimate of treatment effects

Note: This table was constructed by the author using a combination of resources including: material from a course on econometrics methods by Barbara Sianesi at the Institute for Fiscal Studies, University College London; useful reviews by Imbens and Wooldridge (2008) and Bryson et al (2002); a paper by Blundell, Dearden and Sianesi (2005); and other sources cited in the text.

remains unchanged between the pre-treatment and post-treatment; otherwise, treatment effects will be biased (Bryson *et al.* 2002). Ashenfelter's dip is also a concern with this method.

2.7.3 Measuring treatment effects: parameters of interest

Much of the programme evaluation literature estimates the average treatment effect (ATE) and the average effect of treatment on the treated (ATT). Deciding which parameter to use will depend on the policy question of interest. Each of these parameters are defined below. As an extension of the formula given earlier for the treatment effect of individual *i*, the average treatment effect (ATE) in the population can be calculated by averaging the treatment effects for all observed individuals, such that:

$$ATE = E(Y_i(1) - Y_i(0))$$

This parameter assumes that all those who have been assigned to (or offered) a program are fully compliant with the program. However, in reality not everyone participates, while some participate but drop out of the program before completion. Moreover, in a voluntary program, people randomized to be offered a program cannot be forced to participate. For this reason, the intention-to-treat (ITT) estimator is often of policy relevance. The ITT compares outcomes for those to whom treatment was offered with those to whom treatment was not offered, irrespective of actual enrolment. This parameter is important when trying to determine the average impact of a program on the population targeted by the program (Gertler *et al.* 2011).

Because programmes often reach only a segment of their target population (either because of purposive programme placement or selection into the programme), it is generally of interest to policymakers to measure the average treatment effect on the treated (ATT). This estimate of the program's effect takes into account those who have been offered the program and actually enrolled and is given by the following equation:

$$ATT = E(Y_i(1) - Y_i(0)) | w_i = 1,$$

which is the equivalent to:

$$ATT = E(Y_i(1)|W_i=1) - E(Y_i(0)|w_i=1)$$

If the method used for programme evaluation assumes homogeneous returns, i.e., all participants respond the same way to a given treatment, the ATE and the ATT will be the same. However, most of the recent econometrics literature assumes a more realistic scenario – that the impact across individuals is heterogeneous (Bryson *et al.* 2002). This heterogeneity stems from two sources: 1) some people respond better to treatment than others, based on underlying characteristics, and therefore the impact of a programme varies across individuals; 2) people participate in programmes based on this heterogeneity (i.e., an individual anticipates gains from the programme and therefore participates). Allowing for heterogeneity, the ATT will be different than the ATE (Imbens and Wooldridge 2008).

In summary, there are several methods that can be used to estimate the counterfactual outcome in a programme evaluation. The extent to which treatment effects can be estimated with minimal bias will depend on whether or not the assumptions mentioned above are upheld. In identifying the optimal method, the literature recommends that the choice be guided by three factors: knowledge of the selection process; the parameters of interest; and the richness and nature of the available data (Heckman *et al.* 1999; Blundell and Costa Dias 2000; Blundell 2005).

2.8 Relevance of literature, research gaps, and priorities in Lao PDR

The review of the literature identifies a number of research gaps and provides a broader context for the health financing policy priorities in Lao PDR. The universal coverage literature shows that, at a time when the Government of Laos is making an effort to expand enrolment in health insurance, many countries are developing their health financing systems to achieve universal coverage. Some of the approaches that other countries have taken to reach out to different population groups provide insight into options for expanding health insurance in Laos.

The review of economic theory provides a partial explanation of the decision to enrol in insurance. However, most theories model behaviour of individuals in industrialised countries and do not translate well to low-income countries, where poverty and trust have been found to influence decision-making. Nevertheless, some theories and

discussion of risk offer alternative explanations of why people choose to enrol: unlike expected utility theory, which explains that more risk-averse individuals are more likely to purchase insurance, the literature suggests that enrolling in insurance may be seen as a more "risky investment" due to the uncertainty of the expected pay-offs, the comfort in maintaining the status quo, and the extent to which individuals have confidence and trust in the insurance scheme and the overall health care system. Thus, greater risk-aversion (especially among the poor) may make it *less* likely for individuals to purchase insurance. However, the relationship between risk and enrolment in health insurance needs to be further explored in different contexts.

Although many studies examine the determinants of enrolment in CBHI, little is known about the factors driving or hindering enrolment in CBHI in Laos. Understanding decision-making in the context of Laos is an important policy question in light of the low enrolment levels in CBHI and the government's plans to expand coverage among the informal sector. Moreover, measuring the extent to which adverse selection plays a role in the Lao scheme will be important for the MOH in its effort to make CBHI more financially viable.

While there is a voluminous body of literature exploring the *impact* of CBHI on utilisation and out-of-pocket expenditures, weak study designs and the failure to account for selection into voluntary insurance limit the conclusions that can be drawn from these studies. Experimental designs are not always appropriate for evaluating the impacts of social programmes, but there are a number of econometric approaches that can approximate the treatment effects of a programme and reduce the risk of selection bias. Although more recent CBHI studies have attempted to tackle the "selection problem" using methods that control for selection bias, high quality studies on the impacts of CBHI are still rare. Many CBHI studies still fail to adequately control for the factors that are likely to contribute to selection bias, such as health status and other risks, risk-preferences, and preferences for different types of care. Furthermore, there has been no attempt to measure the impacts of CBHI in Laos. A research study examining the impacts of CBHI using a robust evaluation approach has relevance for health policy in Laos and will make a positive contribution to the health financing literature.

The challenges of expanding social security and/or SHI in developing countries have been widely debated. While this literature touches on factors associated with social

security compliance, no study explicitly addresses firms' decision to enrol or not enrol in SHI (or a broader social security scheme), although the larger body of literature on social security compliance and preferences for private employer-based insurance in the US offers insight into factors that shape a firms' decision to enrol in SHI. Given the growing interest in expanding health insurance towards universal coverage (in Laos and internationally), and the scarcity of data on the determinants of enrolment in SHI or social security, identifying the factors that are likely to drive or hinder enrolment of firms in SHI is likely to be an important contribution to policymakers in Laos and other countries looking to stimulate SHI enrolment.

The next chapter gives an overview of the study setting and describes the insurance schemes that will be examined in the thesis (i.e., CBHI and SHI). The chapter also highlights the health financing priorities in Lao PDR that have helped to shape the questions addressed in the thesis, thereby setting the context for the overall study.

Chapter 3. Study setting

This chapter gives an overview of the socio-demographic characteristics, the economic environment, and the health situation in Lao PDR and describes the organisation and financing of health services. Also presented is a detailed description of the two health insurance schemes studied in this thesis: CBHI and SHI. Much of the information presented here was generated from reviews of government, donor and NGO documents, key informant interviews with employees of the CBHI and SHI schemes, and compilation of data from government documents and databases from international organisations.

3.1 Country profile

3.1.1 Geographic and demographic characteristics

Lao PDR is a landlocked country in Southeast Asia, bordered by Cambodia, Myanmar, Thailand, Vietnam and China. Its geographic position in the heart of South-East Asia makes it a crossroads for trade, and historically, it has served as a buffer zone between neighbouring countries (Messerli *et al.* 2008). Three quarters of the country is mountainous, with high elevations and steep terrain, and the Mekong River forms most of the western border with Thailand. Although the level areas in the southern provinces are suitable for rice cultivation and farming, overall arable land accounts for only 4 to 5 percent of the country's surface. The country is divided into 16 provinces and one municipality (Vientiane Capital), and further subdivided into 140 districts. Although the Mekong is a popular route for trade within the region, the Khong Falls in the south of the country prevents sea access (Messerli *et al.* 2008).

Lao PDR's population of 6.3 million is low by regional standards and population density is much lower than in neighbouring countries. Only 32 percent of the population resides in urban areas, but the migration to urban areas has resulted in a high urban population growth rate. Thirty-eight percent of the population is below 15 years of age, and together with the Philippines, the population is growing at a faster rate than any other country in the region (World Bank 2010b). The population is also the most ethnically and linguistically diverse in mainland South-East Asia: the official ethno-linguistic groupings include 49 distinctive ethnic groups and four main ethno-linguistic families, including

Lao-Tai (Tai-Kadai); Mon-Khmer (Austro-Asiatic); Sino-Tibetan; and Hmong-Mien (Messerli et al. 2008). Table 3.1 shows how Lao PDR compares to other countries in the region with respect to demographic and socioeconomic indicators.

3.1.2 Economic and health profile

Lao PDR remains one of the poorest countries in South-East Asia, and is ranked 122nd out of 162 countries on the Human Development Index (UNDP 2010). Like many of its neighbours, the country is transitioning from an agricultural socialist economy to a market-oriented economy. Laos is still largely dependent on official development assistance[20] but economic growth is relatively strong by regional standards (see Table 3.1) due to increased integration with neighbouring countries and development of mining, hydropower, and other sectors (MOH Lao PDR et al. 2008). In the next few years, nearly 40 percent of GDP growth is expected to come from the power sector, mainly due to the recent construction of the Nam Theun 2 (NT2) project — a large hydropower facility jointly implemented by the government and a private power company, and financed by the World Bank, Asian Development Bank and others (World Bank 2010a).[21] The manufacturing industry has also grown in recent years, and with the exception of garment factories, small enterprises still dominate this sector. The services industry is also growing, largely due to tourism (ADB and World Bank 2007). The growth in these industries is expected to increase fiscal space[22] (Tangcharoensathien et al. 2011), which is currently low by regional standards (See Table 3.1). However, the extent to which increased government resources will be spent on the health sector is unpredictable.

Although the country has achieved much progress in reducing poverty and child mortality over the last decade, poverty rates remain high and significant challenges remain in improving health outcomes, which, as shown in Table 3.1, are among the poorest in the region. It is important to note, however, that while average health and

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[20] Official development assistance accounts for 72 percent of total public expenditure in the health and education sectors (ILO 2007).

[21] The Nam Theun 2 project is a $US 1.45 billion hydropower project expected to contribute substantially to the country's economic growth. Electricity from NT2 will be exported to Thailand (under pre-arranged long-term contracts) and used for domestic consumption. There is much optimism in Laos that this new source of funding will generate large government revenues. There is also potential for increasing revenues to the health sector through NT2 as funds are already earmarked for economic development and poverty reduction. However, no specific earmarks for the health sector have been defined.

[22] Fiscal space refers to the government's ability to collect tax and spend funds for desired purposes.

poverty outcomes in Laos are low by regional standards, these indicators do not reveal disparities by region, income, or ethnicity. For example, maternal mortality rates range from 200 to 800 per 100,000 live births throughout the country (Messerli et al. 2008) and literacy rates are nearly 100 percent in urban areas, but below 75 percent in rural areas without road access (Department of Statistics 2010). These disparities are part of the

Table 3.1 Demographic, socioeconomic and health indicators, South-East Asia

	Lao PDR	Cambodia	Indonesia	Philippines	Thailand	Vietnam
Demographic Indicators						
Population (millions), 2009	6.3	14.8	230.0	92.0	67.8	87.3
Population growth rate (annual %), 2009	1.8%	1.7%	1.2%	1.8%	0.6%	1.2%
% of population <15 years, 2009	38%	33%	27%	34%	22%	26%
Population density (people/sq. km), 2008	27	82	125	303	132	278
Urban population (% of total), 2009	32%	22%	53%	66%	34%	28%
Urban population growth (annual %), 2009	5.5%	4.5%	3.3%	2.9%	1.6%	2.9%
Socioeconomic indicators						
GDP per capita (constant 2000 US$)	$496	$505	$1124	$1215	$2567	$674
GDP per capita (PPP US$), 2008	$2124	$1951	$3994	$3513	$8086	$2787
GDP growth (annual %), 2009	6.4%	-1.9%	4.5%	1.1%	-2.2%	5.3%
GNI per capita ($US, Atlas method), 2009	$880	$610	$2050	$2050	$3760	$930
Government tax (% of GDP)(fiscal space), 2007	10.1%	8.2%[d]	12.3%[c]	14.0%	16.1%	13.0%[g]
% households living below $1.25 a day, PPP, 2007	37%[a]	26%	29%	23%	2%[c]	21%[d]
Income Gini coefficient, 2006/7	33%[b]	44%	38%	44%	42%[c]	38%[d]
Primary school completion (% of relevant age group), 2007	74%	85%	108%	92%	87%	101%
Health Indicators						
Life expectancy at birth (years), 2008	65	61	71	72	69	74
Infant mortality rate (per 1,000 live births), 2008	48	69	31	26	13	12
Under five mortality rate (per 1000 live births), 2009	59	88	39	33	14	24
Maternal mortality ratio (per 100,000 live births), 2005	405	472	228[e]	162[d]	12	75[f]
Total fertility rate (births per woman), 2008	3.5	2.9	2.2	3.1	1.8	2.1
% of children <5 yrs receiving ORT for diarrhoea (2005-8)	49%	50%	54%	60%	46%	65%
% of 1 year olds immunised with DPT, 2009	57%	94%	82%	87%	99%	96%
% of 1 year olds immunised with measles, 2009	59%	92%	82%	88%	98%	97%
HIV prevalence (% of pop'n 15-49), 2007	0.2%	0.8%	0.2%	--	1.4%	0.5%

Notes: Unless otherwise stated, the source of the indicators is the World Bank (WB), World Development Indicators database, 2010. Unless otherwise indicated, the date for the estimate is given in the left column.
[a] 2007/8 figure from Department of Statistics, 2010; [b] WB 2002; [c] WB 2004; [d] WB 2006; [e] WB 2007; [f] WB 2008; [g] 2007 figure from Tangcharoensathien et al, 2011.

reason that the country will likely fail to achieve most of its Millennium Development Goals for the health sector by 2015 (Thomé and Pholsena 2009).

3.2 Health care provision and financing

3.2.1 Organisation of health services

The main network for the provision of services is the public sector, which includes 4 central government hospitals, 3 specialised hospitals, 5 regional hospitals, 13 provincial hospitals, 127 district hospitals and 717 health centres. Given the country's low population density and low utilisation rates there are more facilities and hospital beds than can operate efficiently (Knowles 2006). Table 3.2 compares service delivery characteristics between Laos and neighbouring countries.

The shift to a market-economy in recent years has facilitated growth of the private health sector, which is still relatively small and is largely unregulated. It consists of approximately 500 small private clinics; 600 traditional medicine practitioners; 2,000 pharmacies and drug vendors (many of which are unlicensed), and a large number of unlicensed "village health workers" with varying levels of formal training. Today, government facilities account for a low percentage of outpatient visits (20 to 25 percent) (Knowles 2006), while private pharmacies and clinics are often the first choice of care for people in urban areas (Paphassarang *et al.* 2002; Patcharanarumol 2008). In addition, many people use private health services in neighbouring Thailand, where the majority of health workers speak Lao as their native tongue[23] (Knowles 2006; Thomé and Pholsena 2009).

Access to health services in Laos varies by urban and rural location. Approximately 93 percent of the population lives within a 90 minute walk to a health facility, although this ranges from 108 minutes on average in rural areas to 19 minutes in urban areas. Moreover, in the mountainous regions individuals must travel three hours to reach a health facility (Thomé and Pholsena 2009).

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[23] Isan Thai is spoken in North-Eastern Thailand and is a dialect of the Lao language.

Table 3.2 Service delivery and health financing indicators, South-East Asia

	Lao PDR	Cambodia	Indonesia	Philippines	Thailand	Vietnam
Service delivery indicators						
Hospital beds (per 10,000 people) (2002-2006)	12.0	1.0	6.0	10.6	22.0	26.6
Physicians (per 10,000 people) (2002-2004)	3.5	1.6ᵃ	1.3	11.5	3.1	5.6
Nurses and midwives (per 10,000 people) (2002-2004)	9.7	8.5ᵃ	8.2	61.2	13.6	6.6
Pregnant women receiving ≥ 1 ANC visit (%), 2006	35.1	69.3	93.3	91	97.8	90.8
Births attended by skilled health staff (%) (2005-2008)	20.3	43.8	79.4	62.2	97.3	87.7
Health expenditure indicators						
Total health expenditure (THE) as % of GDP, 2007	4.0%	5.9%	2.2%	3.9%	3.7%	7.1%
Health expenditure per capita (US$)(2007)	$27	$36	$42	$63	$136	$58
Source of expenditure						
General government exp. on health as % of THE , 2007	19%	29%	55%	35%	73%	39%
Private expenditure on health as % of THE, 2007	81%	71%	46%	65%	27%	61%
Total	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*
OOPs as % of private expenditure on health, 2007	76%	85%	66%	84%	72%	90%
OOPs as % of THE, 2007	62%	60%	30%	55%	19%	55%

Notes: ANC=antenatal care; OOP=out-of-pocket expenditure. External resources for health are included in government and private shares. The source of the service delivery indicators is WHO, National Health Accounts, various years. The source of the health expenditures indicators is the World Bank (WB), World Development Indicators database, 2010; ᵃ WB 2000.

The health sector in Laos faces a number of challenges with respect to human resources. Although the numbers of physicians and nurses are higher than in Cambodia and Indonesia, levels are still low (See Table 3.2). Most health workers receive inadequate training, low salaries, and inadequate non-monetary incentives. Thus, productivity is low and most workers are disproportionately concentrated in Vientiane Capital and economically better-off regions where they have an opportunity to earn supplemental income through the private sector (Dodd *et al.* 2009).

3.2.2 Health care financing

Prior to the early 1990s, health care in Laos was funded solely through the government budget, with support from China, Vietnam, and the Soviet Union. Government budget deficits, waning international support, and a shift to a market-economy led to an increased reliance on household and community financing. Revolving drug funds and user fees were adopted in the 1990s, with the objective of securing access to essential medicines and increasing revenues to the health sector (MOH 1995; Murakami *et al.* 2001). Although user fee exemptions were endorsed by a user fee exemption policy in

1995, in practice, many of the poor pay for health services due to difficulties in implementation of the policy (e.g., lack of clear criteria for identifying the poor; lack of financial support to providers for exempted patients, etc.)(Patcharanarumol *et al.* 2009). Thus, the burden of financing falls largely on households, with out-of-pocket payments accounting for 62 percent of overall health spending — among the highest in the region.[24] Government spending on health as a percentage of total health expenditures is much lower than other countries in the region (19 percent compared with 73 percent in Thailand (World Bank 2010b). This is equivalent to less than one percent of GDP and estimates show that the level has not risen in real terms over the past decade (Powell-Jackson and Lindelow 2010). Much of the public expenditure on health (75 percent) covers salaries for health care workers, and therefore facilities are dependent on revenues from the revolving drug funds to cover recurrent costs (WHO 2010a). Some of the revenues from revolving drugs funds are also used to fund top-ups to staff to augment their low salaries. Given this dependency, there is an incentive for providers to overprescribe non-essential and non-generic drugs and diagnostic tests. Drug procurement is not adequately regulated and although the price for drugs is officially set at cost plus 25 percent, in practice drugs are often charged at a higher profit margin and charges are not always displayed in pharmacies (Thomé and Pholsena 2009; Ron *et al.* 2010).

The actual cost of health services in Laos is substantial, especially given the country's high poverty rate. The World Health Survey (2003) estimated the total cost of an inpatient episode between US $15 to US $90 depending on the level of care (WHO 2003). At the time of these estimates, per capita income was US $340 (World Bank 2003), and therefore an inpatient visit accounted for between 4 and 25 percent of annual per capita income. These high costs contribute to impoverishment and reluctance to use services. Moreover, an estimated 40 percent of households reportedly sell items or borrow money to pay for health services (WHO 2003).

Four main health insurance and risk-protection schemes operate in Lao PDR. These include: a mandatory Civil Servants' Scheme (CSS) for government employees and their dependents; a mandatory Social Health Insurance (SHI) scheme for private and state-

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[24] Recent studies in Lao PDR suggest that out-of-pocket spending in official National Health Accounts Estimates may be under-estimated (Powell-Jackson and Lindelow 2010).

owned enterprises and their dependents; voluntary community-based health insurance (CBHI) for the informal sector and self-employed households; and health equity funds (HEFs) for households living in extreme poverty. However, outside the CSS, which covers approximately 6.3 percent of the population, these schemes reach a small segment of the total population, with approximately 1.7 percent of the population enrolled in CBHI, 1.5 percent enrolled in SHI and 2.1 percent enrolled in HEFs in 2009[25] (See Figure 3.1). Thus, just over one tenth of the population is currently covered by health insurance and risk-protection schemes.

Although the abovementioned numbers give an indication of overall coverage of health insurance in the *population*, it is also important to understand the relative *sizes* of the population groups (sub-populations) and their respective coverage rates. Thus, Figure 3.2 shows the approximate size of each sub-population[26] and the coverage rates that have been achieved: civil servants and their dependents account for less than 500,000 individuals in the country (7 percent of the population); private sector employees and

Figure 3.2 Coverage of health insurance and health equity funds in Lao PDR, 2009
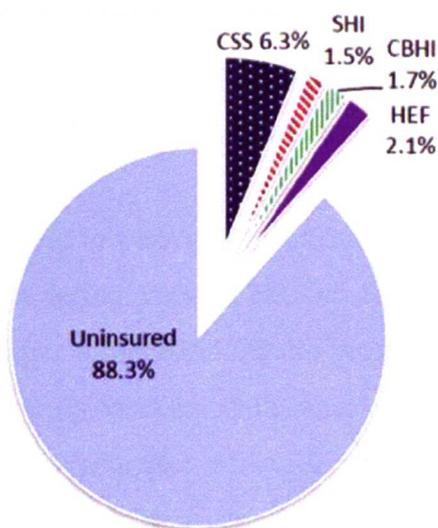
Figure 3.2 Proportion of individuals enrolled in health insurance and health equity funds by sub-population, 2009
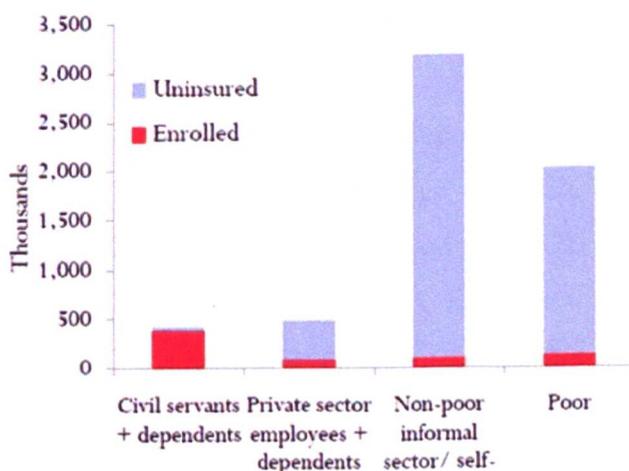
Source: Compilation of data by the author, from: CBHI database, MOH, 2009; SSO database, SSO Jan 2009; CSS/SASS databases, 2009; HEF 2009 annual report, MOH 2010.

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[25] The latest coverage figures show that HEFs currently reach closer to 3% of the population (MOH Lao PDR Dep't of Planning and Finance March 2011).
[26] The estimates of the size of each sub-population are used for illustrative purposes. The size of the informal sector was made by subtracting the formal sector and their dependents, the military, and the poor from the total population. However, the true size of each sub-population is difficult to estimate given the lack of distinction between the "formal" and "informal" sectors, and the difficulty of identifying the poor.

their dependents (the SHI target group) make up approximately 8 percent of the population; the informal sector and the self-employed account for more than 3 million people (about 52 percent of the population) and the poor account for a little more than 2 million (33 percent of the population). Apart from the CSS scheme, which reaches approximately 90 percent of its sub-population, coverage rates within each sub-population are low. However, it is important to recognise that SHI, CBHI and HEFs are not yet operating country-wide and have therefore only targeted a small fraction of their respective sub-populations.[27] For example, the SHI scheme contracts only with provincial and central hospitals located in the four provinces where a substantial proportion of the population is engaged in private sector employment. By the end of 2009, roughly 30 percent of firms that had been targeted by the SSO had enrolled.[28] The rationale for introducing CBHI in only select districts was to ensure that the scheme was functioning well before expanding to other more remote areas. CBHI therefore was first introduced in the most affluent urban and semi-urban areas where health services are of a reasonable quality. However, given the challenges of getting the target population to enrol, roll-out of the schemes to other geographic areas has been slow. For example, by the end of 2009, only about one quarter of the informal sector had been targeted by CBHI and only 13 percent of those targeted had enrolled.[29] Thus, the reasons for low coverage are in part due to limited geographic implementation of the schemes, but even in the targeted areas, coverage levels remain low.

Despite low coverage of health insurance and risk-protection schemes, the government is considering various options for scaling up to achieve universal coverage by 2025. A merger of all social health protection schemes is also planned for 2015 and the MOH is currently working with other agencies on a decree to govern this process. Expansion of health insurance schemes and health equity funds are stated priorities in the Sixth National Socio-Economic Development Plan (NSEDP 2006-10) and the more recent National Health Sector Development Plan (NHSDP 2011-15). To operationalise these plans, the Health Financing Strategic Plan 2011-15 was drafted in 2009-2010 but has not yet been approved by the national assembly. The mission of the plan is: "*To achieve*

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[27] The coverage levels within each sub-population are shown in Figure 3.2. However, these are only approximations – it is difficult to estimate the true coverage within each sub-population because the size of each sub-population is only an approximation (the definitions of each are overlapping). Moreover, only a small proportion of each sub- population has actually been targeted.

[28] Calculation by the author, based on Social Security Database, 2009

[29] Calculation by the author using data from CBHI database, MOH 2009.

universal coverage by reducing out-of-pocket spending for health, thereby increasing access to essential quality health services for all Lao people without catastrophic expenses and to attain the five health MDGs" (MOH Lao PDR 2010).

This thesis was designed in part to inform the strategic planning process by providing empirical evidence about the determinants of enrolment in CBHI and SHI and the impacts of CBHI on utilisation and out-of-pocket expenditures. The following section gives more details about the CBHI and SHI schemes.

3.3 Overview of CBHI and SHI schemes

3.3.1 Overview of CBHI

CBHI was introduced in 2001 as a pilot project by the Ministry of Health (MOH), and has received technical assistance from two donors (previously the United Nations Trust Fund for Human Security, implemented through WHO, and now Agence Française de Développement (AFD), implemented jointly through Swiss Red Cross (SRC) and GRET (Professionals for Fair Development)). The office responsible for managing the scheme is the Health Insurance Program, within the Department of Planning and Finance, MOH. The MOH contracts hospitals to provide services for CBHI members[30] and a gatekeeping system requires members to first seek services at the contracting facility in their district. The CBHI benefit is similar to that of the two formal sector schemes: it covers outpatient and inpatient services including primary health care, specialist services, diagnostic tests, and drugs prescribed at hospitals. The features of both CBHI and SHI are summarised in Table 3.3.

The main target group for CBHI is households who are self-employed or working in the informal economy and are not covered by other social protection schemes. Enrolment takes place at the household level for all members and the cost of premiums varies according to urban or rural residence, and number of household members. The cost of the premiums were originally set at between 2.5 to 3 percent of average household income (Ron July 2010). However, the contribution levels have not been updated since

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[30] In most districts, the MOH contracts with the district hospital to provide services. However, in two districts (Viengkham district in Vientiane Province and Luang Prabang municipality) there is no district hospital and the MOH instead contracts with a provincial hospital.

Table 3.3 Overview of CBHI and SHI scheme characteristics

	CBHI	SHI
Membership	Voluntary	Compulsory (although not enforced)
Unit of membership	Household	Firm
Coverage (2009)	Approximately 105,000 (1.7% of the population)	Approximately 95,000 (1.5% of the population)
Beneficiaries	All household members as defined by the "family book" (official registration book within the villages)	Employees in private and state-owned enterprises, their dependents (including children <18) or <25 if in full time education, and retirees
Eligible providers (type of facility)	Contracts with government district hospitals for first-line care, and provincial and central hospitals for referral care	Contracts mainly with government provincial and central hospitals
Health care benefit package (inclusions/exclusions)	Includes mainly curative outpatient (OP) and inpatient (IP) care and prescription drugs. Excludes long IP stays, road accidents, non-prescribed drugs, some specialist services and care outside the country.	Includes mainly curative outpatient (OP) and inpatient (IP) care and prescription drugs. Excludes long IP stays, road accidents, non-prescribed drugs, some specialist services and care outside the country.
Preventive services	Includes preventive care, but most preventive care is provided free at government facilities in vertical programmes.	Includes preventive care, but most preventive care is provided free at government facilities in vertical programmes.
Exclusions	None	None
Waiting period	1 month for OP; 3 months for IP; 6 months for deliveries, obstetric and elective surgery; 3 months for emergency	3 months for all services, except work-related injuries
Responsible Agency	Health Insurance Unit, Department of Finance & Planning, MOH	Social Security Office (under MOLSW)
Supporting agencies	WHO, AFD	ILO/WHO
Payment arrangements	Capitation payment (approx. 60,000 Kip/person/year), prepaid monthly. In practice, only 40,000 because of late payments. No additional payments to providers.	Capitation payment (80,000 Kip/person/year + additional funds to cover chronic diseases based on cases treated (paid quarterly). High-cost treatments paid on a case-by-case basis.
Capitation distribution across levels of care	70% retained at district level; 30% of payment to referral hospital	Either 1) 100% to provincial hospital, or 2) 60% district and 40% provincial.
Contribution collection procedures	Flat rate monthly payments according to household size and location (See Table 3.4). Contributions collected by village collectors and distributed to account managers in hospitals.	4.5% of earnings from employees; 5% from employers up to a ceiling of LAK 1,500,000 ($175.00). 4.4 percentage points of the 9.5% contribution is allocated to health benefits. (No additional charge for dependents)
Referral	Referral required for care at provincial or central hospitals (except in areas with no district hospital)	No gatekeeping, except in areas where SSO contracts directly with district level. However, members must use one hospital of their choice.

2005, despite average inflation rates of 5.5 percent per year since that time (International Monetary Fund April 2010). Table 3.4 below gives the contribution levels by family size and location. For a family of five in 2009, the contribution comprised approximately one percent of average household consumption in the sample.[31] (For the same family size in the poorest quintile, the premiums comprise 2.4 percent of household consumption in the sample).

Table 3.4 Monthly contributions for CBHI (Lao Kip/$US)

	Urban CBHI	Rural CBHI
Single person	14,000 ($1.65)	12,000($1.41)
Family 2-4 persons	24,000($2.82)	20,000($2.35)
Family 5-7 persons	30,000($3.53)	25,000($2.94)
Family >8 persons	33,000($3.88)	28,000($3.29)
Monks, nuns, dormitory students	5,000($0.59)	5,000($0.59)

Source: (Ron 2009)

Household contributions to the scheme are collected on a monthly basis by a *village collector* — an individual appointed by the village chief who receives LAK 2,000 (US$0.25) for each newly enrolled household and LAK 1,000 (US$0.12) for each monthly contribution. However, a recent study reported several problems with the fee collection system: insured households complained that collectors stopped collecting fees or did not come on a consistent basis, and village collectors reported that collection fees were too low to cover the costs of travel (Burnet Institute 2008). As a result, some villages have moved to a system whereby villagers pay the CBHI account manager at the district hospital directly.

To date, CBHI has been implemented mainly in the most affluent urban and semi-urban areas but the MOH intends to expand to more remote areas in the future. As discussed earlier, the rationale for starting in urban and semi-urban areas was so that the scheme could be strengthened before expanding to more remote areas that were considered more difficult to reach. Thus, in the targeted areas health care services are of a reasonable quality and the socioeconomic status of the target population was deemed high enough

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[31] This calculation was made by taking the unweighted average annual contribution for families of five in urban and rural areas (Ron 2009) and dividing it by the average consumption level for a family of five in the sample.

that households could afford the premiums.[32] However, after 9 years of piloting, CBHI in Laos continues to face the same challenges that most other countries implementing CBHI have experienced. The first challenge is coverage: Figure 3.3 shows that rolling out the scheme to new districts has not resulted in substantial increases in enrolment. By July 2009, the schemes were operating in 19 districts but reached only 7 percent of the population in the targeted districts (and 13 percent of the population in the targeted *villages* in those districts). This is the equivalent to 1.7 percent of the total population. It is expected that scale-up of the scheme to more remote areas will pose further challenges due to low population density, poor geographical access to contracting facilities, limited acquaintance with and knowledge of modern health care among ethnic minorities, and low quality of care available in the districts that have not yet been targeted.

Figure 3.3 Expansion of CBHI, 2002-2009
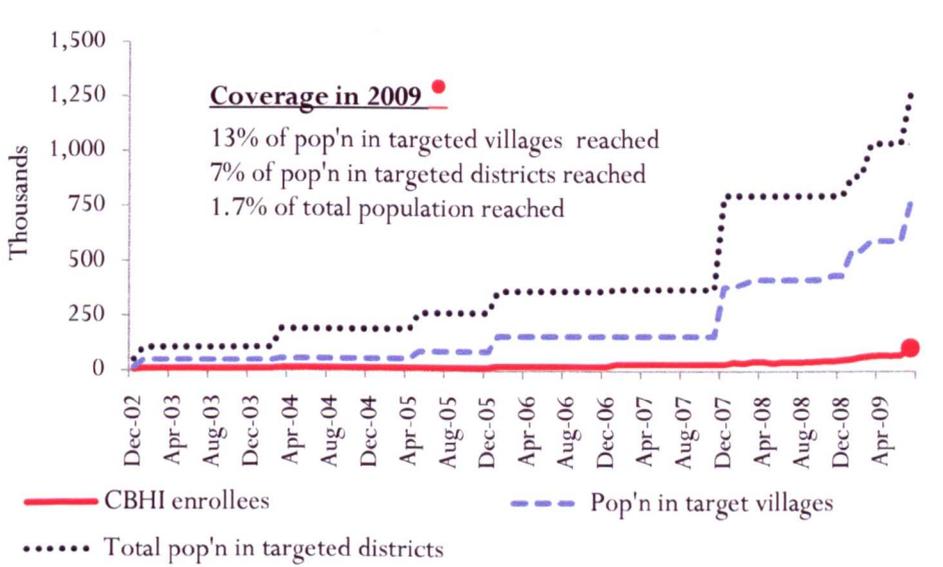
Source: Compiled by the author using administrative data, CBHI office, Department of Planning and Finance, MOH, 2009

Another challenge facing expansion of CBHI is financial sustainability: the scheme is currently not generating enough revenues to cover the cost of services and drugs offered to CBHI members. Only the salaries of health care workers are subsidised by the government; all other costs incurred by CBHI members are expected to be covered by the household premiums. Ninety percent of the amount collected through premiums is paid to the contracting hospitals regardless of actual use by beneficiaries, and the

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[32] Risk-pooling is at the district level but CBHI is not always rolled out across all villages in a district because some villages are too remote or do not have good access to the hospital.

remaining 10 percent covers administrative costs. In Vientiane Capital, this capitation payment amounted to between LAK 40,000 to 45,000 (US$4.70 - $5.30) per insured person per year in 2009 (Ron July 2010). The capitation is arbitrarily split between the district and the referral hospitals, according to need. However, in the absence of additional subsidies or higher premiums, the capitation payments are insufficient to cover the cost of services. As a result, several central hospitals in Vientiane Capital have refused to contract with the CBHI scheme (Ron July 2010). In contrast, providers depend on revenues paid through user fees and revolving drug funds to cover recurrent costs of facilities (Ron *et al.* 2010).

In addition to the problems of low coverage and insufficient funding, high drop-out rates from CBHI (estimated at 6 percent (WHO 2009)) and late payments have been reported. For example, in 2009 an average of 54 percent of members made their payments during the three month warning period that is imposed after payment is due (WHO 2009). A recent study describes various management challenges of the scheme, including insufficient staffing, insufficient technical capacities and scarce financial resources at all levels (Goursat 2010). Anecdotal evidence also claims that the scheme suffers from adverse selection — a phenomenon that is explored in this thesis.

3.3.2 Overview of SHI scheme

In Lao PDR, social health insurance is part of a larger social security programme and covers employees in the private formal sector (including previously state-owned enterprises) and their dependents. The social security scheme consists of a comprehensive package of health care and other benefits, including medical care, paid sick leave, paid maternity leave, death benefits, employment injury or occupational disease benefits, retirement pensions, life insurance, and disability insurance. Upon enrolment in social security, a firm is automatically enrolled in all social security benefits and therefore, enrolment in social health insurance (the focus of this study) is linked to enrolment in the other benefit packages by design. Introduced in 1999, the scheme is managed by the Social Security Organization (SSO), a semi-autonomous organisation within the Ministry of Labour and Social Welfare. Funding for the scheme is generated from a combination of employee and employer contributions, which are dependent on employees' earnings and are paid through payroll taxes. Employees contribute 4.5 percent of their earnings, while employers contribute 5 percent of each

employee's earnings, up to a ceiling of US $175 per month. Enrolment in the scheme is mandatory for all enterprises with at least 10 employees. However, the scheme is currently only operating in four provinces (Vientiane Capital, Vientiane Province, Savannakhet and Khammoune). Within the group of firms that were targeted by 2009, only 30 percent were enrolled.[33] With rapid expansion of the labour force, and various amendments to the labour law requiring smaller companies to enrol in social security, plans are underway to expand the scheme in order to reach people outside major urban centres but implementation has so far been slow. More details of the scheme are provided in Table 3.4 above.

The health care fund (referred to as SHI) receives the largest share of employee and employer funds and is also subsidised by the government to finance outpatient and inpatient care, and prescription drugs available at public hospitals. There are no co-payments or limits on the number of contacts or services provided. Public providers are paid by capitation, which is fixed at LAK 80,000 (US$ 9.40) per insured person per year (Thomé and Pholsena 2009).

The SSO depends on its public relations department to stimulate enrolment among its target population. The public relations team makes announcements through the radio and daily newspapers, and also convenes meetings on an ad hoc basis with large companies (100 employees+) to raise awareness about the scheme and encourage enrolment. However, the public relations department was staffed by only five people in 2009 and lacks the financial resources and capacity to effectively stimulate enrolment among the target population (Personal communication with Social Security Office December 17, 2008).

Social security legislation and enforcement

According to the SSO Decree 207, enrolment in social security is mandatory for all enterprises with at least 10 employees (Social Security Organization 1999). However, the decree is difficult to enforce for two main reasons. First, Decree 207 is a ministerial decree, and therefore by nature, weaker than a law promulgated by the President. Second, no regulatory procedures are in place to enact penalties for non-compliant firms.

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[33]Calculation by the author, based on Social Security Database, 2009

Although an inspection unit at SSO was introduced in 2008 with a mandate of identifying non-compliant enterprises, at the present time only verbal warnings can be issued. Furthermore, the SSO office is understaffed and has very little capacity to carry out inspections: like the public relations department, the inspection unit was staffed by only five people in 2009.

In an effort to strengthen the regulatory framework around social security, the SSO is planning to 1) draft guidelines for inspections and sanctions for non-compliant companies; and 2) work with other line ministries to promulgate a law specific to social security. The new law will mandate enrolment of all enterprises *with at least one employee* (Personal communication with Social Security Office December 17, 2008). Although the Labour Law (2006) mandates that *"all labour units must participate in...social security"*, the language is vague in that it does not specifically define the term "labour unit" or the minimum number of employees that constitute a "unit"(2006). The implications of this vague description of the target group are discussed in Chapter 7 on SHI enrolment.

In summary, low enrolment in social security can be attributed, at least in part, to the small size of the formal sector, limited geographic reach of the scheme (4 provinces only), lack of enforcement and weak regulatory structure, and limited capacity of the SSO to attract new members through scheme promotion. Thus, social security effectively functions as a voluntary scheme. Therefore, understanding the factors that influence enrolment, as well as employers' perspectives on social security, will help to inform strategies to expand and improve the scheme.

This chapter has given an overview of the study setting and has described the insurance schemes that will be studied in the thesis. The following chapter will present the methodology; subsequent chapters will present the results from three sub-studies; and a final chapter will discuss the policy implications of the findings.

Chapter 4. Methods

4.1 Introduction

Building upon the literature review in Chapter 2 and the health financing context described in Chapter 3, this chapter describes and justifies the choice of the research methods. The chapter first presents the aim of the study and revisits the objectives that were defined in Chapter 1. Next, the conceptual framework that was developed to guide the methodology is presented. The methodology for the overall study is then described, followed by individual descriptions of the CBHI and SHI sub-study methods. With the description of each sub-study, potential limitations of the overall design and sources of bias are discussed. The methods presented in this chapter cover all aspects of the study approach, with the exception of the analytical approach, which is included in each of the three results chapters. Discussion of the policy implications of the findings is reserved for the concluding chapter of the thesis.

4.2 Research aim and objectives

Aim

The aim of the thesis is to generate new knowledge about the factors affecting enrolment in health insurance and the impacts of insurance on utilisation and financial protection, thereby contributing to the ongoing dialogue regarding options for expanding health insurance in Laos and other countries.

Objectives

The specific objectives of the thesis are as follows:

1. To explore the household and village-level determinants and barriers related to enrolment in CBHI in Lao PDR;

2. To measure the extent to which enrolment in CBHI facilitates access to health care services and offers financial protection to insured individuals by using a robust methodological approach;

3. To explore the firm-level determinants and barriers related to enrolment in social health insurance;

4. To identify the opportunities and challenges of expanding health insurance to the informal and formal sectors in Laos and internationally.

4.3 Conceptual framework

The conceptual framework shown in Figure 4.1 integrates economic theory and evidence from the empirical literature into a model of health-seeking behaviour. Economic theory suggests that the demand for health care is derived from the demand for health. As illustrated in the bottom left of the framework, individuals invest in health through use of health services as well as through diet, exercise and other investments that are expected to improve health. Similarly, firms invest in their employees (by offering benefits such as health care that improve their well-being) as a way of increasing productivity among employees and maximizing profit.

The top left of the framework illustrates how the demand for CBHI is shaped by factors at the individual, household and village levels. These factors might include education, exposure to CBHI, and certain elements of scheme design such as terms for premium payment. Similarly, the demand for SHI is shaped by determinants at the firm level, such as firm size, education of the company head, and wage levels. Given that health care is considered to be a normal good (with a positive income elasticity of demand), households or firms with higher revenues are expected to be more likely to enrol in insurance. The expectations about the relationship between size of firm and enrolment in social security are less clear, however. On one hand, larger firms are more likely to have a lower variance of medical expenditure and are therefore less likely to need insurance to smooth expenditure. On the other hand, larger firms have higher revenues and therefore should be more likely to be able to afford, and enrol in, social security. This trend of larger firms enrolling was expected by key informants who were interviewed prior to the study. However, after controlling for revenues it seems more likely that *smaller* firms would be more likely to enrol in SHI, as these firms have more to lose from a few serious illnesses in a given year.

The demand for health insurance (whether at the individual, household or firm level) is also influenced by the *need* for health care services. Individuals (or households or firms) often have a better understanding of their need for health care than do insurers and this need influences their likelihood of enrolling. This information asymmetry contributes to

a distortion in the market for health insurance (due to adverse selection). Thus, households with ill family members are expected to be more likely to purchase health insurance, as doing so allows them to reduce uncertainty due to illness. In contrast, households that are relatively healthy will be less likely to purchase health insurance. At the firm level, adverse selection can come about if firms with greater exposure to occupational risks are more likely to enrol in health insurance. Moreover, when mandatory enrolment is not enforced within firms and healthy individuals are permitted to opt-out of social security, adverse selection can result and can lead to poor risk-pooling.

Expected utility theory assumes that the demand for health insurance is also influenced by the desire to reduce uncertainty and that the demand for health insurance should be particularly high for risk averse households. Enrolment in CBHI decreases uncertainty of health expenditures, which leads to increased utility. Thus, risk-averse households should be more likely to enrol in health insurance relative to more risk-tolerant households.

While individuals and households seek to maximise utility, firms seek to maximise profits. Incentives for maximizing profits will therefore differ depending on the health care financing arrangements of a firm. In Laos, firms are required by the Labour Law to pay for health care for their employees directly. For such firms, insurance can help to either minimise costs that they would otherwise incur in the face of unexpected illness. This allows them to maximize profits. Given the profit-maximizing behaviour of firms, firms in which employees have a greater occupational risk (e.g. higher number of injuries, higher rates of illness, etc.) will be more likely to purchase health insurance than firms that perceive themselves to be "low risk".

Despite the wide acceptance of expected utility theory, it is important to note that "reduced risk" is not necessarily attained by purchasing insurance: in some contexts, enrolment in insurance may actually *increase* risk, especially when insurance is a relatively new concept and when it is not clear that the expected pay-offs will outweigh the costs of enrolling. For example, in an environment where quality of care is poor (e.g., the public health care system in Laos), individuals, households, and firms may perceive the option to purchase insurance as more costly or risky than using care at the time it is needed at alternative sites (e.g., private sector).

Figure 4.1 Conceptual framework of the determinants and impacts of enrolment in health insurance
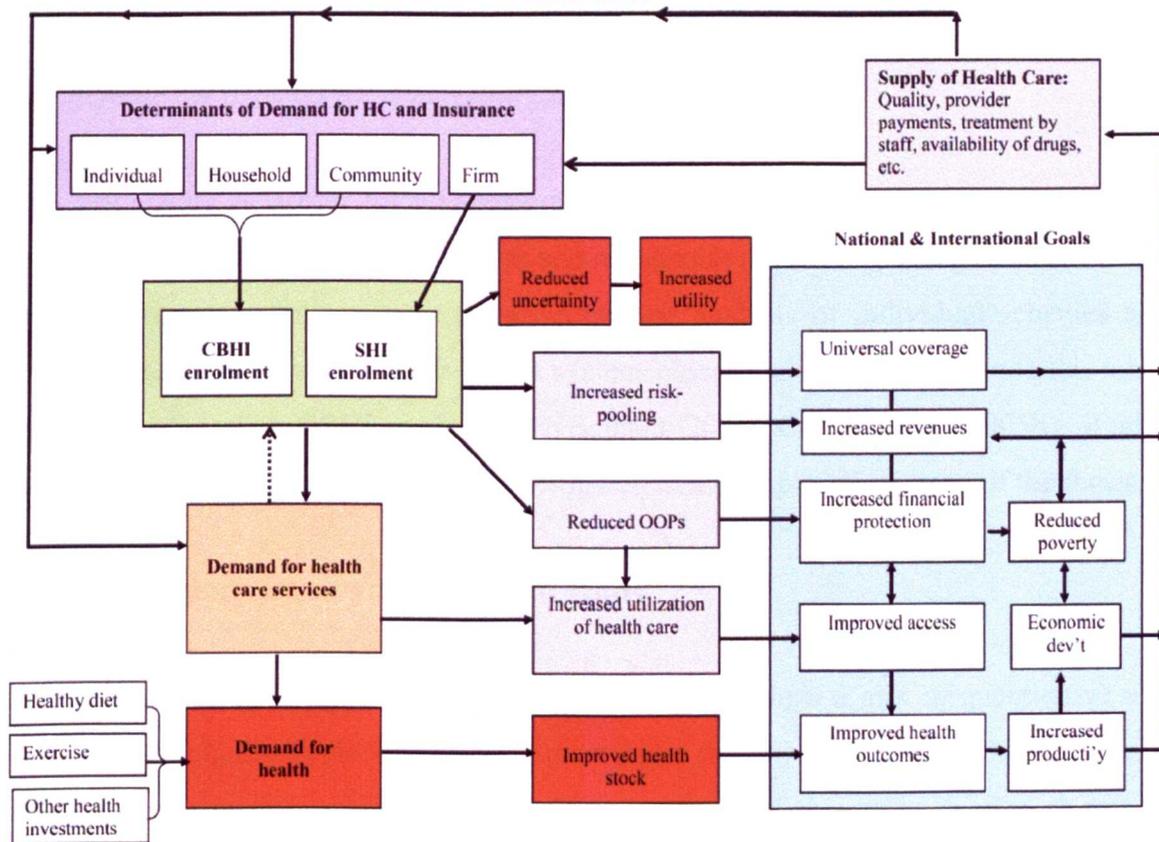
Once enrolled, insurance is expected to increase the demand for health care by lowering the price of care at the point of service delivery. The lower price for the insured represents a downwards movement along the demand curve, which results in insured individuals demanding more services. Thus, insurance can lead to an increase in use of services. Given that CBHI and SHI in Laos both provide full coverage for outpatient and inpatient services, with no copayments, it is expected that among those who use services, the insured will incur lower out-of-pocket expenditures than the uninsured. Insurance also increases risk-pooling across individuals and across time. Consequently, health insurance is expected to serve as a vehicle for achieving national and international goals, i.e., universal coverage; increased revenues to the health sector; improved access to health care services; increased financial protection; improved health; and ultimately, poverty reduction and economic development. (Improved health leads to increased productivity, which leads to economic development and reduced poverty). Furthermore, increased revenues generated from health insurance can translate into increased investments in the health sector (assuming the political will to invest in health care is

present), thereby improving the supply of health care (top right of framework). Supply-side factors in both the health care system (e.g., quality) and within the scheme (e.g., management of insurance schemes) influence the demand for health care among households and firms: at a given price, improved quality, trust and promotion of schemes can increase the demand for health care (and health insurance).

This framework is useful for understanding the role that health insurance can play in helping a country to achieve both health and non-health objectives. Using this framework to guide the methodology helps to move beyond analysis of individual schemes and explore interactions with broader health system objectives — a recommendation made by critics of earlier CBHI evaluations (Bennett 2004; Carrin *et al.* 2005b). It also suggests a series of hypotheses to be investigated in the empirical sections of the thesis.

4.4 Methodology for overall research study

This research study comprises three sub-studies and employs a mix of quantitative and qualitative methods. Table 4.1, below, summarises the objective and methods for each sub-study. A timeline, which includes all components of the study, is also shown in Figure 4.2.

Table 4.1 Summary of objectives and methods for sub-studies

Sub-study	Objectives	Primary Methods (Secondary methods used for background research)	Results Chapter
1	#1. Enrolment in CBHI	(Key informant interviews with CBHI and hospital staff; exploratory focus group discussions); household and village surveys; focus group discussions	5
2	#2. Impact of CBHI	Household survey, with data collected for all individuals; village survey; focus group discussions	6
3	#3. Enrolment in SHI	Firm survey; (review of legislation and documents; key informant interviews; secondary data analysis of Lao Economic Census; Excel projections of coverage expansion scenarios)	7
1,2 & 3	#4.Opportunities/challenges of expanding health insurance	Analysis of results from sub-studies 1, 2 & 3 (Document reviews; discussions)	8

Figure 4.2 Study timeline

	2008								2009								Sept. 2009 – Apr 2010	2010									2011				
Overall study	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A		A	M	J	J	A	S	O	N	D	J	F	M	A	M
Information gathering phase	▓	▓															Interruption														
Development of research protocol			▓	▓	▓												of studies														
CBHI sub-studies																	(maternity														
Design questionnaires					▓	▓				▓							leave)														
Training and pilot-testing for survey											▓																				
Data collection, entry and cleaning												▓	▓																		
Preliminary data analysis for survey													▓																		
Design FGD guide																															
Training and pilot-testing for FGDs																															
Data collection and transcription																															
Analysis of surveys														▓	▓				▓	▓	▓	▓	▓	▓	▓						
Analysis of FGDs																				▓		▓	▓	▓							
SHI sub-study																															
Design firm questionnaire												▓	▓																		
Training and pilot-testing																															
Data collection, entry and cleaning													▓	▓	▓																
Analysis of firm survey															▓																
Writing (all sub-studies)																															
Preparation of research reports, policy notes, publications & thesis														▓	▓				▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	
Thesis submission and viva																														▓	

4.4.1 Development of the research objectives

The CBHI study[34] was part of an ongoing effort by the World Bank to strengthen the evidence base for health financing decision-making in Lao PDR and to help the government develop a long term vision for health financing reform. I became involved in the World Bank project in May 2008, with the specific objective of designing and carrying out a study on health financing that would serve as my PhD research, and would also be part of the World Bank's health financing programme in Laos. As principal investigator, I took primary responsibility for all aspects of the study. Prior to my involvement in this study, discussions were held between the World Bank, WHO and the MOH regarding the need for a study on CBHI, and funding from the World Bank had been provisionally approved. My task was to hold discussions with the staff in the CBHI office (health insurance division), World Bank, WHO and other partners, and to identify research questions that were both relevant to the Government of Laos and would make an important contribution to the health financing literature. I therefore reviewed all

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[34] Although there are two CBHI sub-studies (one examines enrolment and the other examines impacts), the same design was used for both sub-studies and therefore the "CBHI study" refers to the overall study.

documents related to the CBHI programme (including draft decrees, reports, and studies), attended health financing meetings, and visited with other researchers in Laos to solicit feedback on logistical and cultural challenges of conducting fieldwork in the country. This "information gathering phase" allowed me to become familiar with the health financing context and to identify the research and policy priorities of the government and its partners. This process also prevented duplication of efforts and ensured that policymakers, donors, researchers, and other users of the information were consulted during the research design phase.

During the information gathering process, discussions revealed that there was a gap in knowledge about the social security scheme and that it would be helpful to learn more about the challenges of expanding coverage of social health insurance to the formal private sector. Therefore, a separate proposal for funding from the World Bank was developed and was subsequently approved. Thus, in addition to designing a study that fills gaps in the international literature, this research was intended to inform health policy in Laos. The study answers a direct call from the Lao Minister of Health for high quality research studies to guide health policy decision-making on risk-protection schemes.[35]

4.4.2 Roles and responsibilities

It is important to recognise that there was substantial overlap between my PhD study and the work that I conducted for the World Bank. I also carried out additional work for the World Bank that is not presented here. Throughout the study period, I received guidance from my supervisor at the World Bank, Magnus Lindelow. This support was instrumental in helping me think through the study designs, designing the questionnaires, and directing me to key stakeholders who I consulted during the process (e.g., government stakeholders, international experts, etc.). Magnus also provided guidance with the analytical approach and provided feedback on policy notes that were developed based on the study findings. However, throughout the process I was given the freedom to work independently to ensure that I would meet the requirements for the PhD.

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[35] In a health financing meeting in Vientiane in June 2008, several government ministries, international organisations and implementing agencies discussed the need to overcome barriers to expansion of risk-protection schemes. The Minister of Health, in his keynote address, emphasised the need for high quality research studies to guide health policy decision-making on this topic.

Under my supervision and with funding from the World Bank, Indochina Research Laos (IRL), a local research firm, was hired through a competitive process to carry out the data collection, data entry, and preliminary cleaning for all components of the study. IRL has extensive experience with the methods applied in this study (household surveys, focus group discussions (FGDs), and enterprise surveys), and is skilled at all aspects of survey implementation.

IRL assigned three teams to carry out the various components of the studies. The first research team was tasked with implementing a CBHI survey[36] and included 32 staff members: 24 data collectors; 6 data collection supervisors; one senior field supervisor and an operations manager. The second team carried out FGDs and included one local moderator with extensive experience conducting FGDs in the context of health and development projects in Laos, one note taker, and one field supervisor. The third team was assigned to a firm survey (for the SHI study) and included six data collectors, one field supervisor, and an operations manager. In collaboration with the field supervisors for the CBHI and SHI studies I co-led the training and pilot testing for all three study components. I supervised all the training and pilot-testing (7 weeks in total), as well as the first two weeks of the CBHI survey and the first week of the SHI firm survey. I was present for the exploratory FGDs and FGD pilot tests but did not attend the final round of FGDs, due to the risk of introducing bias. During the rest of the data collection period, I communicated with the project director and field supervisors on a weekly basis at a minimum, although often correspondence occurred daily over email and Skype.

With my training and supervision, IRL was responsible for data entry for all surveys, translation of all open-ended responses in the firm survey, and transcription and translation of the CBHI FGDs. Further details of these procedures are discussed in forthcoming sections of this chapter.

4.4.3 Ethical approval

The study meets international ethical standards and posed little risk to participants. Formal approval of the study was granted by the ethics committees at the National Institute of Public Health in Laos and the London School of Hygiene and Tropical

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[36] The CBHI survey includes both a household and village survey.

Medicine (LSHTM) (See approval notices in Appendix A1). Formal procedures were required before data collection could begin and these are described, along with a description of the consent process, under each component of the study.

4.5 Methodology for CBHI studies

The CBHI study includes two sub-studies: the first on enrolment in CBHI and the second on the impacts of CBHI on access to services and financial protection. However, one design was used for both sub-studies and is therefore described as the "CBHI study design".

4.5.1 CBHI research questions

To achieve the study objectives, the research questions in Table 4.2 were defined. Specific hypotheses that were tested are included in the respective results chapters.

Table 4.2 Research questions and study objectives for CBHI sub-studies

Research Questions	Study Objectives
• What is the typical profile of households that enrol/ do not enrol in CBHI? • What is the relative importance of factors driving households' enrolment in CBHI (e.g., health status, risk preferences, socioeconomic status, education levels, exposure to CBHI, etc.)? • How do enrolment levels differ across villages and what are the reasons for these differences?	Objective 1. To explore the household and village-level determinants and barriers related to enrolment in CBHI.
• Are CBHI members more likely to use health care services than an equivalent comparison group of uninsured individuals? • Does CBHI membership influence the source of health care delivery among those using services? • Do insured users of health care incur lower out-of-pocket payments for health care than uninsured users? • Are CBHI members with an inpatient visit less likely than uninsured users of inpatient services to employ coping strategies (e.g., borrowing, selling assets) to pay for health care? • How do outcomes (e.g., utilisation, out-of-pocket expenditures) differ across socioeconomic groups?	Objective 2. To measure the extent to which enrolment in CBHI facilitates access to health care services and offers financial protection to households.
• What are the prospects for increasing coverage of CBHI? • How can Lao PDR progress towards universal coverage given the current health financing arrangements?	Objective 4. To identify the opportunities and challenges of expanding health insurance in Laos

4.5.2 Overview of the study design

The CBHI study used a mix of quantitative and qualitative methods. The main method was a cross-sectional case-comparison survey, combined with a qualitative component (both prior to and following the household survey). The *ex-ante* qualitative work consisted of key informant interviews and exploratory focus group discussions and was used to understand better how CBHI had been implemented and which factors were expected to affect selection into the scheme, thereby informing the study design. Surveys were administered to households and villages: the household survey also collected information about all individuals living in the household (using a proxy respondent). Survey data were analysed in Stata 10.1 using propensity score matching, which controls for bias due to observable differences. The *ex-post* qualitative component consisted of six focus group discussions and was used to help interpret quantitative findings.

4.5.3 Justification of study design

Although randomised control trials (RCTs) have traditionally been viewed as the gold-standard for evaluations, there is growing evidence that non-randomised designs may be more appropriate for evaluating complex public health interventions (Black 1996; Victora *et al.* 2004) and that more attention need be paid to understanding *why* interventions work, rather than *whether or not* they work (Craig *et al.* 2008; Deaton 2010). The combination of quantitative and qualitative methods used in this study facilitates this understanding. In designing this study, a RCT was not considered feasible in Laos for several reasons. First of all, it is very rare that health insurance is assigned randomly — one exception is the RAND Health Insurance study in the US (Newhouse and Insurance Experiment Group 1993). Given that CBHI is a voluntary insurance programme, random allocation into the insurance scheme itself would not have been possible. Theoretically, it could have been possible to offer the programme to villages using clustered randomisation, but there were two issues that made this option suboptimal. First, given the low uptake levels of CBHI in Laos, the number of enrolees would have been uncertain. Moreover, members can drop-out of the scheme on a monthly basis, posing a risk of high attrition rates. A second argument against a RCT is that a considerable amount of time would be required between the point at which CBHI was launched and the measurement of outcomes. One year between recruitment and measurement of outcomes was considered the minimum amount of time that would be

needed to reliably examine differences on relatively rare outcomes such as inpatient visits. During this period of at least one year, contamination caused by overlapping and poorly coordinated donor activities was highly likely. Between 2005 and 2008, 21 different donors were operating in Laos, with 71 separate projects implemented in the health sector alone (MOH and WHO 2010). Thus, the risk of contamination of either control or intervention areas during the study period would be unforeseeable and much more difficult to prevent than in a cross-sectional study and would likely impact on the outcomes of interest. Moreover, waiting one year between the launch of additional CBHI pilots and measurement of outcomes would not allow the findings to be fed into the government's health financing strategic planning process.

Although the next best approach to a RCT was a longitudinal prospective study that compared a group of CBHI households with uninsured households, this approach was not considered feasible for the same reasons that a RCT was not considered feasible: the likelihood of high attrition rates; risk of contamination; and the need to generate timely research findings. Another factor that significantly weakened the case for a RCT or a longitudinal prospective design was the uncertain donor support for CBHI in the future. At the time the study was designed it was known that WHO would be terminating its support to the CBHI office and that AFD would be taking over in only some of the WHO districts. Termination of support during the study period could affect study outcomes and bias results.

After ruling out both a RCT and a longitudinal prospective design, the next best approach was a case-comparison design (with a sample selected from districts where insurance had been operating for at least two years), combined with a qualitative component. This design was expected to overcome the problems mentioned above. For example, to prevent contamination it was possible to confirm with the MOH and other donors whether particular programmes were operating in the study areas (e.g., health equity funds supporting CBHI, NGO support for health care or CBHI premiums, etc.) and exclude these areas from the sample. A cross-sectional study also eliminated the potential for attrition or potential loss of donor support during the study period. Moreover, the desired sample size of eligible households (i.e., those who had been enrolled for one year) could be ensured prior to data collection. A final advantage of a

cross-sectional design is that it allowed results to be generated relatively quickly, thereby feeding into the health financing strategic planning process that began in Laos in 2009.

Despite the advantages of using a cross-sectional study, there were some concerns that needed to be addressed — the main one being that a cross-sectional design does not allow for control of time-invariant unobservables (as well as other types of unobservables) and could lead to bias in the estimation of treatment effects. Given the voluntary nature of CBHI, it is likely that households who choose to enrol in CBHI are inherently different from households who choose not to enrol. Households may enrol due to a greater *need* for health services, and because they anticipate benefits from the scheme. This need for health services produces selection into insurance and if not observed, can lead to bias when measuring outcomes of interest. Therefore, an attempt was made in this study to minimise selection bias by: 1) making an effort in the design phase to understand both the implementation of the programme and the most important factors affecting household selection into the scheme, thereby allowing these factors to be measured in the survey and controlled for in the analysis; 2) relying on a rich-dataset of variables collected using primary data, which allowed for careful measurement of factors that often result in selection bias due to unobserved heterogeneity (e.g., multiple measures of health status, preferences for different types of care, risk preferences, etc.); and 3) using propensity score matching (PSM) in the analysis, which minimises bias due to observable characteristics and allows for heterogeneity in treatment effects. Although other approaches for the analysis were carefully considered, the decision to use PSM was based on the assumption that selection into the programme was based on observable variables. This assumption could be made only after a thorough understanding of the programme and of the factors most likely to influence enrolment. The justification for using PSM is discussed in more detail in Chapter 6.

In summary, there was a strong rationale for choosing a cross-sectional survey with a qualitative component. Several techniques were used to overcome problems that have traditionally been associated with cross-sectional studies, such as the failure to adequately control for risk and health variables, which can lead to selection bias. The *ex ante* and *ex post* qualitative work also added value to the overall design in that it informed the questionnaire and facilitated interpretation of the quantitative findings.

Further details of the design, and the rationale for the design, are discussed in Section 4.5.5.1 (*Design of CBHI survey*).

4.5.4 Pre-survey work

As mentioned above, before designing the methodology for the household survey it was important to fully understand the CBHI scheme, its implementation, and the most important factors affecting selection into CBHI. Therefore, over the course of a few weeks, I conducted several key informant interviews with staff from the CBHI office and hospitals where the scheme is operating to learn more about the programme and its implementation. The interviews with staff at the CBHI office were conducted in English, and interviews with the hospitals were conducted in the Lao language, with the assistance of a translator. The deputy director of the CBHI office accompanied me during visits to the hospital, during which time we met with the account managers[37] for the CBHI scheme and learned about the process that a CBHI member goes through when seeking care at the hospital. We also examined the account manager's records to see how the hospital identifies whether a household is enrolled in CBHI and whether they are up to date on their contribution payments. A considerable amount of time was also spent mapping the locations of the districts and villages where CBHI had been implemented and the corresponding dates when CBHI was launched, and identifying the criteria for implementation in those areas. These discussions revealed that the CBHI scheme had not been implemented randomly, as discussed in Chapter 3. These details of implementation informed the study design and will be discussed in the next section *(Section 4.5.5.1, Design of CBHI Survey)*.

Following the key informant interviews, two exploratory focus group discussions (FGDs) were held. The purpose of these discussions was to 1) identify the most important household-level factors affecting selection into the scheme; 2) identify or validate the meanings of various concepts that would be used in the questionnaires (e.g., risk, trust); and 3) explore the extent to which participants would be willing to share experiences and speak openly and honestly about their feelings towards CBHI. Both

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[37] The account manager at the district hospital is hired by the CBHI office (MOH) and is responsible for collecting contributions from the village collectors and keeping up-to-date records regarding which households are enrolled and have made monthly payments. The account manager also keeps all CBHI member books, in which all visits made by the CBHI members are recorded. All records, with the exception of one hospital, were paper-based at the time of the study.

FGDs took place in Ban Xokkham, Saysettha District[38] in Vientiane Capital and were moderated by the director of Indochina Research. All discussions took place in the Lao language. I observed and listened to all discussions with the assistance of a translator. The discussions revealed that participants were willing to share experiences and even criticise the scheme and the government health care system. This was unexpected given that previous research had reported cultural constraints to obtaining accurate information through FGDs and interviews (due to "politeness bias") (Jacobs 2008; Patcharanarumol 2008). It seems that in urban and semi-urban areas, where this study was conducted, people are very willing to speak openly while in rural areas (the location of the previous studies), people may be more reserved.

4.5.5 Design and implementation of CBHI survey

The details of the CBHI survey are described under three main sub-headings: design; implementation; and preparation for analysis.

4.5.5.1 Design of CBHI Survey

Study design

CBHI and comparison households were both selected from villages where CBHI had been running for at least two years. (This design is herein referred to as the *"within village comparison"* design). A great deal of time was spent considering the trade-offs between the *within-village comparison* design and an alternative design in which the comparison group would be selected from non-CBHI villages (herein referred to as the *"across-village comparison"* design). The *within-village comparison* design was optimal for the enrolment sub-study because it allows exploration of the reasons that some people in a given village join health insurance while others do not join. However, it was not immediately clear which option was optimal for measuring impacts. The *across-village comparison* design would result in a comparison group that has not been given the option to enrol, which would reduce the risk of household selection bias. In contrast, the *within-village comparison* group would be selected from a group that has explicitly declined enrolment in CBHI, increasing the risk of household-level selection bias. Although the

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[38] The reason for choosing Xaysettha district for pre-piloting and piloting are described under "pilot testing".

across-village comparison design initially seemed the most attractive option, closer examination of programme implementation revealed that this design could lead to significant village-level selection bias, which was expected to pose a bigger problem than household level selection bias in this context. This is because CBHI has not been rolled out randomly, as revealed by the exploratory work. In most districts CBHI has only been offered to villages within close proximity to the contracting hospital. In fact, in some districts, the villages that are not targeted are not accessible by road. In other districts, CBHI has been offered to all villages, making it difficult to find an "unexposed" comparison group within the district. Through discussions with the CBHI team, it was confirmed that many of the non-targeted villages were expected to be very different from the targeted villages not just in terms of distance to facilities and access, but also with respect to socioeconomic status, ethnicity, and other village-level factors that may not easily be observed. Given that CBHI had been implemented using a very selective approach, the *across-village comparison* design would introduce strong village level effects that are likely to contribute to selection bias due to unobservables. The exploratory work revealed that these village effects are likely to be stronger than household-level effects in determining enrolment. *The across-village comparison* design was also expected to lead to poor balancing on *observable* characteristics (because the CBHI and comparison villages are very different on measurable characteristics). As discussed in the literature review and in the forthcoming impact evaluation (Chapter 6) poor balancing on observables is a problem when using PSM because it reduces the number of observations on the common support and, if groups are very different, could lead to a small sample with which to measure impacts.[39]

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[39] Considering trade-offs between selecting a comparison group from exposed villages vs. unexposed villages is not a decision that is unique to this study. A previous study (Wagstaff *et al.* 2009) considered these issues when designing an evaluation of the NCMS in China and that study was useful in informing this design. The China study benefitted from using a survey that had already been conducted in counties with and without insurance and the authors were therefore able to select the comparison group from both targeted and untargeted villages and compare the results. The authors later decided that unobservables affecting selection into insurance at the household level were potentially more problematic than at the village level and therefore selected the comparison group from untargeted villages. Since this study was designed, at least two other studies have considered the issue of whether to select the comparison group from unexposed areas or from non-participants in targeted areas and both have had the luxury of sampling from both groups, and then made a decision to use the unexposed comparison group to estimate treatment effects (Wang *et al.* 2009; Aggarwal 2010). However, implementation of the scheme in Laos was very different from implementation of CBHI in the other countries, the major factor being that districts and villages where CBHI had been implemented were very different from non-exposed areas.

While the *within-village comparison* design increases the likelihood of household level selection bias, the pre-survey work provided a good understanding of the factors affecting enrolment. It was therefore possible to include in the questionnaire, all known potential factors affecting enrolment including several measures of health status and risk, which were used to control for adverse selection. Availability of different health care options and proxies for preferences for modern health care were also measured through the survey (See *Data collection* below for more details). Thus, given the strong knowledge of the programme and rich dataset that would be generated through the questionnaires, the *within-village comparison* design was considered optimal as it was expected to result in less bias and better balancing on observables. Furthermore, this design could be used to study both enrolment and impacts (on utilisation, out-of-pocket expenditures, source of care and coping mechanisms).

Sampling

A sample of 3000 households (14,804 individuals) was selected from 87 villages where CBHI had been operating for at least two years. The enrolment rate in these villages was 15.7 percent, with a median enrolment rate of 12.2 percent. The sample covered a total of six districts in three provinces, and was drawn from urban and semi-urban areas, reflecting the areas where CBHI has been implemented to date. For every CBHI household recruited to the sample, two comparison households were selected (from the same village): the reason for this ratio was to ensure that an adequate pool of comparison households would be available for matching in the impact evaluation. Thus, the sample included 1000 CBHI households and 2000 comparison households. This size was informed by sample size calculations, which are outlined later in this section. The CBHI households in the sample comprise 30 percent of the CBHI households across the six districts. The sample was selected using a 3-step sampling approach, described below.[40]

1. *Purposive selection of districts:* Six districts were purposively selected: Sissattanak; Hatxaifong; Champasak; Keoudom; Viengkham; and Phonehong. The selection criterion was that CBHI was launched in the district at least two years prior to the survey. Seven out of the 10 districts where the scheme was operating met this

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[40] I selected the districts and villages in the sample and trained the data collection team to randomly select the households in the village.

criterion; the seventh district was excluded due to the likelihood of contamination of the comparison group, due to multiple donor projects taking place in that area, and the cost constraints of conducting field work in a district that was relatively far away. Figure 4.3 shows a map of the districts, with corresponding CBHI coverage rates.

2. *Selection of clusters (villages) using probability proportional to size (PPS):* A two-stage cluster sample was selected using probability proportional to the *number of CBHI households* in each village. This ensured that all CBHI households across all eligible villages had an equal chance of being selected. Some large villages were selected multiple times (i.e., because of their larger size they had a higher probability of being selected more than once).[41]

3. *Random selection of households:* Within each cluster, 8 CBHI and 16 comparison households were randomly selected. Where villages were selected more than once, multiples of 8 CBHI and 16 comparison households were randomly selected. A CBHI household was eligible for the study if it had been enrolled for at least one year.[42] Comparison households were eligible as long as they were not members of another scheme or had not been enrolled in another scheme for at least one year.[43] The sampling frame used to select CBHI households was the most recent CBHI member list that is maintained and updated monthly by the village collector. The comparison households were selected from the village registry, which includes all households in the village and is updated annually.

Each step of the sampling is outlined in further detail in Appendix B1 and forms designed to assist the research team in the sampling process are included in Appendix B2. These forms were also used to collect up-to-date details about the size of CBHI and

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[41] To determine the size of the CBHI population in each village prior to the sampling, the CBHI office in the MOH sent personnel to update information at the village level and to compile a list of all CBHI villages and their respective numbers of CBHI members enrolled. This information is not routinely collected by the CBHI office, but was collected specifically for this study.

[42] It is important to distinguish the two year requirement for villages from the one year requirement for households. The two year requirement for villages ensured that the sample was selected from villages where the scheme was well established and where there would be a high likelihood of recruiting households that had been enrolled for at least one year.

[43] In the final sample, 199 comparison households (10 percent of the comparison group) were former members of the scheme but had dropped out more than one year before the survey.

comparison populations to be used for sample weighting.[44] The median eligibility rate for CBHI households (i.e., # of households that had been enrolled for one year/ # of all CBHI households) was 94 percent. This high eligibility rate indicates that the eligible households are representative of the total sample of CBHI households in the villages where the sample was drawn.

Figure 4.3 Location and coverage rates of CBHI study districts

Keoudom district (semi-urban)
- 722 households enrolled
- 21% enrolment rate in villages
- 31/31 villages with CBHI

Viengkham district (urban)
- 614 households enrolled
- 9% enrolment rate in villages
- 19/19 villages with CBHI

Sissattanak district (urban)
- 603 households enrolled
- 8% enrolment rate in villages
- 40/40 villages with CBHI

Phonehong dist. (semi-urban)
- 467 households enrolled
- 15% enrolment rate in villages
- 24/59 villages with CBHI

Hatxaifong district (urban)
- 252 households enrolled
- 4% enrolment rate in villages
- 24/60 villages with CBHI

Champasak district (semi-urban)
- 698 households enrolled
- 31% enrolment rate in villages
- 24/92 villages with CBHI

Prior to selecting the sample, sample size requirements were calculated separately for each outcome based on the expected differences between CBHI and comparison households on utilisation and OOPs (i.e., the effect size). Various scenarios were calculated using the *'sampsi'* command in Stata, and adjustments were then made in Excel to take into account the intracluster coefficient, illness and utilisation rates, and

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[44] I created sampling forms for the survey team so that they would have a systematic approach for selecting the sample. At the same time that the sampling took place, the team was asked to record the following information on the sampling sheet: the number of eligible CBHI households (i.e., those enrolled for at least one year); the total number of CBHI households; and the total number of non-CBHI households. The data from these sampling sheets were entered with the survey data and were used to construct the appropriate sampling weights.

potential loss of observations due to the use of PSM. Several assumptions needed to be made to calculate the sample size.[45] The assumptions for the calculation for out-of-pocket expenditures yielded the largest sample size requirement and are given below:

- *Effect size:* The effect size of 25 percent was used in the calculations, which means that the study attempted to detect a 25 percent difference in means between CBHI and comparison individuals with respect to their out-of-pocket expenditures. This difference is smaller than what other impact evaluations of health insurance in the region have detected (Wagstaff 2007; Wagstaff *et al.* 2009). Because the data on out-of-pocket expenditures are not normally distributed[46] the relative means between the two population groups were estimated using the natural log. For example, a 25 percent difference in means in a skewed distribution is equal to $\ln(1.25)=0.22$ regardless of the value of the means. Therefore, the means of the two populations are: m1=1; m2=1.78.

- *Intracluster correlation:* A value of 0.02 was used to estimate the intracluster correlation. The World Bank LSMS survey manual states that this value for most LSMS variables ranges from 0.01 to 0.10. Discussions with a statistician confirmed that 0.05 is considered to be quite large and that 0.02 is an appropriate estimate for health expenditures.

- *Standard deviation of the outcome (OOPs):* The standard deviation of OOPs was taken from a study in Vietnam (Wagstaff 2007), where health care costs are expected to be similar to Laos (m=$196.76; sd= 667.32). The log of the standard deviation was then used in the Stata calculation, given the skewed distribution of OOPs.

- Power = 90%; confidence level = 95%

- Potential loss of sample due to PSM: The use of PSM can substantially reduce the sample size if a large number of observations are off the common support and therefore, the sample size estimates were increased by another 10 percent to account for this potential loss.

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[45] These assumptions were made after personal communication with Ben Armstrong, a statistician at LSHTM. Other documents were also consulted to assist with sample size calculations: Data for Impact Evaluation (World Bank 2007); LSMS survey manual (Grosh and Munoz 1996); and Stata help files.
[46] The distribution of OOPs is not typically normal because of a high frequency of people not using health care. The tails of the distribution can also be long due to a small frequency of very high spenders.

The results showed that to detect a difference of 25 percent a total sample size of 1004 observations was required. However, utilisation of health care is quite rare (estimated at 1 in 5 individuals in a given year) in the general Lao population. Because OOPs are measured only on the sample of individuals who use health care, the required sample size of 1004 observations needed to be multiplied by five, giving a required sample size of 5020 observations. Thus, the actual sample size of 14,804 individuals[47] (from 3000 households) was considered sufficient to detect a difference of 25 percent. In fact, the actual sample is large enough to detect differences of 15 percent within a 99 percent confidence interval. Such a large sample, relative to sample size calculations was justified because it was not clear how many observations would be lost due to PSM. There was also interest in analysing data by subgroups (e.g., inpatient visits only; quintile analysis, etc.), which required a relatively large sample size. Given the large sample of individuals, a 99 percent confidence interval was used for the impact evaluation (which took place at the individual level), while a 95 percent confidence interval was used to study enrolment (which took place at the household level).

Description of Questionnaires

Questionnaires were designed to be administered to the head of household where possible and to collect information about household level characteristics, as well as information about all individuals living in the household. Although the interviewee answered questions on behalf of all household members, where possible, responses were validated by other household members who were present during the interview and in some cases modules were answered by different individuals (although some modules required that the household head responded).[48] A particular emphasis of the questionnaire was to capture self-selection into the scheme — most importantly adverse selection. As shown in the conceptual framework in Chapter 4, characteristics such as presence of chronic illness, disabilities, pregnancies, or even different attitudes and preferences for health care, have a direct effect on an individual's use of health services. Controlling for the differences in these risk and health factors gives a more reliable estimate of the effects of insurance on utilisation, expenditures, and other outcomes and

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[47] Out-of-pocket expenditures were measured at the individual level.
[48] The consumption module was answered by the individual who purchases food in the local market; the risk-perception module was answered by the head of the household to the extent that this was possible; questions about health care use and expenditures were often validated by other household members.

decreases the likelihood of selection bias. Because perceptions of "illness" and "poor health" differ across households, this study used multiple measures of health status to adequately capture factors affecting enrolment. Health status of all individuals in the household was measured using four indicators: self-reported health on a scale of 1 to 5[49]; the presence of a chronic disease or disability; whether or not the individual had difficulty performing activities in the past 3 months; and whether or not the individual's health had deteriorated in the past year. These variables reflect three different categories of health indicators that are typically used to measure health status: medical, functional, and subjective (Wagstaff *et al.* 1991). O'Donnell et al. (2008) recommend using multiple measures from these three categories because they can provide a better picture of the distribution of health in a sample population relative to using just one measure (O'Donnell *et al.* 2008).

Other types of risks were also measured in the questionnaire, including: age, presence of elderly family members and children five years or below; number of women in the household; number of births in the past year; and a pregnancy in the household. Given the various theories described in Chapter 2 about the uncertain role of risk-aversion as a determinant of enrolment in health insurance, a measure of risk-aversion was included in the questionnaire to understand better the relationship between risk-aversion and enrolment. The head of household's attitude towards risk was measured using an experimental gambling approach with hypothetical payoff levels which, at the maximum, represented slightly more than the average daily expenditure of an individual. This question was adapted from a study in India by (Binswanger 1980) and used by (Krishnan and Krutikova 2010).[50] In the analysis, the variable was dichotomised to differentiate those who were completely risk-averse from those who will take at least some risk.

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[49] Although this variable is referred to as "self-reported" health, the proxy respondent actually answered the question for all household members.

[50] To measure risk preferences the head of household was presented with a gamble in which he/she was asked to guess which hand contained money. The first option gave the same pay-out (5,000 Kip) regardless of the hand selected and was hence "risk-free" but in the next five bets, the stakes were gradually increased, with the last choice being an "all-or-nothing" risk. It was expected that only individuals who were risk-loving would take this "all-or-nothing" gamble, while only those who were completely risk-averse would accept the "risk-free" gamble.

Other variables in the household questionnaire measure preferences for modern health care, for example, ethnicity and attitudes towards government health facilities.[51] Laos is comprised of several ethnic groups, and it is expected that some of these ethnic groups have a preference for traditional care over modern care. Perceptions of quality of care at the household and village level were also measured, as quality perceptions are expected to influence enrolment. However, the household-level measure of quality perception is likely to be endogenous in that CBHI members may have more contact with the health system, which may influence their quality perceptions.[52] Therefore, in the impact evaluation only the village-level measure, which is expected to be less endogenous than the household-level measure, was used to control for selection into the scheme. The questionnaire also included sociodemographic characteristics, including an aggregate consumption measure, which compiled data on the types of food and non-food items that households purchased, produced themselves, or obtained through nonfinancial transactions. Forty-one food items and 28 non-food items were included in the survey. The recall period varied depending on the item but was either one, three, or twelve months.

For each individual in the household, data were collected about illness, whether or not an individual had an outpatient or inpatient visit, how many visits they had, how much they spent, the length of hospital stay, and the source of care. A separate module also collected data on coping mechanisms that the household may have used to pay for health care.

The village questionnaire included questions about sociodemographic characteristics of the village and village chief, political support for the schemes, exposure to CBHI and

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[51] To measure attitudes towards modern care, interviewees were presented with a small vignette describing mild, moderate and severe health problems and asked where they would recommend that an uninsured friend seek services. The results were expected to serve as a proxy for measuring whether a household uses modern services.

[52] To measure household level quality the head of the household was asked to rate the quality of services at the district (or contracting) hospital, relative to other options in the area and was also asked whether or not he/she would recommend a friend to seek care at the contracting hospital. The response was dichotomised to differentiate those who rate the quality of services as high and would recommend services to a friend, from those who rate the quality of services as mediocre or poor and would not recommend services to a friend.

CBHI campaigns, perceived quality of facilities[53], access to different health care options in the village, and other variables of interest. The English versions of the household and village questionnaires are included in Appendices C1 and C2, respectively.

4.5.5.2 Implementation of CBHI survey

Formal procedures

In addition to receiving ethical approval for the study, two letters were required before data collection could begin: 1) a letter of approval from the MOH, which was presented to villages prior to data collection; and 2) a letter from the CBHI office (MOH) to inform provincial MOH offices of the fieldwork and ask for their cooperation (See Appendix A2 for both forms). The provincial MOH offices then notified the district health offices and requested that one official be assigned to each district to work with the data collection teams during the study. The role of the officials varied but tasks included scheduling appointments with the village chief in advance of the survey, guiding the team to the villages, and making formal introductions to the village chief.

As outlined in the ethics application, some Lao colleagues advised against obtaining written consent from household survey respondents, explaining that participants would feel uncomfortable with such a formal procedure. Thus, for the CBHI study, the ethics committees in Laos and the UK granted approval for the researchers to obtain *written* informed consent from the village chiefs on behalf of the interviewees in the village, and *verbal* informed consent from households. In place of a signature by the interviewee, the interviewer was asked to sign the consent form to confirm that he/she had received verbal consent to proceed with the study.

Despite the apprehension around written consent, the research team discovered during the pilot tests that most CBHI interviewees were eager to provide their signature on the consent form and in most cases, written consent was given. One possible explanation for the differences in preferences for consent procedures is that people in urban and semi-urban areas, where the study was conducted, are accustomed to following official procedures, whereas people in rural areas, where previous studies had problems with the

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[53] To measure village-level quality, the village chief was asked to rate the quality of the contracting hospital relative to a variety of health care options. Results were compiled into three levels of quality perceptions: high, medium and low.

consent process, may be intimidated by such formal procedures. The information sheets and consent forms for all the surveys are included in Appendix A4.

Training and pilot testing

In preparation for the survey, training and pilot-testing took place over 3.5 weeks in January and February 2009, at which time survey instruments were translated into Laos, back-translated into English and validated by the research team. The training included a mix of classroom sessions and field training/piloting. During the classroom sessions, the field supervisor and I (with the assistance of a translator) reviewed the questionnaires aloud with the trainees to ensure each question was clear and that the translation was accurate. The sessions also included role-play exercises, in which interviewers took turns administering and answering the questionnaires. This process not only helped the interviewers to gain hands-on experience in administering questionnaires but was also useful in uncovering problems with the translation, skip patterns, and general flow of the questionnaire. The training also covered interviewer techniques and ethical procedures. The translated questionnaires and sampling procedures were pre-tested on a purposively selected sample of households in the following six villages in Xaysettha district, Vientiane Capital: Ban Xiengda, Ban Somsagna, Ban Nonekor Tai, Ban Nonekor Nuea and Ban Nonesavang. All data collectors were required to conduct five pilot interviews, at least one of which was observed by a supervisor, prior to commencing data collection. After each pilot test, interviewers returned to the classroom to discuss any problems encountered. The field supervisor and I then checked the questionnaires for accuracy and added new codes for frequent "other" responses.

Data collection and field procedures

Interviewers were divided into six teams of five people, each consisting of four data collectors and one data collection supervisor. The data collection supervisors directed the activities of their teams and checked all questionnaires within 24 hours of completion, while the field supervisor oversaw the work of all six teams and also performed random checks on data collectors (See *Quality Assurance* below). The operations manager sometimes assisted the field supervisor and data collection supervisors and was also responsible for overseeing data entry.

Data collection took place over six weeks from February 19 to April 3, 2009. Prior to conducting the survey, interviewers verbally briefed participants on the study and requested informed consent from participants Households were also given an information sheet, which contained information on which they had already been briefed. Households were then screened to ensure eligibility. The screening ensured that CBHI households had been enrolled in the scheme for at least one year, and that comparison households were not members of another health insurance scheme (e.g., CSS, SSO, private insurance, or health equity fund).[54] Household questionnaires were administered to the head of household, where possible, and information about all household members (e.g., demographic characteristics, health status, use of health care, expenditures, etc.) was collected.[55] All interviews were conducted in the Lao language. The response rates for the CBHI and non-CBHI strata were 99.7% and 96.9%, respectively.

Several rules were followed to prevent availability bias in the selection of households. Given that many individuals were not at home during the day, many interviews took place at night and on weekends. In some villages, interviews travelled to farmers' fields to either conduct the interviews or to arrange an appointment for a later date. Interviewers made three attempts to contact a household for an interview, after which time a replacement household was randomly selected by the data collection supervisors. Although sometimes the spouse of the household head was interviewed, the module on risk preferences was specifically designed for the household head and therefore if the head of household was not present for the interview, interviewers made an appointment to return to the household.

The screening process sometimes revealed that there were not enough eligible households in a village, either because CBHI households had dropped out or because they had not been enrolled for one year. When this occurred, replacement villages and households were selected using the same methodology used to select the original villages and households. A total of six replacement villages and 108 replacement households were selected.

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[54] Screening of eligible CBHI households had already been conducted prior to arrival at the household (during the random selection process). Therefore, screening at the household level was only necessary to confirm eligibility.

[55] A household and its members included all individuals registered in the "family book" — an official documentation of families maintained by villages.

After questionnaires were completed they were checked by supervisors and stored in a locked box until the team returned to the IRL office in Vientiane, at which time questionnaires were processed for data entry. Data were double-entered into a Microsoft Access Database and random checks were performed by the operations manager.

Quality assurance procedures

The most important factor affecting quality of the data was the skill of the interviewer, and therefore the training programme was quite rigorous. After three and a half weeks of training for the CBHI survey and five pilot tests each, all interviewers were well prepared to successfully administer the interviews. To ensure quality of data, 30 percent of the interviews were "back-checked", meaning that households were visited a second time by the data collection supervisor or field supervisor and asked to repeat randomly selected questions. During this process, interviewees were also asked to assess the skills and manner of the interviewer. In addition to the back-checks, 10 percent of the interviews were directly observed by a supervisor. Written reports summarising the results of interviews in each district, total progress made, and any problems encountered, were submitted to me through email on a biweekly basis, (in addition to regular weekly, and sometimes daily, contact by email and Skype when I was out of the country).

4.5.5.3 Data preparation

Cleaning and recoding

During the questionnaire design stage, a data analysis plan was developed for all relevant outcomes. This plan was instrumental in guiding the data preparation and analysis. The data were first cleaned and recoded where necessary. For the enrolment analysis, household and village level datasets were merged. For the impact evaluation, datasets at all three levels were merged (e.g., individual, household and village level) given that the analysis was at the individual level. Although many variables were already described above, some key variables were recoded or constructed:

Health status: Self-perceived health status was dichotomised to differentiate those who rate their health as "less than good" from the remaining group. Dichotomising the variable avoids the imposition of a scale that may not be comparable between individuals (O'Donnell *et al.* 2008).

Consumption: Data from the consumption module were aggregated to give annual per capita consumption. Price data were obtained from a local market in each district and given that the districts covered urban and semi-urban areas, prices were quite similar between districts and the average price of goods was used for the entire sample. Health care expenditures were excluded from the final consumption measure to prevent endogeneity between consumption and enrolment. Per capita consumption rates were calculated using the adult equivalent scaling factors that were used in the 3rd Lao Economic and Consumption Survey (NSC 2004). The consumption unit is 1 adult equivalent for the first adult in the family, 0.9 for other adults, 0.7 for children 7-15 years and 0.4 for children below 7 years. This approach accounts for the fact that members of a household share some expenses and that small children consume less food than an adult. However, it is important to note that there was no empirical basis from Laos for the choice of the adult equivalent parameter, but results from this approach were similar to those using equal weights for all household members. Households were divided into per capita consumption quintiles, with sampling weights applied to the quintiles.

Asset index: An asset index was constructed using principal components analysis (PCA) of household assets and characteristics, following the methodology used by (Filmer and Pritchett 2001).[56] Sixteen variables were used to construct the index: the first principal component captured 35 percent of the variation in wealth status. More details of the asset index and its use are discussed in Chapter 5, while the steps taken to construct the index and the results of PCA are given in Appendix B3.

Risk preferences: The risk preference variable was dichotomised to differentiate those who were completely risk averse from those who will take at least some risk.

4.5.6 Design and implementation of focus group discussions

Overview of focus group discussions

Focus group discussions were held in six villages where CBHI is running: three of the groups included members and three included non-members. Thus, each group was

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[56] This methodology is a tool for summarising variability among a set of variables and can be used to reduce a large number of variables into fewer common linear combinations. The first principal component is usually assumed to be the asset index as it explains the most variation in the sample (O'Donnell *et al.* 2008).

relatively homogeneous in terms of their decision to enrol in health insurance. This homogeneity of groups is expected to encourage more free-flowing conversations among group participants (Morgan 1997). The non-member groups also included individuals who had previously been members (drop-outs). The decision to combine non-members and drop-outs was made after preliminary focus group discussions revealed that reasons for never enrolling are similar to reasons for dropping out. The pilot test also confirmed that it was feasible to interview both non-members and drop-outs together.

Sampling

Villages were purposively selected from the list of villages where the survey had already been conducted. One FGD with members and one with non-members were carried out in each of the three study provinces. An effort was made to choose villages with a range of coverage levels (low, medium, and high), varying distance to the district hospital (close/far away), and of varying size (small, medium and large). One village was also selected because it had a high drop-out rate. Table 4.3 gives a profile of the six villages in the sample.

A total of 55 individuals participated in the FGDs, with 7 to 10 in each group. Participants were purposively selected from the household lists used in the survey but were not necessarily interviewees from the survey. However, most were aware of the survey because it had been conducted in their village. An effort was made to include participants with a range of characteristics in an effort to obtain broad representation of the community. However, village collectors were not invited to participate in the FGDs given that their presence could bias the responses from participants. For example, in the exploratory FGD the presence of the village collector seemed to influence participants to say what they thought the village collector wanted to hear. This effect of hierarchy on group dynamics has been cited in the literature (Kitzinger 1995). The criteria for selecting participants are summarised in Table 4.4.

Table 4.3 Profile of focus group discussion sites

Village	Ban Thamouong	Ban Chompettai	Ban Kaenghai	Ban PhonHang	Ban Donetalath	Ban Phaphinh
District (Province)	Hatxaifong (Vientiane Cap.)	Sissattanak (Vientiane Cap.)	Keoudom (Vientiane Prov.)	Viengkham (Vientiane Prov.)	Champasak (Champasack)	Champasak (Champasack)
Membership	Members	non-members	members	non-members	members	non-members
Coverage	7% (low)	4% (low)	~14% (medium)	38% (high)	16% (medium)	11% (low - recently decreased from 24%)
# CBHI HHs	25	17	21	38	113	13
Distance to contracting facility	4-5 km	<1 km	10+ km to district hospital	10+ km to provincial hospital	In village (district hospital was recently moved here)	18 km (was once close to district hospital)
Village size	379 HHs (medium)	435 HHs (medium)	146 HHs (small)	99 HHs (small)	711 HHs (large)	118 HHs (small)
Urban/semi-urban	Urban	Urban	Semi-urban	Urban	Urban	Urban
Support from village chief	Good	Good	Good	Good	Good	Good
Main occupation(s)	Factory workers; flower plantation	Small trade; civil service; factory; construction	Farming	Rice farming and vegetable gardening	Farming; civil service; small trade	Farming; small trade; fishing; construction; civil service
Other	Money collector very negative about CBHI and may drop out		Members complain of high transport costs to hospital	CBHI contracts with provincial hospital -high drop-outs	Road access poor during rainy season	

Table 4.4 Criteria for selecting focus group discussion participants

	Members	Non-members/ drop-outs
At least 1 has been in the scheme for < 1 year	✓	
At least 2 have been in the scheme for 2 years+	✓	
At least 4 members are drop-outs (preferably 2 have dropped out in last year)		✓
At least 4 members have never enrolled in CBHI (and do not have other insurance)		✓
At least 1 has small children (or a woman is pregnant)	✓	✓
At least 1 HH has elderly family member(s)/ is elderly	✓	✓
At least 1 HH of an ethnic minority	✓	✓
Good mix of men and women	✓	✓

Description of focus group discussion guide

The FGD guide was finalised following preliminary data analysis of the quantitative work. Five main topics were explored, including: knowledge of CBHI (and details of implementation); motivation for enrolment/non-enrolment/dropping-out; experiences and perceptions of the scheme and of the health care system; impact of enrolment/non-enrolment on use of services, expenditures, and source of care; and recommendations for improving the scheme. The FGD guide was translated into Lao and discussions were conducted using the translated topic guide. The English versions of the guides for members and non-members are included in Appendix C4 and C5, respectively.

Training and pilot testing

A local female moderator with experience conducting FGDs in Laos was hired to facilitate the discussions. Training and pilot testing were conducted over a four day period in Vientiane Capital from May 11 to 14, 2009. On the first two days, the moderator was briefed on the CBHI scheme and the study. On the last two days, two pilot-tests were held: two with members and two with non-members and drop-outs. The pilot tests were conducted in two villages: Ban Thaduea and Ban Somsanouk in Hatxaifong district. I observed these discussions with the assistance of a translator. A note taker and the field supervisor from IRL were also present.

Some potential concerns regarding group dynamics were addressed during the pilot test and an effort was made to ensure each member felt comfortable and participated in the discussions. One concern was that some participants were more willing to participate than others and could dominate the conversation. The moderator and I noticed in the pilot FGDs that people had different comfort levels, and some women were reluctant to speak openly unless they were asked questions directly. Thus, it was important for the moderator to draw people out as much as possible and give each participant an opportunity to share their views and experiences.

Data collection and field procedures

Data collection took place over 6 days, from May 17 to May 22, 2009. Prior to the day of the FGDs, the IRL field manager travelled to the selected villages to brief the village chief on the study and to ask for informed consent. All village chiefs agreed to allow

their villages to participate. The chief was then asked to participate in a short village questionnaire that gives a profile of the community.

Focus group discussion participants were recruited on the day of the FGDs. However, given that some participants were working during the day, the discussions were sometimes conducted in the evenings to prevent availability bias. The village chief and village collector assisted the moderator with the recruitment of participants but the moderator was instructed to prevent either of these individuals from influencing the decision about which households to interview, as this could bias the responses. The role of the village authorities was merely to help identify households with certain characteristics. Several FGDs have faced the problem of the participants not showing up for the discussion (Miles and Huberman 1994) and therefore, the engagement of the village authorities in the recruitment process was expected to increase the likelihood that villagers would participate.

At the beginning of the interview, the moderator briefed the participants on the study and asked for their verbal informed consent. An information sheet was also given to each participant (See Appendix A4 for all consent forms and information sheets). The moderator then briefed participants on the rules of the FGD and discussed the need to keep all aspects of the discussion confidential. All discussions were audio recorded and transcribed and lasted between 1.5 to 2 hours.

4.5.7 Limitations of study design

The main limitation of the methodology for the CBHI study is the cross-sectional nature of the survey, which leads to the possibility of selection bias due to unobservables. However, as discussed earlier, it is expected that the effect of any unobservables is minimal because of the efforts that went into understanding the programme and controlling for a wide range of variables expected to influence enrolment. Nevertheless, the potential for bias should be considered and will be discussed further in relation to the impact evaluation (Chapter 6).

Other concerns relate to bias in the focus group discussions. The first concern is the effect that the moderator may have had on the participants. The interviewer, through body language or tone of voice, could have influenced participants' responses (the

"interviewer effect"). Second, individuals could have exaggerated responses merely because they were participants in an experiment (the *"Hawthorne effect")* (Berg 2001). A similar concern is *response bias*, which occurs when participants craft their responses according to what they think the interviewer wants to hear (Miles and Huberman 1994). It is also possible that participants exaggerated negative opinions about CBHI in hopes of improving the scheme in the future. On the other hand, it is possible that participants were reluctant to speak too negatively about the CBHI scheme or the public health care system in Laos for fear of information getting back to the government. Other concerns may have arisen due to group dynamics of the FGDs. For example, the composition of the group can prevent participants from speaking openly for a number of reasons. First, it is possible that the participants with the "strongest voice" influenced the discussion in one way or another. Second, the fact that male and female participants may interact differently in mixed groups has been documented (Thorne and Henley 1975). The preliminary FGDs showed evidence of these effects on group dynamics. However, these effects may have been minimized given that the moderator had extensive experience and had no incentive to influence results, and because I was not present during the final FGDs.

4.6 Methodology for SHI study

This section describes the methodology used to study enrolment in social health insurance.

4.6.1 SHI research questions

To achieve the study objectives, the research questions in Table 4.5 were defined:

Table 4.5 Research questions and study objectives for SHI sub-study

Research Questions	Study Objectives
• Which employer characteristics are associated with enrolment in social security (e.g., size of firm, type of ownership, risk profile, etc.)? • What motivates employers to enrol/not enrol in social security? • What have been firms' experiences with social security (e.g., impact on business, strengths and weaknesses of the scheme)? • Is the benefit package offered by non-enrolled firms comparable to social security benefits? • Is there any evidence that firms are employing strategies to evade social security contributions?	Objective 2. To explore the firm-level determinants and barriers related to enrolment in social health insurance
• What are the prospects for increasing coverage of SHI? • How can Lao PDR progress towards universal coverage given the current health financing arrangements?	Objective 4. To identify the opportunities and challenges of expanding health insurance in Laos

4.6.2 Study design and implementation

This sub-study used a cross-sectional case-comparison design of 130 firms, including 65 enrolled and 65 non-enrolled firms. The study was conducted in Vientiane Capital, the province with the highest concentration of formal sector enterprises. A structured questionnaire with both closed- and open-ended questions was administered to employers. Although the survey was the main method used in the sub-study, other methods were employed to help set the context for the study and to shed light on the potential for expanding coverage. These methods include: reviews of legislation and documents; key informant interviews; secondary data analysis of the Lao Economic Census; and Excel projections of various coverage expansion scenarios. The

methodology used for the pre-survey work (i.e., key informant interviews) and household survey are discussed below. Details of the analysis of the household survey, as well as the secondary data analysis and methodology used to project coverage scenarios in Excel, are included in Chapter 7.

Justification for design

The sub-study on enrolment was designed to address key policy questions in Laos, and to shed light on the reasons that enrolment in social security is so low. Given that information was needed relatively quickly to inform the development of the country's health financing strategy, a cross-sectional case-comparison design was considered an optimal approach. In addition, the main purpose of the study was to generate descriptive information about the scheme, and therefore a cross-sectional design was deemed appropriate.

The decision to use a sample size of 130 was mainly based on budget constraints. The cost of an enterprise survey is relatively expensive: one enterprise interview was more than six times that of a CBHI household survey. Moreover, the SHI study was considered secondary to the CBHI study, as part of the World Bank work, and therefore a relatively smaller amount of funding was allocated for this study. In addition to considering budget constraints, the literature was consulted regarding the minimum sample size required for logistic regression: according to Long and Freese, models using maximum likelihood should use no fewer than 100 observations (Long and Freese 2006). Thus, a sample size of 130 was appropriate given both the budget constraints and the rule of thumb for the minimum sample size.

Pre-survey work

Prior to designing the study I held key informant interviews with five private sector employers (three SSO-member firms and two non-member firms); three leaders of business associations; the Lao National Chamber of Commerce and Industry; two senior staff members in the State Authority of Social Security; and two senior staff members in

the Social Security Organization.[57] Additional meetings with mid-level staff at SSO occurred on an ongoing basis. Approximately one third of these key informant interviews were conducted in Lao, and therefore a translator accompanied me. The purpose of the discussions with private sector employers was to better understand the factors influencing enrolment in social security, in order to inform the questionnaire. The purpose of the interviews with SSO staff members was to learn more about the scheme, its implementation, and the Social Security Organization; to identify the optimal sampling frame for the study; and to better understand how the target group for the scheme was defined. An overview of the target group as it is officially defined in the Lao legislation, and the discrepancies between the official group and the actual target group, are presented in Chapter 7.

Sampling

Lists of firms maintained by the SSO were used as the sampling frame for this study, which is herein referred to as the *SSO database*. The SSO database actually consists of two separate lists (one for enrolled firms and one for non-enrolled firms), maintained by two separate departments within the Social Security Organization and therefore to construct the sampling frame, these lists were merged. Merging the lists required reclassifying and recoding the names of industries into one common list, as the two departments that maintain the lists use different industry categories.

After linking the two lists, the master list included 1320 firms (388 member and 932 non-member firms) but this list was subsequently restricted to firms in Vientiane Capital, as this province has the highest concentration of private-sector firms. The sampling frame was also restricted to the four biggest industries in the SSO target group: manufacturing; construction; trade; and services, leaving a total of 891 firms (252 SSO-member and 639 non-member firms). Selecting a subsample of industries is consistent with the methodology used in the World Bank Enterprise Surveys (World Bank sampling

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[57] The five private sector employers included staff from two hotels (small and medium-sized); a small to medium-sized internet technology and computer sales company; a small furniture design and interior decoration company; and a large soft drink company. The business associations included the Lao ICT Commerce Association; the Association of the Lao Garment Industry; and the Lao Hotel and Restaurants Association.

methodology, 2007). Within Vientiane Capital Province, firms were selected from seven districts but the district was not a criterion for recruitment to the sample.[58]

A sample of 130 employers (including 65 member firms and 65 non-member firms) was selected using stratified random sampling, from the four industries in the sampling frame and from four size categories (10 to 19 employees; 20 to 49 employees; 50 to 99 employees; and 100 or more employees), amounting to a total of 16 strata in the SSO-member group and 16 strata in the non-member group. To perform the sampling, I created lists of all firms in each strata (e.g., SSO-member firms in the manufacturing industry with 10 to 19 employees; non-member firms in the services industry with 50 to 99 employees, etc.) and used a random number generator in Excel to select firms until the total quota in each stratum had been reached (the quota in each stratum was approximately four firms).

Once the firms were selected, employers were contacted by telephone to request participation in the survey. Following acceptance, an appointment was made for a face-to-face interview. If the prospective interviewee was not available, the interviewers called back up to three times to reschedule the appointment. If firms refused or an appointment could not be arranged after three attempts, a replacement firm was selected from the same stratum of the sampling frame.

As is often the case with firm surveys, the refusal rate was quite high.[59] Among the firms that were contacted, 20 percent declined to participate in the survey. In an additional 13 percent of firms, the interview could not be successfully arranged (after attempting to follow-up or re-schedule three times). Therefore a total of 33 percent of the sample (43 out of the 130 firms) that was originally selected needed to be replaced, and this was done using the original sampling approach. However, due to the high refusal rate, in some strata the quota (i.e., ~4 firms in each) could not be selected and therefore firms needed to be selected from another stratum.[60] Thus, the strata in the final sample size are

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[58] The districts where the firms are located in Vientiane Capital include: Hatxaifong; Sissattanak; Chanthabuly; Xaysettha; Sikhottabong; Naxaithong; and Xaythany.

[59] In addition to the low response rate, the quality of the SSO database was poor and one third of the firms could not be located, had moved or were no longer in business. However, these firms were not factored into the response rate.

[60] If less than 4 firms were available in a given stratum, a firm was selected from the next stratum in the list. I performed selection of all replacement firms and gave the lists to the interviewers.

not equal but sampling weights were used to restore representativeness of population proportions as they appear in the sampling frame. The procedures for weighting are further discussed in Chapter 7.

The low response rate was expected given previous reported difficulty of interviewing private sector employers in Laos and because the initial point of contact was through telephone.[61] The profile of the firms that refused to participate differed between the enrolled and non-enrolled populations: in the SSO group, mostly larger firms (>50 employees) refused to participate while in the non-enrolled group mainly smaller firms (<50 employees) refused to participate. These differences between groups may lead to some concern of sampling bias.

Description of questionnaire

A structured questionnaire with both closed- and open-ended questions was designed to capture variables that are expected to influence enrolment in social security, such as characteristics of businesses (ownership, company size, revenues, etc.), sociodemographic characteristics of heads of company (education, age, nationality, gender), risk perceptions of firms, details of employment contracts and employee benefits, and awareness of, and experiences with, social security. For some questions, employers were asked to obtain information from company records if available, such as the number of employees by employment contract, and the amount paid to social security and other benefits. The detailed questionnaire is included in Appendix C3.

Ethical procedures

For the SHI study, no official notices from the government were delivered to employers in advance but once telephone contact had been made with an employer, a letter from the country manager of the World Bank was sent to employers to brief them on the study and to request their cooperation (See Appendix A3).

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[61] Indochina Research Laos had previously conducted several enterprise surveys in Laos, all of which had relatively low response rates.

All interviewees were asked to provide written informed consent prior to participation in the survey. The information sheets and consent forms for the SHI study are included in Appendix A4.

Training and pilot testing

In preparation for the survey, training and pilot-testing took place over a two week period, from February 19 to March 6, 2009, at which time the questionnaire was translated into Lao, back-translated into English, and validated by the research team. The training included a mix of classroom sessions and field training/piloting, much the same as that followed for the CBHI survey training. The classroom sessions covered interviewer techniques, ethical procedures and role-play exercises. The translated questionnaires and survey procedures were pre-tested on a purposively selected sample of 24 enterprises. Each data collector was required to conduct four surveys prior to data collection. After each pilot test, interviewers returned to the classroom to discuss any problems encountered. After the pilot tests, the operations manager and I checked the questionnaires for accuracy and added new codes for frequent "other" responses.

Data collection, field procedures, and quality assurance measures

The research team assigned to the SHI study consisted of six data collectors, one field supervisor, and an operations manager. Data collection took place over a 2 month period, from March 10, 2009 to May 10, 2009. Where possible, the questionnaire was administered to heads of companies (i.e., chief executive officer, director, general manager, etc.).[62] However, the study focused on benefits and contracts and therefore, it was reasonable for the head accountant or human resources director to participate when the head of the company was not available. All interviews were conducted in the Lao language and most were conducted during the work day given that that was the best time to schedule appointments with employers. At the end of each day, questionnaires were brought to the IRL office and submitted to the data entry staff. Data were double-entered into a Microsoft Access Database and random checks were performed by the operations manager. Like the CBHI surveys, the data collection supervisor, with the help of the

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[62] Thirty-nine percent of interviews were conducted with the head of the company (e.g., director, general manager, chief executive officer, etc.); 30% were conducted with the head accountant; and 33% were conducted with the human resources manager. (Two percent were conducted with more than one respondent).

operations manager, directly observed the surveys 10 percent of the time and back-checked 30 percent of the interviews. However, most of the back-checking took place over the phone, given that it was difficult to make an appointment with the employers. The team updated me on their progress in much the same way as they did with the CBHI study: written reports summarising the results of interviews in each district, total progress made, and any problems encountered, were submitted to me through email on a biweekly basis, in addition to regular correspondence through email and Skype when I was out of the country.

Data preparation

After data were entered by IRL I received a copy of the dataset and spent several weeks cleaning, recoding and generating new variables where necessary. A data analysis plan that was developed during the questionnaire design stage guided the data preparation and analysis. Details of data analysis are described in Chapter 7.

4.6.3 Limitations of study design

The main limitation of the design is that the sampling frame, although it is representative of the current target group, represents only a small proportion of firms in the country. Moreover, this study examined trends in only four industries. This narrow sampling frame has implications for external validity in that the study results can only be generalised to the small percentage of firms in the sampling frame (i.e., those that have a tax identification number, are registered with the central or provincial Tax Registration Office (Ministry of Finance), have 10 or more employees, are operating in the four provinces where the scheme is running, operate in one of the four industries in the sample, and are included in the SSO database).

There are a few design issues that may contribute to bias. First, the cross-sectional nature of the data makes it difficult to imply causal relationships and therefore findings from the logit model should not be interpreted as such. Second, the small sample size leads to large standard errors and can increase the likelihood of sampling errors, relative to a larger sample size. There is also a risk that using different respondents (e.g., head of company, human resources director) may bias the responses in one direction or another,

but this bias is likely to be less than if the head of the company had been required to respond, which would have resulted in a higher refusal rate due to unavailability.

4.7 Concluding remarks

This chapter has given an overview of the research aim and objectives, the conceptual framework, the methodology for each sub-study, and the limitations of the study designs. In the next three chapters the analytical approach for each sub-study will be described, followed by the results and a discussion of the findings as they pertain to the literature. The first results chapter (Chapter 5) focuses on the determinants of enrolment in CBHI; the second results chapter (Chapter 6) examines the impacts of CBHI on utilisation, out-of-pocket expenditures and other outcomes of interest; and the third results chapter (Chapter 7) explores the determinants of enrolment in social health insurance.

Chapter 5. Enrolment in community-based health insurance

5.1 Introduction

Community-based health insurance is often implemented to provide coverage to households outside the formal sector. However, in most countries where CBHI has been implemented, coverage rates are low. As countries strive to achieve greater coverage of health insurance, there is interest in learning more about what is encouraging households to enrol and how the schemes can be strengthened to increase enrolment levels. However, the findings are context dependent and vary across countries. In Laos, after nearly a decade of piloting CBHI, less than 2 percent of the population is covered and coverage in the targeted areas stands at approximately 13 percent. Chapter 3 revealed a number of problems with the scheme but there are still many unanswered questions regarding what is driving, and hindering, enrolment.

The conceptual framework in Chapter 4 gives an idea of the factors that are most likely to affect enrolment: the empirical literature identifies a range of determinants at the individual, household and village level, while economic theory holds that individuals enrol in insurance due to a demand for health care and the desire to decrease risk (although some theories suggest that purchasing insurance is not necessarily a risk-reduction strategy). As shown in the conceptual framework, the demand for health insurance is also influenced by the *need* for health care services. Individuals often have a better understanding of their need for health care than do insurers. This information asymmetry contributes to a distortion in the market for health insurance in that individuals with higher rates of illness (and therefore more certainty of the need for health care) will be more likely to enrol. This phenomenon is known as *adverse selection*. When the cost of the premiums are flat-rate, as they are in Laos, adverse selection can threaten the financial sustainability of the scheme because the cost of services used exceeds the revenues collected through premiums.

This sub-study was designed to provide country-specific evidence about the determinants of enrolment in CBHI in Laos and to explore specifically whether individuals with poorer health status and higher rates of risk aversion are more likely to enrol in the voluntary CBHI scheme. The sub-study responds to objective 1 of the overall study,

which is *to explore the household and village-level determinants and barriers related to enrolment in CBHI in Lao PDR.* Specifically, the sub-study aims to answer the following research questions:

1. What is the typical profile of households that enrol/ do not enrol in CBHI?

2. What is the relative importance of factors driving households' enrolment in CBHI (e.g., health status, risk preferences, socioeconomic status, education levels, exposure to CBHI, etc.)?

3. How do enrolment levels differ across villages and what are the reasons for these differences?

Within the second research question above, four hypotheses derived from the conceptual framework are tested:

Hypothesis 1: Households with poorer health status are more likely to enrol in CBHI than households with better health status.

Hypothesis 2: Households with greater aversion to risk are more likely to enrol in CBHI than households that are more risk-tolerant.

Hypothesis 3: Households that are better-off financially are more likely to enrol in CBHI than households of lower socioeconomic status.

Hypothesis 4: Households with higher perceptions of quality at the district hospital will be more likely to enrol in CBHI than households with lower quality perceptions.

The next section presents the methodology of the study, and this is followed by the descriptive findings and results. The discussion then summarises how the results relate to the literature, and highlights policy implications in Laos (these policy implications will be discussed in more detail in Chapter 8). Some limitations of the analytical approach are then reviewed.

5.2 Methodology

5.2.1 Overview of methodology

This sub-study uses a mix of quantitative and qualitative methods to understand better the decisions regarding enrolment in CBHI. The study employs a cross-sectional, case-comparison design of CBHI households and uninsured (comparison) households, both

from villages where CBHI has been implemented. The methods include: exploratory focus group discussions; household and village surveys; and focus group discussions. As described in Chapter 4, the exploratory work informed the study design and the questionnaires. The household and village survey covered 3000 households across 87 villages and 6 districts, and the sample was selected using a multi-stage cluster sampling approach. Six focus group discussions with members and non-members were conducted in the same study areas and were intended to complement the surveys by providing more in-depth explanations about the decision to enrol or not to enrol. Chapter 4 presented the study design, sampling, data collection and more detailed description of the methods for this sub-study. The following discussion on methodology covers only the methods used in the analysis.

5.2.2 Quantitative analysis of household and village surveys

The analysis for this sub-study took place at the household level, given that the level of enrolment in CBHI is the household. Descriptive data analysis was performed to better understand which types of households typically enrol in CBHI. CBHI and non-CBHI households were compared on a range of characteristics and T-tests were used to compare means for continuous variables; Chi-squares and Fisher's exact[63] tests were used for proportions or categorical variables. All estimates account for sampling weights and village-level clustering by using the "svy" commands in Stata. This weighting is necessary because in this sample, the proportions in each stratum differ from the respective population proportions (i.e., the CBHI population is effectively oversampled) and in the absence of weights differences in means and proportions of the sample will yield biased population estimates (Deaton 1997). Use of the sampling weights restores the sample to one that is representative of the population and applying the cluster effect ensures robust standard errors. The weights are simply the inverse of the probability that the observation was selected and the cluster effect is accounted for at the village level.

To perform the multivariate analysis on the determinants of enrolment, a probit model was used. The probit model is a qualitative discrete choice model that has been

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[63] Fisher's exact tests were used for 2x2 columns.

developed to model relationships in which the outcome is binary.[64] In this study, the probit is used to estimate the probability that a household will enrol in CBHI. The probability of enrolment is a function of individual/household and village characteristics, such that:

$$\Pr(y=1|x) = f(X_1, X_2, \varepsilon)$$

where y takes on a value of 1 for an enrolled household and 0 for an uninsured household. X_1 represents individual and household characteristics; X_2 is a vector of village level characteristics; and ε represents the error term. The probit model uses sampling weights and accounts for the cluster effects at the village level.

In studying enrolment using a cross-sectional survey, it was important to acknowledge that the relationship between independent variables and enrolment could be endogenous and endogeneity of consumption was a primary concern. For example, CBHI households may incur lower out-of-pocket expenditures on health care, leading them to have higher consumption levels than if they had not enrolled in CBHI and had to pay for care directly. Thus, enrolment *affects* consumption, making it difficult to test whether consumption is a *determinant* of enrolment. To partially address this endogeneity problem, health care expenditures were excluded from the aggregate consumption measure, but it is still possible that the relationship between consumption and enrolment is endogenous (i.e., the level of non-medical consumption in a household could still be affected by whether or not the household took up CBHI). However, given that no suitable instrumental variable for consumption could be identified it was not possible to control for this endogeneity. The use of quintiles of the consumption measure is expected to be less endogenous than the use of an absolute consumption measure, although is unlikely to remove endogeneity in the model.

In addition to using consumption quintiles to look at the relationship between wealth and enrolment, a household asset index was also used. The methodology for constructing this index was described earlier in Section 4.5.5.3. Relative to consumption, an asset index is

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[64] The probit model differs from the logit model in that the error in the probit is assumed to be distributed normally, whereas the error term in the logit model is assumed to be distributed logistically. The mathematical model for the probit is given as: $\Pr(y=1|x) = \int_{-\infty}^{\beta_0+\beta_1 X_1+\beta_2 X_2+\varepsilon} \frac{1}{\sqrt{2\pi}} \left(\frac{-t^2}{2}\right) dt$ (Long and Freese 2006).

more likely to reflect longer-run household wealth or living standards, and is less likely to account for short-run interruptions or shocks to the household (Filmer and Pritchett 2001). For example, in the face of medical expenditures, individuals are more likely to smooth consumption and less likely to sell household assets. Although there is some correlation between consumption and the asset index, the asset index also has an independent effect on enrolment, which justifies its inclusion in the model. More details of the probit model are given in Section 5.3.2.

For ease of interpretation of the probit model findings, the marginal effects of each independent variable on the outcome are presented. The marginal effect indicates the magnitude of the effect of a particular variable on enrolment in insurance. To report marginal effects, the command "dprobit" is used in Stata. This command also generates a maximum-likelihood probit model but rather than reporting coefficients, as in the probit, it reports the average percentage point difference in the probability of enrolment of a CBHI household relative to a comparison household (for continuous variables) and the discrete change in the probability for dummy variables.

In addition to looking at the marginal effects, another approach was used to interpret the effect of key variables on enrolment. Because the probit model assumes a nonlinear relationship between the independent variables and the outcome variable, the marginal effects are not constant and it is difficult to interpret the relationships from the probit model alone. Instead, the relationship between an x-variable and the outcome depends on the level of x as well as the level of other independent variables. Therefore, to understand the relationship between health status and enrolment across wealth quintiles, predicted probabilities were estimated. These predicted probabilities represent the probability that a household will enrol in CBHI when all other factors are held constant at their mean value and were estimated using the *SPost* programme in Stata, which is a post-estimation programme (Long and Freese 2006). Comparing predicted probabilities for "representative individuals" allows the change in probability of enrolment as the variable of interest changes to be seen. This technique also allows the values of different variables to be imputed, and the impact of health status on enrolment across quintiles to be modelled.

In addition to measuring household-level enrolment, the study also examined the factors affecting village-level enrolment levels across the 87 villages in the study. Enrolment

levels were collected from village records[65] during sampling and an ordinary least squares regression model was then used to regress village enrolment levels (which ranged from one percent to 72 percent) on various village-level factors. Given that *villages* in the multi-stage cluster sample were selected with probability proportional to population size, the sample was self-weighted and sampling weights in the analysis were not necessary. All quantitative analysis was performed in Stata 10.1.

5.2.3 Qualitative analysis of focus group discussions

The objective of the qualitative analysis was to confirm and check consistency with the quantitative results and to present findings in richer detail, thereby leading to a deeper understanding of the relationships that emerged through the quantitative analysis. Given the cross-sectional nature of the survey, the qualitative results also helped to shed light on the direction of relationships between independent variables and CBHI enrolment. The analysis followed a two-part process. First, the moderator, who conducted the FGDs, transcribed the FGDs and prepared summary notes in English. The summary notes served as a first step in data reduction, while ensuring that the most important information was retained for the analysis, which I then performed. These summary notes contained all the essential information that was generated by the discussions but omitted instructions and clarifications. Responses were quantified where possible and quotes from participants were included. I then analysed the data using thematic analysis (Miles and Huberman 1994). I used Microsoft Word 2007 to manually code results from the six FGDs, organising the results by themes that corresponded to each of the respective research topics. I used a table to record the codes and frequencies of the responses in order to interpret the relative importance of emerging themes. Quotes that were most useful in explaining the findings were selected and organised under each theme. I had trained the moderator to pay particular attention to differences between individual opinions and actual group consensus. Therefore, in the analysis, I also paid particular attention to identifying these 'outliers' and presenting them where relevant. This type of analysis is known as "deviant case analysis" or "negative case analysis" and is a useful process for preventing self-selecting biases in the analysis (Miles and Huberman 1994; Kitzinger 1995).

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[65] Village collectors maintain records of all enrolled households. Information about payments made to the scheme is collected monthly and maintained by the village collectors.

5.3 Results

5.3.1 Descriptive findings

Household-level descriptive findings

Table 5.1 presents the results of the descriptive statistics at the household level. The results showed that CBHI households are larger, more likely to be married, and more educated than uninsured households. On average, the household head in CBHI households is also older. There is no difference in ethnicity between CBHI and comparison households: most households belong to the Tai-Kadai ethnic group.[66] CBHI households have significantly higher consumption levels than uninsured households but similar *per capita* consumption levels. Per capita income levels are also similar between groups and are just below the national average of $880 per capita.[67] There is no significant difference in the number of CBHI and comparison households living below the national poverty line: across the sample, 21.4% of households live in poverty. This percentage is less than the estimated poverty headcount in the population (37%). Thus, the sample has a lower average income level than the population but also has fewer households living in poverty, which makes sense given that CBHI targets the near-poor in the informal sector but does not specifically target the poorest or the richest households. Among CBHI household heads who are employed[68], the insured are more likely than the uninsured to hold a long-term contract. There is no difference between groups in the location of the households: one third in both groups lives in urban areas.[69]

In terms of health status, CBHI households are less healthy than uninsured households, as shown by the CBHI group's poorer self-rated health, higher prevalence of disability or chronic illness, higher proportion of households who reported difficulty performing activities, and a higher proportion of households with a family member with deteriorating health. CBHI households also have more elderly household members, more women of reproductive age, more pregnant women, and are relatively less risk-averse

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[66] The official ethno-linguistic groupings include 49 distinctive ethnic groups and four main groupings. However, 98 percent of the study sample belongs to the Tai-Kadai group as this group dominates the cities and other semi-urban areas where the study was conducted.

[67] The comparison with national income and poverty levels is for illustrative purposes only and should be interpreted with the caveat that the methodologies for calculating these figures are different.

[68] "Employment" excludes unpaid household duties but includes subsistence farming.

[69] Although "urban/rural location" is really a village measure, it was measured at the household level because a few large villages included both urban and semi-urban areas.

than uninsured households. (See Chapter 4, Section 4.5.5.1 for a description of the risk-aversion measure.)[70]

Attitudes towards different sources of care serve as proxies for preferences for modern health care over traditional. The descriptive findings show that attitudes are similar among CBHI and non-CBHI households. However, CBHI households report a higher perception of quality of health care at the district hospital. CBHI members are also more likely than the uninsured to have attended a CBHI campaign, to have more close relatives and friends in the scheme, and to place higher trust in the scheme.[71]

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[70] The percentage of risk-averse household heads also differs by socioeconomic status: in the first consumption quintile, 41% of household heads are risk averse, compared with 42% in the second quintile, 43% in the third quintile, 37% in the fourth quintile, and 38% in the fifth quintile.

[71] Due to the cross-sectional nature of the study, the number of close relatives and friends enrolled in the scheme (a proxy for "peer pressure"), and trust in the scheme are likely to be highly endogenous and were therefore left out of the final model.

Table 5.1 Background characteristics of CBHI and comparison populations

	CBHI (n=1000)	Comparison (n=2000)	p-value
Sociodemographic characteristics			
Mean household size (persons)	5.3	4.7	<0.001**
Marital status of household head (% married)	84.2%	80.4%	0.027*
Education			
Highest level=any primary	43.1%	42.7%	0.866
Highest level=any secondary	31.6%	37.2%	0.028*
Highest level=university/institute	5.1%	2.3%	0.002**
Highest level=vocational	11.8%	8.4%	0.020*
Age of HH head (mean years)	52.4	48.4	<0.001**
HH is member of ethnic majority (1=Tai-Kadai; 0=other)	98.6%	98.2%	0.404
Total annual household consumption ($US)	$3,162	$2,729	<0.001**
Total annual per capita consumption, mean ($US)†	$754	$741	0.531
Total annual per capita income, mean ($US)	$863	$845.9	0.822
HHs living below $1.25 per day	21.6%	20.3%	0.435
Employment status			
Not working for money	21.1%	17.2%	0.009**
Family farm-based agriculture	24.0%	22.8%	0.644
Small-scale trading or family business	26.4%	31.2%	0.039*
Work for someone else	28.5%	28.8%	0.878
HH heads with long-term employment contract (12 months +)	17.2%	11.6%	0.002**
Household is located in urban area (vs. semi-urban or rural)	30.1%	33.9%	0.413
Health status and risk aversion			
HHs in which avg self-rated health is <3 on scale of 1 to 5	19.4%	14.9%	0.023*
HHs in which someone has disability or chronic condition	23.4%	14.5%	<0.001**
HHs in which someone had difficulty with activities in 3 months	16.3%	11.0%	0.008**
HHs in which s/o experienced deterioration of health in past year	11.9%	8.5%	.034*
Risk preferences: head of household is risk-averse	37.1%	41.6%	0.041*
Other risk variables			
HHs with any member age 65+	28.0%	21.9%	.001**
HHs with any member age 0-5	37.0%	37.6%	0.754
Mean # of females 15-49	1.6	1.4	<0.001**
HHs in which a woman has given birth in past 2 years	15.7%	13.9%	0.261
HHs with a pregnant woman	4.4%	2.3%	.004**
Attitudes towards sources of care and quality perceptions			
HH respondents recommending a government hospital for an uninsured friend...........)			
a severe condition/emergency?	99.4%	99.5%	0.669
a moderate condition?	94.6%	92.6%	0.138
a minor condition?	97.5%	96.8%	0.42
HH respondents stating that services at district hospital are good	75.4%	64.8%	<0.001**
Exposure to CBHI and trust in scheme			
HH attended CBHI campaign	92.5%	66.2%	<0.001**
How many of your close relatives/friends had joined CBHI prior to enrolment? (or how many are enrolled now?)			
None	4.5%	30.7%	
Some	49.2%	48.9%	<0.001**
Many	46.3%	20.4%	
HHs reporting trust that contributions will be used properly	92.5%	69.7%	<0.001**
HHs reporting that members will get the benefits they pay for when they need them	95.8%	69.4%	<0.001**

Significant at 5%; significant at 1%. Reported results are based on t-tests of means for continuous variables and chi-squares for proportions/ categorical variables. All estimates account for sampling weights and village-level clustering. †Per capita expenditure was calculated using adult equivalents.

Descriptive findings on use of health services and out-of-pocket expenditures (individual-level)

To shed light on utilisation of health care and out-of-pocket expenditures, descriptive results from analysis on individuals in CBHI and comparison households are presented in Table 5.2. The findings show that a significantly higher percentage of CBHI individuals in the sample had a somewhat serious or serious illness in the past 3 months, relative to uninsured individuals. However, there was no significant difference between groups in the percentage of sick individuals who went without care during this time. On average, individuals in CBHI households were significantly more likely to use health services and incurred significantly lower out-of-pocket expenditures than individuals in households without insurance.

Table 5.2 Descriptive statistics of health care utilisation and expenditures by individuals

	CBHI n=5336	Non-CBHI n=9468	p-value
% of people who had a somewhat serious or serious illness in past 3 months	13.3%	11.4%	0.001**
% with somewhat serious/serious illness who went w/o care in 3 months	6.5%	7.5%	0.400
% of individuals with an IP visit in past month	8.1%	3.9%	<.001**
% of individuals with an OP visit in past 1 year	15.1%	13.5%	0.009**
OOPs for OP visits in past month, per person ($US)	$3.20	$5.66	0.011*
OOPs for IP visits in past 1 yr, per person ($US)	$76.22	$186.37	<.001**
OOPs on all care per person in 1 yr (incl. premiums)(for those with IP or OP visit)	$62.78	$99.09	<.001**

*Significant at 5%; significant at 1%. Reported results are based on t-tests of means for continuous variables and Fisher's exact tests for proportions/ categorical variables. 1 USD=8,500 Lao Kip (2009)

Village-level descriptive findings

Table 5.3 summarises the characteristics of the 87 villages from which CBHI and comparison households were selected. The average age of the village chief is 49 years and most have less than a secondary education. Roughly two thirds of the chiefs are members of CBHI. In terms of the options for health care in the villages, half the villages have pharmacies, one third have both drug sellers and healers, one tenth have a health centre and less than one fifth have a private clinic.

In three quarters of the villages a village collector collects monthly contributions at members' homes, while in the other one quarter of villages, members make their payments directly to the contracting hospital. The majority of villages have mass

organisations that promote the scheme and CBHI is a regular discussion topic at meetings.

Table 5.3 Descriptive characteristics of villages

	% or mean/sd
Age of chief, years (mean(sd))	48.9(8.3)
Chief has secondary or higher education	43.7%
Chief is a member of CBHI	67.8%
Pharmacy in village	49.4%
Drug seller in village	33.3%
Healer in village	33.3%
Health centre in village	11.5%
Private clinic in village	16.1%
Village has had 3+ CBHI promotional campaigns	29.9%
# visits from provincial CBHI team (mean(sd))	1.1(0.7)
Door to door promotion of CBHI conducted	13.8%
Village collector comes to home to collect payments	75.9%
Mass organisations promote CBHI	63.2%
CBHI is discussed at formal village meetings at least 1X month	64.4%
Village collector has stolen money	10.3%
% of villagers working for government (mean(sd))	16.8%(19.1)
% of villagers working in migrant labour (mean(sd))	7.04%(8.8)
Perceived quality of contracting facility is poor	11.5%
Perceived quality of contracting facility is average	60.9%
Perceived quality of contracting facility is high	27.6%
Contracting facility: Sissattanak district hospital	19.5%
Contracting facility: Hatxaifong district hospital	9.2%
Contracting facility: Phonehong district hospital	10.3%
Contracting facility: Keoudom district hospital	21.8%
Contracting facility: Vientiane provincial hospital	19.5%
Contracting facility: Champasak district hospital	19.5%
	N=87

Note: All estimates at the village level are self-weighted.

The majority of chiefs rate the quality of the facility that contracts with CBHI for first-line care as average or higher, relative to other options. In four fifths of the villages, CBHI members are required to use the district hospital for their first line care, whereas in one-fifth of the villages, CBHI members go directly to the provincial hospital for their first line care as there is no district hospital within close proximity.

5.3.2 Determinants of CBHI enrolment: quantitative and qualitative results

Household-level determinants of CBHI enrolment

The marginal effects of explanatory variables were estimated from the probit model and are shown in Table 5.4. The results showed that age and education of the household head were associated with enrolment in CBHI, such that households in which the household

head is older or has either vocational or post-secondary education, were more likely to enrol. Surprisingly, household size was not significantly associated with enrolment, even though the scheme's premium structure provides an incentive for larger households to enrol: as family size increases, the cost of the premium per person decreases.

The results confirmed that health status is a significant determinant of enrolment in CBHI. The marginal effect indicates that having a chronic illness in the household increased the probability of enrolment by almost 5 percentage points, while having a member who had difficulty performing activities increased the probability of enrolment by 3 percentage points. Both these relationships were significant. However, households with poorer than average (self-rated) health were not significantly more likely to enrol.[72] Other types of risks at the household level were significantly associated with enrolment: having a pregnancy in the household and having more women of reproductive age. However, having an elderly family member or a child under the age of five[73] was not significantly associated with enrolment.

The relationship between illness and enrolment was supported by the focus group discussions. In all focus group discussions, the most frequently cited reason for enrolling was that family members suffer from chronic conditions, while in non-member households the second most frequently reported reason for never enrolling in the scheme was that people were healthy.

"Joining CBHI is really convenient as I often see doctors about my diabetes and high blood pressure. Sometimes it is not only me who sees the doctors, but also my family members: one person has a fever or another person has a problem with his stomach."

-CBHI member from Ban Donetalarth, Champasak district

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[72] Four health status variables were used in the analysis: self-rated health; chronic illness; difficulty; and deteriorating health. Tests for multicollinearity showed that the variables are only weakly collinear (VIF<1.5; tolerance is between .72 and .83 for all variables). However, it was also necessary to test for synergistic effects (i.e., whether the presence of multiple symptoms had an additional effect on enrolment). When entered separately, each variable with the exception of "deterioration of health" was significantly associated with a higher probability of enrolment. "Deterioration of health" was removed from the final model to improve model fit. A second iteration of the model was constructed using all three remaining health variables and interactions of the variables: none of the interactions were significant but "chronic illness" and "difficulty with activities" were both significant at the .01 level. The interactions were therefore dropped from the model as they did not further explain relationships between variables.
[73] The relationship between having children aged 0-5 and enrolment was not significant and was removed from the final model.

"In my case, I always get sick. The hospital is like my second home! I had an operation five months after enrolling in the scheme and I did not pay anything."

-CBHI member from Ban Kaenghai, Keoudom district

"No one in my family gets sick; I am not really interested in this scheme. When someone in my family gets sick, we just go to the hospital like normal patients."

-Non-member from Ban Chompettai, Sissattanak district

The positive association between pregnancy and enrolment in CBHI would make sense if most women in the target group had a preference for facility deliveries. For women who are expecting to become pregnant[74], CBHI can be an attractive option in that deliveries are covered by the scheme, whereas deliveries in public hospitals are considerably expensive.[75] Even if women don't anticipate becoming pregnant prior to enrolment, it is possible that once enrolled, women remain in the scheme when they become pregnant, in order to take advantage of free facility deliveries. However, in all three FGDs with members, participants agreed that most women prefer to deliver babies in their homes, rather than in a facility. Thus, the quantitative and qualitative findings showed some inconsistencies. However, only a few pregnant women participated in the FGDs and very little time was allotted during the FGDs to discuss preferences for maternal health care. Therefore, insufficient data exists to investigate this issue thoroughly. Thus, it is difficult to ascertain whether or not the relationship between enrolment and pregnancy is related to the demand for maternal care or tied to other unobservable factors that are related to pregnancy.

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[74] Pregnant women in the sample were pregnant at the time of data collection and therefore became pregnant at least one year *after* enrolment in CBHI.

[75] In 2011, the Government of Laos introduced a pilot project to provide free deliveries in public facilities for all women. However, at the time of data collection, deliveries were only free for the insured.

Table 5.4 Marginal effects of determinants of enrolment

Dependent variable: CBHI enrolment (1,0)	M.E.	S.E.	p>|z|
Household-level variables			
Age of household head	0.0064	0.0021	0.003**
(Age of household head)²	<0.0001	<0.0001	0.043*
Education of HH head: completed any primary (vs. "none")	0.0062	0.0117	0.595
Education of HH head: completed any secondary	0.0117	0.0161	0.459
Education of HH head: completed any vocational	0.0425	0.0231	0.031*
Education of HH head: completed any post-secondary	0.0686	0.0381	0.025*
HH head is married (vs. "not married")	0.0152	0.0093	0.123
Household size: 4-5 members	-0.0007	0.0112	0.952
Household size: 6+ members	0.0111	0.0133	0.391
Someone in household has worse than average health	0.0095	0.0118	0.401
Someone in household has a chronic health condition	0.0461	0.0143	<0.001**
Someone in HH had difficulty performing activities in past 3 months	0.0302	0.0168	0.047*
At least one pregnancy in household (currently)	0.0411	0.0241	0.048*
Number of women of reproductive age (15-49)	0.0127	0.0035	<0.001**
At least one HH member >=65 years	-0.0016	0.0088	0.860
Household head is risk averse	-0.0141	0.0064	0.030*
HH consumption per capita: quintile 2 (vs. quintile 1)	0.0118	0.0130	<0.348
HH consumption per capita: quintile 3	0.0262	0.0130	<0.029*
HH consumption per capita: quintile 4	0.0503	0.0165	<0.001**
HH consumption per capita: quintile 5	0.0452	0.0168	<0.003*
HH wealth (asset index)	0.192	.0030	<0.001**
Job HH head: family farm (vs. not working for money)	-0.0148	0.0100	0.162
Job HH head: small-scale trading/self-employed	-0.0184	0.0097	0.075
Job HH head: work for someone else	0.0117	0.0119	0.310
Recommends a government hospital for moderate illness	0.0199	0.0141	0.205
Household head's perception of quality of district hospital is good	0.0395	0.0066	<0.001**
Attended campaign	0.0846	0.0077	<0.001**
Urban (vs. semi-urban or rural)	-0.0334	0.0088	<0.001**
Village-level variables			
Pharmacy in village	-0.0048	0.0097	0.620
Drug seller in village	-0.0178	0.0091	0.053
Health centre in village	-0.0238	0.0094	0.024*
Private clinic in village	-0.0150	0.0127	0.259
Young village chief (<=40 years)	0.0428	0.0150	0.001**
Village chief has secondary education (vs. primary only)	0.0164	0.0082	0.045*
Chief is a member of CBHI	-0.0014	0.0099	0.889
CBHI collection system in place (vs. "other")	0.0108	0.0108	0.327
3 or more campaigns conducted in village	0.0283	0.0085	0.001**
Door-to-door promotion of CBHI in village	-0.0043	0.0134	0.754
Relative quality in village is medium (vs. "low")	0.0003	0.0150	0.983
Relative quality in village is high	0.0187	0.0207	0.343
Village size (log of # households in village)	-0.0390	0.0085	<0.001**
Contracting hospital 1: Sissattanak district (vs. Hatxaifong district)	0.0206	0.0180	0.228
Contracting hospital 3: Phonehong district	-0.0045	0.0206	0.822
Contracting hospital 4: Keoudom district	0.0843	0.0260	<0.001**
Contracting hospital 5: Viengkham provincial	0.0154	0.0177	0.359
Contracting hospital 6: Champasak district	0.1674	0.0342	<0.001**
Number of observations	3000		

Pseudo R2=0.1803; Wald chi2(46)=872.40; Prob>chi2<0.001; Log pseudolikelihood=-886.078
Hosmer-Lemeshow chi2(8)=4.95, Prob chi2=0.763

*significant at 5%; **significant at 1%; Note: Sampling weights were applied to the model and the t-statistics were adjusted for clustering at the village level and therefore, standard errors are robust. Non-significance of the Hosmer-Lemeshow test indicates that the data fit the model well. There are no obvious misspecifications.

In contrast to prior expectations, the quantitative findings showed that households in which the household head is risk averse were significantly *less* likely to enrol in CBHI. Qualitative interviews shed light on why this may be the case. Although the majority of the respondents in the FGDs reported that enrolling in CBHI allows people to minimise their risk, some felt that enrolling in CBHI is a risky venture and that enrolment actually *increases* risk, because one can't be sure that benefits will be delivered when they are needed.

> *"I am taking a risk by putting money into the scheme because after two years if the scheme collapses I will not get anything from it."*
>
> *-Member from Ban Thamouong, Hatxaifong district*

Thus, risk-averse individuals who worry about losing money from an unexpected illness do not have enough confidence in the CBHI scheme to see investing in it as a risk-reduction strategy.

Although there was no association between enrolment and the job category of the household head, households with higher income (measured by consumption quintiles) were significantly more likely to enrol in CBHI. The probit analysis showed that the probability of enrolment increases with wealth for households in the top three quintiles. However, once a certain level of wealth has been achieved, the additional effect of wealth has diminishing returns, as shown by the peak in the marginal effect among the fourth quintile. This makes sense given that CBHI does not target the rich. According to a FGD participant, *"rich people are not interested in joining this scheme because they have money and when they get sick they can choose wherever they like to go for treatment; mostly they will go to private clinics, then to the central hospital or to Thailand"*. The most frequent reason for never enrolling in CBHI was the inability to afford the premiums. A FGD participant explained why his family's financial situation prevents him from enrolling:

> *"For me, it's already difficult to pay for our monthly expenditure. I don't have enough money. My four children also go to school; sometimes I cannot earn money for their school on time. Then I have other expenses such as water bill, electricity bill, rice farming (because I have to pay for water pumped into my rice field). It costs more than 1 million kip per year. So the money I earn is spent on many things. There are eight people in my family; they sometimes get sick but not very serious illness. I sometimes borrow money from others when my children get sick"*

In addition to the effect of household consumption on enrolment in CBHI, wealth status, measured by a household asset index, exerts an independent effect on enrolment such that households with higher living standards (as measured by household assets) are more likely to enrol in insurance.

In designing this study, it was acknowledged that the decision to enrol in CBHI could be linked to factors such as ethnicity, preferences for modern health care (e.g., whether a household uses traditional or modern care), and perceptions of quality of care. The study found that almost all households in the sample belong to the Tai-Kadai ethnic group, and therefore this variable was excluded from the multivariate analysis. Almost all households recommended a government hospital for moderate illness (a proxy for a preference for modern services) and any differences in preferences for care did not explain differences in enrolment in this sample.

The probit analysis showed a significant and positive association between perception of health care quality at the contracting facility and enrolment in CBHI. Given the cross-sectional nature of the data, the relationship between quality and enrolment could be endogenous: it is plausible that higher quality reported by CBHI members is a *result* of being in the scheme, rather than a factor affecting enrolment. For example, CBHI members may have more contact with the district hospitals or a better experience overall because they don't have to pay for health care, leading them to report better quality. However, the qualitative findings, described below, are incongruent with the quantitative findings.

The qualitative findings allow exploration into various dimensions of quality and shed light on differential treatment between members and non-members. Across all six FGDs, CBHI members, non-members and drop-outs agreed that non-members, who pay for services at the point of service delivery, receive services faster than CBHI members regardless of the urgency of health care needs.

> *"When CBHI members go to the hospital and show their membership card, the hospital workers ignore them and make them wait for a very long time. But if people with money come to the hospital, the staff gives them faster services — they need not wait long! In some cases, when CBHI members have an emergency or very serious illness, they do not receive priority treatment.*

Instead, they are kept for a very long time and have to wait their turn. So some people would die before they get their turn! This is why some people drop out"

-Drop-out from Ban Thamouong, Hatxaifong district

Across all six villages where FGDs were held, participants complained that CBHI members usually receive low quality drugs, while non-members are prescribed a variety of more expensive drugs. CBHI members are also reportedly treated with less respect than cash-paying patients. Among drop-outs, poor quality of services was the most frequently mentioned reason for leaving the scheme.

"I took my wife to the district hospital to have tests. The first day we were there, we did not get examined because it was quite late. The next day we went back, the hospital staff told us to wait. We were just waiting for doctors and did not get anything. We waited with other CBHI members until lunch time. They told us to come back again in the afternoon. We then came back in the afternoon and the doctor gave us each three pills of Paracetamol and other medicines. I noticed that other CBHI members also got the same kind of medicines. Later, I took my wife again to the hospital. This time I didn't use the CBHI membership card. I used cash. The nurses and doctors took good care of my wife and I paid each of them 700,000 kip per day (US $82.00/day). They provided very good services but it was about 11 days and I spent 16 million kip (US $1882.00)! I actually had no problem to pay the money because I wanted to save my wife's life. Since then, I stopped being a CBHI member since we have money to pay. "

-Drop-out from Chomphettai, Sissattanak district

Aside from the differential treatment given to members and non-members, health care workers reportedly provide faster treatment to patients who have money or who have relatives working in the hospital. Several participants also mentioned that children are given preferential treatment over adults. However, quality of service delivery is reportedly poor in general. Both members and non-members reported that health care staff members do not have the skills to diagnose health problems and that productivity is low. For example, some FGD participants described the behaviour of health care workers as *"lazy"*, explaining that *"they just sit there and ignore patients with CBHI"*. Although a few respondents complained about the cleanliness of the hospital, most participants felt that the facilities were clean but that lack of equipment is a problem in the district hospitals. Thus, results from the FGDs contradict the quantitative findings, which indicated that CBHI members have higher perceptions of quality than non-CBHI members. It is therefore more likely that members who have positive experiences with CBHI *maintain* enrolment in CBHI, and less likely that perceptions of good quality of care at district hospitals are enticing households to enrol in the scheme.

The probit findings showed that attendance at a CBHI promotional campaign had a relatively large marginal effect on enrolment, with the probability of CBHI enrolment increasing by more than 8 percentage points relative to those who did not attend. However, at least to some extent it is expected that some CBHI members *anticipated* joining the scheme prior to attending the campaign. Although FGD participants confirmed that the campaigns were effective in encouraging people to enrol, participants claimed that people also learn about the scheme from friends and relatives in the village.[76] When asked about the quality of information presented in the campaigns, most participants agreed that the promoters of CBHI presented information clearly but about half were discouraged that the scheme promoters had failed to mention the problems with the scheme, such as poor quality, long waiting times, and cumbersome administrative procedures when using services outside the designated hospital. Therefore, attendance at a campaign, while useful to some extent, may not have the impact on enrolment indicated by the quantitative results.

Households in urban areas had a significantly lower probability of enrolling in CBHI than households in semi-urban areas. During FGDs, participants explained that people in urban areas have many options for health care and prefer to use the central hospital or private care. Enrolling in CBHI, which requires households to use services at the district hospital, is therefore less attractive in urban areas for people who can afford to pay for services. In contrast, there are fewer options for care in semi-urban or rural areas, explaining the higher probability of enrolment in these areas. Urban areas in Vientiane Capital are also close to the Thailand border, making care in Thailand an attractive option, although focus group discussions indicated that only those who are relatively well-off financially cross the border for their care.

Village level determinants of CBHI enrolment

At the village level, the factors that were found to be significantly associated with enrolment are shown in the lower half of Table 5.4, presented earlier. The results suggest

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[76] An attempt was made to measure the influence of other CBHI members on enrolment but was left out of the model as the measure was expected to be endogenous. For example, the interviewee was asked how many close friends and family members were enrolled in CBHI before the interviewee enrolled (i.e., few, some, many). However, even though this is a retrospective measure, it is likely to suffer from recall bias in that it is difficult for CBHI members to remember which CBHI members they knew before enrolling/after enrolling. Moreover, "close friends and family" and "few/some/many" are subjective measures.

that CBHI enrolment is influenced by the availability of care in the village. Households living in villages with a drug seller were less likely to enrol in CBHI, although this finding was only borderline significant. Nevertheless, this association is likely because self-treatment (from both registered pharmacies and private, unregistered drug sellers), is relatively common in Laos (Paphassarang *et al.* 2002; Sihavong *et al.* 2006; Thomé and Pholsena 2009). The findings also showed that households living in villages with a health centre were less likely to enrol in CBHI, most likely because CBHI — which requires people to leave their villages to attend the district hospital for their first point of care — is less attractive when a health centre is readily available in the village. According to FGD findings, even when the district hospital is close, it is much more convenient to use the village health centre. FGD participants also reported that they receive faster services at the village health centres, unlike the district hospital where they need to wait a long time. Distance (which was not included in the final model due to little variation across villages[77]), was not a significant factor affecting enrolment, but this finding may have more to do with the way the programme has been implemented: most villages where CBHI has been implemented, and where the study took place, are located relatively close to the district hospital. However, in one FGD, which was held in a village located 18 kilometres away from the district hospital, non-members mentioned distance as a factor affecting both enrolment and utilisation. Enrolment levels in this village have decreased since the district hospital was moved to another district. Thus, it is likely that distance will pose a barrier once CBHI is scaled up to more remote villages.

"People don't want to go to the district hospital because it is very difficult to find a vehicle (ambulance) to send them there. There is no vehicle (ambulance) at the district hospital. In order to find a car, we have to go to the market which is very far!"

-Member from Ban Kaenghai, Keoudom district

The probability of a household joining CBHI was higher in villages with younger, more educated chiefs. It is possible that younger chiefs are more active in their communities and are more likely to promote CBHI among members. Similarly, higher education may lead to a better understanding of the benefits of health insurance, making better educated chiefs more likely to encourage enrolment. However, there was not much evidence from FGDs that the chief has much of an influence in getting villagers to enrol in CBHI.

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[77] Little variation in this explanatory variable makes it difficult to estimate the coefficient with precision.

Furthermore, support of the village chief (proxied by the chief's enrolment in the scheme) was not associated with the probability of enrolment.

Households in villages where a village collector collects monthly premiums at members' homes were not significantly more likely to enrol in CBHI. Qualitative findings indicate that the effectiveness of the money collection system is inconsistent across villages, which may explain why a collection system alone does not influence enrolment: it also has to function effectively. In two out of six villages, participants complained that the village collection system is unreliable because the collector does not collect payments regularly. Several participants have dropped out of the scheme as a result, explaining that it is much more difficult to take money to the district hospital on a monthly basis. Others report that they do not mind taking the money directly to the district hospital. Therefore, although across villages there is no significant association between a collection system and enrolment, these findings were expected to differ considerably at the village level and this analysis is shown in Section 5.3.3 *(Factors associated with village level enrolment levels)*.

Households in villages that have had at least three CBHI promotion campaigns were significantly more likely to enrol in CBHI than households in villages with less than three campaigns. However, door-to-door promotion was not significantly associated with enrolment. Although it is possible that repeating campaigns in villages with low enrolment will help to boost enrolment, CBHI members and non-members feel very strongly that the most effective promotion of the scheme occurs not through campaigns but through word-of-mouth between villagers. FGD participants reported that if people hear good things about the scheme and the quality of services, they will be more likely to enrol.

"It is like going fishing; if many people go fishing and get a lot of fish, more people will want to go to the same place. If people go fishing and tell their friends that they don't get any fish, then nobody wants to go there!"

-Member from Ban Kaenghi, Keoudom district

The probability of enrolling in CBHI was negatively associated with village population size. It is possible that smaller villages have stronger solidarity with the community, and therefore the influence of family and friends and other members of CBHI is likely to be stronger than in larger villages. It is also likely that relative to households in large

villages, households in smaller villages are more likely to know a close friend or family member who is a CBHI member, making the concept of CBHI more familiar.

Quality of care at the district hospital, as perceived by the village chief, is expected to be less endogenous than household perceptions of quality. The results showed no significant association between the village-level quality measure and enrolment, but it is possible that there was not enough variation in perceptions to pick up differences in enrolment in the analysis (most chiefs reported average perceptions of quality). However, the dummy variables indicating the contracting hospital are to some extent expected to account for differences in quality between hospitals. The results showed that relative to households in Hatxaifong, households were 15 percent more likely in Champasak and 8 percent more likely in Keoudom to enrol in CBHI.[78] As described earlier, discussions with CBHI and WHO staff explained that the two schemes in Vientiane Capital (Hatxaifong and Sissattanak) have had difficulty increasing enrolment due to competition with several other health care options in the capital city. It is possible that the relatively higher probability of enrolment in Champasak is a response to high prices charged to non-members for drugs at the Champasak district and provincial hospitals, as one study suggests (Ron et al. 2010). In Phonehong and Viengkham, a problem with coordination between the provincial and district CBHI teams and the hospitals is believed to be the main reason for low coverage (Personal communication with WHO staff members in Lao PDR 2009).

Predicted probabilities of enrolment

The preceding analysis showed the relative impact of different independent variables on CBHI enrolment. However, as described earlier, there are limits to understanding enrolment by examining results from the probit alone. Therefore, to better understand the relationship between variables, predicted probabilities are presented below for "representative households". Figure 5.1 shows that the probability of enrolment for a healthy household (i.e., a household with no chronic illness and no difficulty performing activities) increases with income level (measured by consumption quintiles). Similarly, the probability of enrolment for a household with a sick individual increases with

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[78] Although the CBHI scheme usually contracts with the district hospital, the scheme in Viengkham contracts with the Vientiane provincial hospital. The Vientiane provincial hospital also serves 4 villages in Phonehong and these villages have been grouped under the Viengkham scheme in the analysis.

income, shown by the predicted probabilities of a household with a chronic illness, difficulty performing activities, or both.[79] Thus, both income and illness have a positive impact on enrolment. Although the absolute effect of illness on enrolment is higher in the highest quintile than in the lowest quintile (i.e., 10.3% vs. 13.7%), the relative effect of illness is actually smaller among the highest quintile than it is among the poorest quintile (i.e., the relative differences are 200% for the highest quintile and 224% for the lowest quintile). This is because the better off have a higher probability of enrolment in the first place. These results indicate that the impacts of illness are heterogeneous across quintiles — a finding that is not revealed by examining the results of the probit alone.[80]

Figure 5.1 Predicted probability of CBHI enrolment by health status and wealth quintiles
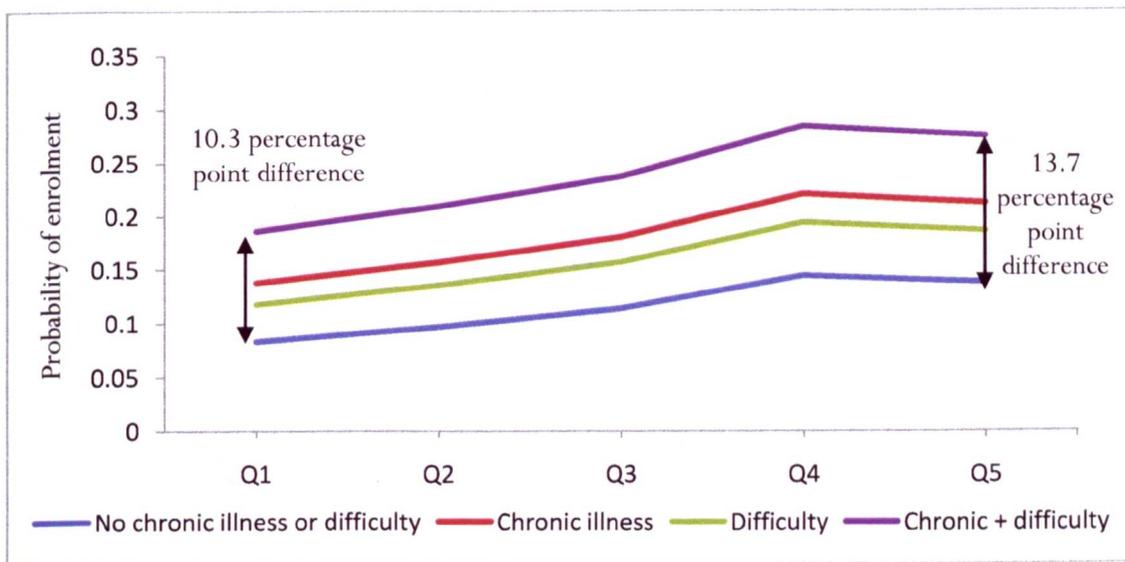
Note: Wealth quintiles are based on a household consumption index.

5.3.3 Factors associated with village-level enrolment levels

Overview of village-level enrolment levels

While the analysis above identifies determinants of *household* enrolment, the findings do not explain the range in enrolment levels across villages. Across the sample, enrolment

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[79] Multiple signs of illness could exist within one family member or across multiple family members.
[80] It is important to note that the heterogeneity in the impacts of health status on enrolment by quintile were not explicitly modelled using an interaction term. Therefore, the higher marginal effects of illness on enrolment in the highest quintile could be, at least in part, due to the parametric specification of the model. Nevertheless, predicted probabilities provide a straightforward approach to examining relationships in the data.

ranges from 1 percent to 72 percent[81], with a median enrolment level of 12.2 percent
(See Figure 5.2).

Figure 5.2 Village-level enrolment levels for the sample
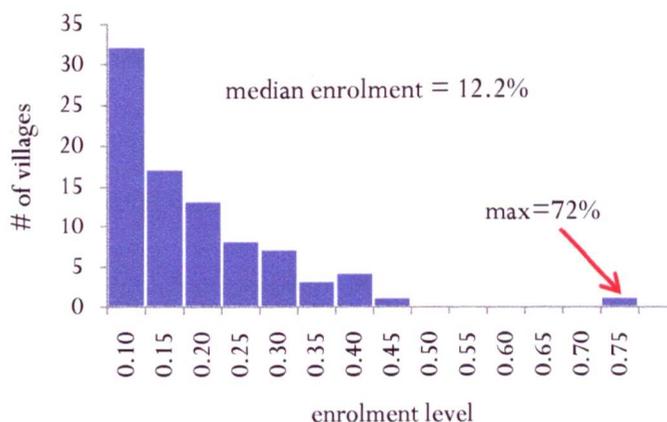
Factors associated with village enrolment levels

The results of the multivariate regression model in Table 5.5 identify factors associated
with enrolment levels at the village level.[82] The village-level model includes some of the
independent variables used in the household enrolment model as well as additional
variables. Two different regression models were estimated: the first model excluded
from the analysis the village with a 72 percent enrolment level, which is considered to be
an outlier, while the second model included the outlier. The findings showed that using
both models, enrolment levels are significantly higher in villages with a young village
chief, a finding that is consistent with the determinants of enrolment at the household
level. In contrast to the household level analysis, which showed no significant
association between a CBHI collection system and household enrolment, having a
village collector was associated with higher enrolment in the village. A former member
of the scheme, who also once worked as the village collector, explained how the
collection system changed after he resigned.

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[81] The village with a 72% enrolment level is one of the smallest in the sample, with only 57 households.
[82] Given the small number of villages in the sample, the level of significance is set at 10% for village level
effects. (According to *ex post* sample size calculations in Stata, using *'sampsi'*, to detect differences of 5%,
a sample size of 93 is recommended; only 74 observations are required to detect differences of 10%).

> *"When I stopped collecting money in 2005, it became a responsibility of the village to promote the scheme. The village promotes the scheme through individual mobilising and community mobilising, for example, when I collected money from members, I would encourage more people to join the scheme. After I resigned, the district hospital was responsible for collecting money and the number of CBHI members decreased until they handed over (responsibility) to our current CBHI money collector. (Since then) the members have increased gradually and remain stable (there are now about 30 CBHI members)."*
> *-Drop-out and former village collector, Ban Phonehang, Phonehang district*

Another drop-out explained that the termination of the money collection system in his village is the reason he dropped out.

> *"Actually it was not me who wanted to drop out! It was because of the money collector who did not come to collect money from me. I waited for him to collect money, but did not see anyone asking me to pay; I was just cut off from the scheme."*
> *-Former member in Ban Phonehang, Phonehang district*

It is clear that the quality and reliability of the village collection system may play an important role in determining enrolment levels, especially in villages where the money collector and other village authorities actively promote the scheme.

The relationship between high enrolment and monthly discussions about CBHI is likely to be endogenous as villages with higher enrolment levels are more likely to have questions or raise issues about CBHI. Thus, these results should be interpreted with this caveat in mind.

Village enrolment levels are higher in smaller villages and villages with fewer migrant labourers. It makes sense that migrant labourers would be less likely to join CBHI because they do not live in the village year round and can therefore not make the monthly premiums or take advantage of services covered. However, it is also possible that there are unobservable factors associated with migrant labour leading to omitted variable bias (e.g., migrant labourers could be healthier given that they are well enough to travel to work and therefore less in need of insurance or health care).

Table 5.5 Determinants of village enrolment levels: regression results

Dependent variable: CBHI enrolment level in village	Model 1 (excludes 72% outlier)			Model 2 (includes 72% outlier)		
	Coef.	S.E.	p>t	Coef.	S.E.	p>t
Village chief is young (<=40 years)	0.061	0.028	0.035**	0.094	0.033	0.007**
Chief has at least secondary education	0.015	0.019	0.414	0.026	0.022	0.248
Chief is a member of CBHI	0.032	0.022	0.151	0.032	0.027	0.236
Pharmacy in village	0.000	0.022	0.991	-0.007	0.026	0.779
Drug seller in village	-0.007	0.022	0.738	-0.002	0.026	0.927
Traditional healer in village	-0.035	0.022	0.112	-0.037	0.026	0.159
Health centre in village	-0.025	0.028	0.382	-0.025	0.034	0.468
Private clinic in village	-0.033	0.030	0.279	-0.026	0.037	0.479
3 or more campaigns in village	0.006	0.020	0.779	0.009	0.024	0.723
Distance to hospital (km)	-0.004	0.011	0.745	0.004	0.013	0.766
Door-to-door promotion of CBHI in village	-0.013	0.026	0.614	-0.022	0.031	0.477
CBHI collection system in village	0.057	0.023	0.016**	0.058	0.028	0.040**
CBHI is discussed at least 1x per month in village	-0.053	0.021	0.014**	-0.061	0.025	0.018**
Mass organisations promote CBHI in village	0.036	0.021	0.093*	0.022	0.025	0.387
Number of visits from provincial CBHI team	0.020	0.023	0.372	0.017	0.028	0.539
Collector has stolen money	-0.039	0.033	0.240	-0.067	0.039	0.092*
Total number of households in village	<0.001	<0.001	0.030**	<0.001	<0.001	0.023**
% of households working for government	<0.001	<0.001	0.603	<0.001	<0.001	0.992
% of households that are migrant labourers	-0.002	0.001	0.022**	-0.003	0.001	0.020**
Perceived quality is medium (omitted: poor)	-0.021	0.033	0.530	-0.021	0.039	0.591
Perceived quality is high (omitted: poor)	-0.012	0.040	0.769	0.001	0.048	0.982
Hospital 1: Sissattanak (Hatxaifong omitted)	-0.023	0.042	0.589	-0.033	0.050	0.510
Hospital 3: Phonehong	-0.009	0.049	0.850	-0.044	0.059	0.453
Hospital 4: Keoudom	0.066	0.042	0.123	0.036	0.051	0.475
Hospital 5: Vientiane provincial	0.039	0.050	0.434	0.026	0.060	0.673
Hospital 6: Champasak	0.102	0.046	0.032**	0.088	0.056	0.120
Constant	0.133	0.062	0.036	0.168	0.075	0.028
Adjusted R2	0.448			0.408		
N	86			87		

*Significant at 10% level; **significant at 5% level. The above models use ordinary least squares regression.

Like the household enrolment analysis, the results indicate that the scheme has had the most success in Champasak, in that enrolment levels were significantly higher for villages using the Champasak district hospital. However, in Model 2 this relationship was not significant. The results from the two models also diverged on two other variables. In model 1, enrolment was significantly higher in villages in which mass organisations promote CBHI but in model 2 this relationship was not significant. In model 2, enrolment levels were significantly lower in villages where the village collector has stolen money but this relationship was not significant in model 1. Stealing or misusing funds from the scheme by the collector was reported in 10 percent of villages and could affect villagers' trust in the system.

5.4 Discussion

The findings generated from this sub-study reveal useful information about the target group's decision to enrol in CBHI. The empirical findings indicate that the decision to enrol is influenced by a range of factors at the household and village levels, including education, health status, risk attitudes, socioeconomic status, quality perceptions, and availability of health care alternatives in the village. Four findings are of particular interest because of their contribution to the literature on CBHI enrolment, as well as their implications for health policy in Laos.

First, the results confirm that illness is driving enrolment in CBHI, and the use of multiple health status measures helps to understand this relationship. These results are consistent with the hypothesis that households with poorer health status are more likely to enrol in CBHI than households with better health status. Thus, there is evidence of adverse selection in the scheme. This finding supports literature from Senegal, Thailand[83], India and China (Jakab *et al.* 2001; Wang *et al.* 2005; Wang *et al.* 2006; Chankova *et al.* 2008; Zhang and Wang 2008) but is inconsistent with results from other studies that did not find a link between health status and enrolment (Jütting 2003; Schneider and Diop 2004; De Allegri *et al.* 2006a; Nguyen and Knowles 2010). From a public health perspective the link between poor health and higher enrolment is encouraging, as it indicates that households with the greatest need for health care services are purchasing insurance. However, given that all members play a flat-rate premium regardless of their risk profile, adverse selection can drive up the cost of health care per insured member and can ultimately threaten the sustainability and financial viability of the scheme. Although CBHI in Laos has attempted to counteract adverse selection by requiring household level enrolment and imposing a waiting time prior to use of services, the results of this study indicate that these measures are insufficient to prevent adverse selection. As long as CBHI is voluntary, it is likely that adverse selection will remain a problem, judging from global experiences.

A second noteworthy finding is the negative relationship between risk aversion and enrolment. This finding is inconsistent with the hypothesis that households with greater

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[83] The evaluation of the Thailand scheme was conducted when Thailand had a community-based scheme, which was largely subsidised by the government.

aversion to risk are *more* likely to enrol in CBHI. However, it is important to note that expected utility theory assumes that insurance is a risk-minimizing strategy and that the scheme will offer protection. As noted in the literature, however, many schemes are poorly managed (De Allegri *et al.* 2006b; Basaza *et al.* 2007; Basaza *et al.* 2008). Moreover, in low-capacity environments, quality of care of covered services is often poor and therefore the features of CBHI may not be risk-minimizing relative to other options. For example, if households perceive the public health care system to be of low quality, then they may view enrolling in CBHI (which requires users to first seek services at the district hospital in the public system, where quality is reportedly poor) as less attractive than remaining uninsured (which allows users a broad choice of health care options, including seeking care in the private sector). Thus, purchasing insurance for some could actually be more risky than not purchasing insurance, especially among the poor, for whom a given loss can be ruinous (Dercon 2002; Dercon 2007; Bendig and Arun 2011). The findings on the relationship between risk and enrolment in CBHI in this study are consistent with a study that found that risk-averse households are less likely to purchase rainfall insurance among farmers in India (Gine *et al.* 2008).

Other economic and social theories may explain better why risk-averse individuals are *less* likely to enrol in the Lao scheme. Under the theory of expected payoffs (Manning and Marquis 1996) households will insure only if they perceive the benefits of enrolment to be higher than the costs, relative to being uninsured. Musgrove (2007) cautions that in low-income countries, risk aversion does not readily translate into the demand for insurance, and that other factors such as cultural or sociological reasons may carry more weight than the purely rational approach to the connection between risk and insurance (Musgrove 2007). For example, trust in the scheme management has also been reported as an important determinant of enrolment (Schneider 2005; Ozawa and Walker 2009). Furthermore, even if individuals can consciously calculate that the expected benefits of insurance outweigh the costs, the benefits may not be realised in the presence of poor quality health care and low capacity to effectively manage the scheme. Thus, in the context of a poorly functioning health care system or poorly managed scheme, it may be that the risk-averse will be less likely to enrol.

The findings regarding the relationship between consumption and enrolment and asset index and enrolment both support the hypothesis that the poorest households are the least likely to enrol in CBHI. These results are consistent with much of the enrolment

literature (Jütting 2003; Wang *et al.* 2005; De Allegri *et al.* 2006a; Chankova *et al.* 2008; Gnawali *et al.* 2009; Jehu-Appiah *et al.* 2011) as well as with economic theory, which predicts that like other "normal goods" the demand for health insurance increases with a rise in income (Folland *et al.* 2007). Although CBHI in Laos does not specifically target the poorest households (this is the task of health equity funds (HEFs), which also suffer from low coverage), lower enrolment by the poor raises concerns about equity. Given that the poor are most vulnerable to catastrophic health payments (Pannarunothai and Mills 1997; Wagstaff and van Doorslaer 2003), it is important that strategies to expand risk-protection schemes target the poorest. Although plans are underway in Laos to eventually link health equity funds with CBHI, so that the fund will pay the premium on behalf of the poor, these linkages have only been implemented on a small scale and the effectiveness of this linkage on increasing coverage and other outcomes such as utilisation is questionable. Apart from HEFs, there are no subsidies in place to cover the cost of CBHI premiums for the poor. Nor is a systematic targeting scheme in place for identifying eligible households.[84] Given the current financing arrangements in Laos, CBHI may continue to exacerbate inequities in areas where subsidies for the poor are not available.

Finally, the study findings indicate that the perception of quality of care is an important factor affecting enrolment in CBHI in that those who perceive quality to be poor are less likely to enrol. This finding is consistent with the hypothesis generated from the conceptual framework as well as previous studies on enrolment (Criel and Waelkens 2003; Basaza *et al.* 2008; Mathauer *et al.* 2008). The complaints about low quality of public health care in Laos are consistent with what other studies from Laos have reported (Paphassarang *et al.* 2002; Thomé and Pholsena 2009). Poor quality of care remains a source of dissatisfaction for *both* members and non-members and is one of the major reasons for leaving the scheme. For example, health care workers lack the skills to adequately diagnose health problems, productivity among health care workers is low, and lack of equipment is a problem in most facilities. However, in addition to poor overall quality, the study identifies specific details about the differential treatment between CBHI members and cash-paying patients. For example, CBHI members are

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[84] Although the government has drafted guidelines to assist local authorities in identifying and monitoring poor households, there is presently significant variation in the criteria used by villages, as this study showed. Moreover, the list of poor households is not consistently maintained across villages.

reportedly made to wait longer to be treated, are treated with less respect, and receive poorer quality drugs than non-CBHI members. A recently published study confirms that cash-paying patients receive more expensive drugs than insured patients but does not measure the extent to which the insured may be under-serviced (Syhakhang *et al.* 2011). However, based on the qualitative findings the differences are unlikely to be simply misperceptions by CBHI members: even non-members confirm that treatment is better for paying patients. Differential treatment would not be surprising given that capitation payments are low and do not cover costs, and that providers depend on the fees charged by paying patients to operate the facilities. Thus, strategies that aim to improve quality overall, and improve equality of treatment between the insured and uninsured will be important factors affecting insurance uptake in the future. If people do not perceive the health services as valuable, they will be less inclined to enrol. In their review of lessons learned from CBHI schemes in sub-Saharan Africa, Wiesman and Jutting state that quality improvement should not be expected as an outcome of resource mobilisation via insurance, but must be considered a necessary precondition for successful implementation of CBHI (Wiesman and Jütting 2000).

5.5 Limitations of methodology

The main limitation of the enrolment sub-study is the cross-sectional nature of the data, which makes it difficult to infer causation between an independent variable and the outcome (enrolment). A number of variables in the enrolment probit model are likely to be endogenous. Although consumption quintiles are expected to be less endogenous than absolute measures of consumption, it is likely that the relationship between quintiles and enrolment is still endogenous. Similarly, it is also possible that the relationship between wealth status (as measured by the asset index) and enrolment is endogenous. Other variables that are likely to be endogenous with enrolment include quality and exposure to CBHI. Despite this endogeneity, the FGD findings support the direction of the results. For example, the FGD results confirm that people who are poorer are less likely to enrol in insurance. However, it is important to note that endogeneity is difficult to overcome with the cross-sectional study and could bias the results identified by the probit model.

A second potential source of bias stems from omitted variables. Although the questionnaires included details about a wide range of factors expected to influence enrolment, it is likely that some important variables were excluded. For example,

political affiliation was not measured due to the sensitivity of gathering this information. Omitting variables may bias the effect of other determinants, either in a positive or negative direction. However, as discussed, it is expected that the most important variables influencing enrolment were accounted for in the analysis and therefore, omitted variable bias is likely to be minimal.

Given that the findings on the relationship between risk attitudes and enrolment are used to test a key hypothesis of this study, it is important to note the limitations of the risk-aversion measure. First, the risk-aversion classes that were used in the question were not validated in the context of Laos and were not based on partial risk aversion intervals, as was done in the original experiment by Binswanger. However, given that the variable was dichotomized, it was only necessary to differentiate the "risk-free" gamble with the other gambles. The second limitation with respect to the risk-aversion measure is that it may not be valid to extrapolate from hypothetical risk preferences to actual decisions about health insurance enrolment, although in the experiment from which the risk question was adapted, no significant difference was found between hypothetical and actual responses (Binswanger 1980).

A fourth limitation is the external validity of the findings on the determinants of enrolment. The household level findings on the determinants of enrolment in CBHI are likely representative of the target population that existed at the time of the study, given that the sample accounted for 30 percent of households enrolled at the time. This target group included households in the most affluent, urban and semi-urban areas of the country, where quality of care is relatively good and where the majority of the population belongs to the Tai-Kadai ethnic group. However, the target group has expanded since data collection and will continue to expand in the future to groups that may be very different and harder to reach (e.g., villages with lower socio-economic status, ethnic minorities and remote access to health facilities, etc.). Thus, external validity is likely to be strong for the target group that existed at the time of the study but results cannot necessarily be generalised to new and future areas.

Although the village level analysis complements the household enrolment analysis, on its own the small sample size (87 villages) leads to relatively low precision when estimating the factors affecting village-level enrolment levels. Thus, the risk of a type 2 error (i.e.,

failure to reject the null when a significant relationship exists) should be considered. Results should be interpreted with this caveat in mind.

Although the main limitations of the focus group discussion methodology were discussed in Chapter 4, there are limitations to the analysis that should be mentioned. The summary reports that I received from the moderator may have excluded important pieces of information that caused me to misinterpret the results, or give greater weight to certain statements. Moreover, because I was not present for the discussions, I had to rely on the moderator to translate, interpret and summarise the discussions, which may have led to information bias. Although an effort was made to ensure all opinions were acknowledged in the analysis, there is still a risk of "confirmability bias", which occurs because researchers have a tendency to make a stronger case for accounts that fit well with other independently derived analyses (Miles and Huberman 1994). Given that the quantitative analysis had already been conducted, it is possible that I inadvertently gave greater weight to statements that confirmed the quantitative findings.

5.6 Concluding remarks

This sub-study has uncovered factors that are most likely to influence enrolment in CBHI and also sheds light on the potential challenges of expanding enrolment further: adverse selection threatens the sustainability and financial viability of the scheme; (reported) poor quality of care hinders expansion of the scheme (and is not likely to be improved in the near future); and CBHI may be exacerbating inequities in areas where subsidies are not available for the poorest. The findings point to a number of short- to medium-term programmatic changes that could help to strengthen CBHI, including: reaching out to households that are least likely to enrol in CBHI; improving quality of information dissemination regarding CBHI during awareness campaigns; updating contribution rates and improving collection of premiums (including strengthening incentives for village collectors); and strengthening the CBHI and management information system. These recommendations are discussed in more detail in a policy note that was written for the Government of Laos and its partners, prior to drafting the health financing strategy (Alkenbrack et al. 2010)(See Appendix D1 for the English summary-version of the policy note).

However, although a number of short-term programmatic changes can help to strengthen CBHI, the longer term challenges of expanding insurance to the informal sector through this route will be more difficult to overcome especially given that the areas that have been targeted to date are those with relatively high socioeconomic status, and access to relatively good quality care. It is therefore worth considering broader strategies that can be taken to expand enrolment within the informal sector. These recommendations and policy implications are discussed in Chapter 8. This discussion will be partly informed by the findings from the impact evaluation of the CBHI scheme, which are presented in the next chapter. The impact evaluation builds upon the analysis from this chapter to examine the impact of CBHI on utilisation, out-of-pocket expenditures, source of care, and other outcomes of interest.

Chapter 6. The impact of community-based health insurance on utilisation and out-of-pocket expenditures

6.1 Introduction

As in other countries, community-based health insurance has been introduced in Lao PDR in hopes of increasing access to health services and reducing medical-related out-of-pocket payments among the informal sector. A voluminous body of the international health financing literature is devoted to understanding whether, and to what extent, CBHI and other voluntary insurance schemes facilitate utilisation of health care services and increase financial protection among the insured. While most of the evidence suggests that CBHI increases utilisation of health care among beneficiaries and reduces out-of-pocket health care expenditures for its members, there are inconsistencies across schemes. Moreover, with the exception of some recent studies, the literature on the impacts of CBHI suffers from methodological weaknesses. One of the main concerns has been the failure to adequately account for differences in risk/health status between members and non-members that leads to adverse selection and other sources of selection bias.[85] As discussed in the literature review in Chapter 2, and also shown in the conceptual framework in Chapter 4, the demand for health insurance is influenced by the expectations about the *need* for services in the future. This need for services is linked to the use of and expenditures on health services and therefore, any attempt to measure the impacts of insurance must take this need into account to prevent selection bias of impact findings.

As discussed in the conceptual framework, insurance lowers the price of care at the point of service delivery, which leads to a higher demand for services among the insured. Thus, it is hypothesised that CBHI members will have higher utilisation rates than the uninsured. Among those using services, the insured are hypothesized to incur lower out-of-pocket expenditures than the uninsured, given that most services are covered by insurance and there are no copayments for covered services. However, despite coverage of services there are some costs to using health care, such as transportation, supplies, and

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[85] The broader body of literature on voluntary health insurance and more recent CBHI studies make an effort to overcome the selection problem but good quality impact evaluations of CBHI are still relatively rare.

additional fees charged at facilities (either informal or formal), which create barriers to accessing health care. Because health care has a positive elasticity of demand, households that are better-off financially are hypothesized to have higher use of health services than poorer households.

This sub-study examines the impacts of CBHI by building on the methodology employed in Chapter 5, which made a strong effort to measure factors that are most likely to affect enrolment in CBHI. The sub-study addresses objective 2 of the study, which is *to measure the extent to which enrolment in CBHI facilitates access to health care services and offers financial protection to insured individuals by using a robust methodological approach.* Specifically, the sub-study aims to answer the following research questions:

1. Are CBHI members more likely to use health care services than an equivalent comparison group of uninsured individuals?

2. Does CBHI membership influence the source of health care delivery among those using services?

3. Do insured users of health care incur lower out-of-pocket payments for health care than uninsured users?

4. Are CBHI members with an inpatient visit less likely than uninsured users of inpatient services to employ coping strategies (e.g., borrowing, selling assets) to pay for health care?

5. How do outcomes (e.g., utilisation, out-of-pocket expenditures) differ across socioeconomic groups?

Two hypotheses derived from the conceptual framework are tested directly:

Hypothesis 1: CBHI members are more likely to use health care services than the uninsured.

Hypothesis 2: Insured users of health care incur lower out-of-pocket payments for health care than uninsured users.

The next section presents the methodology of the study, and this is followed by descriptive findings and results. The discussion then summarises how the results relate to the literature, and highlights policy implications in Laos, although these policy implications will be discussed in more detail in Chapter 8. The chapter then summarises the limitations of the analytical approach and concludes with some final remarks.

6.2 Methodology

6.2.1 Overview of methodology

This sub-study uses a cross-sectional, case-comparison study of insured and uninsured individuals to measure the impact of CBHI on utilisation, out-of-pocket expenditures, source of care and coping mechanisms. Like the enrolment sub-study presented in Chapter 5, this sub-study also uses qualitative methods to help explain quantitative findings, but to a lesser extent. The main method is a survey of 3000 households (covering 14,804 individuals) in 87 villages across 6 districts. The sample was selected using a multi-stage cluster sample. Unlike the enrolment sub-study, which measured outcomes at the household level, most of the outcomes in the impact evaluation are measured at the individual level, given that individuals within a household have different health care needs and health-seeking behaviours. Further details about the study design, sampling, and data collection were discussed in Chapter 4. The method used in the analysis is propensity score matching combined with single differences and the justification for this choice and a description of the approach are given in the next section.

6.2.2 Justification of analytical approach

As described in Chapter 4 (Methods), the decision to use PSM in the analysis was based on the assumption that selection into CBHI was based on observable variables. This assumption could be made only after a thorough understanding of the programme and of the factors most likely to influence enrolment. This understanding was gained through the review of economic theory and empirical literature presented in Chapter 2, as well as the pre-survey work. With this extensive knowledge about the factors affecting selection into CBHI, the questionnaire was designed to control for all known factors affecting enrolment.

As described in Chapter 2, the counterfactual outcome of a programme can never be observed because an individual observation cannot be in the treated and untreated group at the same time. This is commonly referred to as the "evaluation problem". PSM is therefore used to construct the counterfactual outcome to be used to measure the impact of a programme. Given that matching controls for differences between groups, this

comparison group is expected to be very similar to what the treated group[86] would look like in the absence of the programme.

There are several advantages of using PSM over other methods when evaluating the impact of a programme. First, by imposing the common support, PSM compares observations that are comparable on observable characteristics. Other traditional methods such as regression, rely on functional form to extrapolate outside the common support, which may not always result in robust estimates (Bryson *et al.* 2002). Second, matching uses a non-parametric approach[87] that does not impose distributional assumptions about the relationship between covariates and the outcome variable. Regression, on the other hand does impose assumptions about the relationship that is not always justified by economic theory or the data used (Dehejia and Wahba 1999; Smith and Todd 2005). The third advantage of PSM is that it allows for heterogeneity in treatment effects — that is, the impact of treatment differs across individuals or subgroups, whereas ordinary least squares regression does not (Bryson *et al.* 2002). Finally, propensity score matching offers a practical advantage over matching on covariates. When matching on covariates, the chance of finding a match decreases as the number of covariates increases. Propensity score matching instead matches on a single index reflecting the probability of participating in the programme. Rosenbaum and Rubin (1983) showed that matching on this single index is sufficient to achieve unbiased estimates of treatment effects. Therefore, observations can be matched as long as they have the same probability of participating but they do not necessarily need to share the same characteristics.

6.2.3 Description of PSM approach

To estimate the impacts of a programme using PSM, a probit model is used to construct the propensity score for each observation. The propensity score is a single-index variable that represents the predicted probability of being enrolled in the programme, conditional on the characteristics entered into the probit model. The scores are used to match "treated" observations (CBHI observations) to a comparison group of "untreated" observations. This matching seeks to control for observable differences in characteristics

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[86] The term treatment is conventionally used in the evaluation literature to indicate participation in a programme.
[87] PSM uses a non-parametric approach to perform the matching. However, the propensity scores are estimated using a probit or logit model, and therefore PSM is often referred to as a semi-parametric approach.

between the treated and untreated populations. The data used to construct the probit model in this sub-study were gathered from the household and village surveys described in Chapter 4.

A strong effort was made to account for factors that are most likely to affect selection into CBHI, such as multiple measures of health status, risk preferences, preferences for modern care, and quality perceptions. More details of the probit model are discussed in Section 6.2.5.1 *(Description of Model)*. The outcomes of interest were: utilisation of inpatient and outpatient services, out-of-pocket expenditures, source of care, time between symptoms and treatment, length of stay and whether or not coping mechanisms were used to pay for health care. The analytical approach for using PSM is discussed below in Section 6.2.5.

6.2.4 Description of focus group discussions

Like the enrolment sub-study, focus group discussions (FGDs) were also used to complement findings from the household survey. However, the focus of the FGDs was on enrolment, with more limited attention spent understanding impacts. Nevertheless, some useful information was gathered about the impact of the scheme on utilisation, source of care and financial protection and these results are presented where relevant. The approach for the FGD methodology and analysis were discussed in Chapter 4 and Chapter 5, respectively.

6.2.5 Analysis of quantitative survey

In this sub-study PSM was used to estimate the impact of CBHI on the outcomes of interest. I performed the matching using the *psmatch2* programme (Leuven and Sianesi 2003) in Stata 10.1. After matching on the propensity score, the average treatment effect (ATT) is calculated as the difference between the outcomes for the treated and the untreated. This parameter takes into account that the treated individuals in the sample have actually taken up insurance. Although it is often of policy interest to estimate the intention to treat (ITT) or the average treatment effect (ATE), it was not possible to estimate these parameters with this study design for a few reasons. First, the comparison group was selected from "exposed" villages, rather than "unexposed" villages so data needed to measure the ITT or ATE were not available. As outlined in Chapter 4 (see

page 81), this design was considered optimal because of the non-random manner in which the program was implemented. (In summary, the targeted and untargeted villages were considered to be very different and selecting a comparison group from unexposed villages was likely to result in strong village-level unobservables. Because the unexposed villages were so remote and were expected to be very different in terms of health seeking behaviour, a comparison group selected from unexposed villages was also expected to lead to poor balancing on observables.) Furthermore, measuring the ATE or ITT would require sampling the "treated" group from villages that had been offered treatment but had not necessarily taken it up. Given the low CBHI uptake rates (i.e. 13% in targeted villages), very few treated observations would be included in the sample. Thus, it was not considered relevant to policymakers to measure the population effects of a program that had been introduced on such a small scale. For these reasons, the ATT was considered the most relevant parameter.

The equation for the ATT parameter is shown below:

$$ATT = E(Y_i(1) - Y_i(0)) \mid w_i = 1,$$

In this equation, treatment status is given by w, such that $w=1$ if the individual receives treatment and $w=0$ otherwise. $Y_i(1)$ and $Y_i(0)$ denote the potential outcomes for individual i with and without treatment, respectively.

For comparison purposes, outcomes were also estimated without matching, using a probit model for binary variables and ordinary least squares regression for continuous variables. In both the matched analysis and the unmatched analysis, a significance level of .01 is used (See "Sampling" in Chapter 4 for a description of sample size calculations) but differences at the .05 level are also shown.

6.2.5.1 Description of model for estimating propensity scores for matching

A probit model was used to predict the propensity score for each individual in the sample. The dichotomous outcome denotes whether the person is a member of CBHI or not and the model includes variables at the individual, household and village levels. The probit model is not a behavioural model but rather a statistical model to estimate the propensity scores. However, only variables that simultaneously affect both treatment (i.e., CBHI enrolment) and the outcome (e.g., use of services) are included. The decision

of which variables to include was based on theory and knowledge of the programme, as recommended by the literature (Sianesi 2004; Smith and Todd 2005; Caliendo and Kopeinig May 2005). Variables that were expected to affect selection into insurance were included to minimise the likelihood of selection bias (e.g., multiple measures of health status, risk preferences, preferences for modern care, and quality perceptions.) Other variables such as demographics, education, and type of employment were also included. Like the analysis in Chapter 5, the impact evaluation used *consumption* quintiles, as consumption is expected to be a more precise estimate of socioeconomic status than an asset index. Endogeneity was expected to be less of a problem in the impact evaluation than in the study of enrolment because consumption and other variables are simply used to construct the propensity score on which matching takes place. Nevertheless, to reduce the risk of endogeneity between consumption and health care expenditures as much as possible, the consumption variable excluded all health care expenditures. The use of consumption *quintiles* also helped to decrease the risk of endogeneity, relative to a model using absolute consumption levels.

It is important to note that most of the impacts of CBHI were estimated at the *individual* level. However, selection into insurance is at the *household* level, given that all household members must enrol.[88] Therefore, the propensity score was estimated for individuals using mainly household level variables to capture selection into the household level treatment. However, to ensure that individual level characteristics were balanced, three important individual level variables were also included in the model (i.e., the individual's age, whether or not he/she has a chronic illness, and whether or not a woman is pregnant). These variables are expected to influence both enrolment and outcomes and are not affected by the programme or anticipation of the programme. The probit model was constructed to take into account clustering within households.

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[88] The decision use household level variables at the individual level was carefully considered and discussed with other experts in the field, including Barbara Sianesi at Institute for Fiscal Studies. Other studies have also used this approach (Wagstaff *et al.* 2009; Wang *et al.* 2009). It also made sense to measure individual-level outcomes rather than household level outcomes given that utilisation of services and episodic expenditures are measured at the individual level. Another option would have been to measure household level impacts but this would have prevented measurement of important outcomes such as cost per individual visit, number of visits per person, length of stay per visit, etc.

6.2.5.2 Choice of matching algorithm

In this analysis kernel matching is used to construct the comparison group.[89] While other matching approaches (e.g., nearest neighbour, caliper, radius) use one or a few observations from the comparison group to construct the counterfactual outcome of a treated individual, kernel matching uses a weighted average of all individuals in the control group, whereby the weight given to the untreated observation is in proportion to the closeness of a given treated individual. The kernel weights are inversely proportional to the absolute difference in propensity score between the treated and untreated observations (Smith and Todd 2005). Thus, kernel matching can be thought of as a weighted regression of the outcome on the treatment indicator variable with weights given by the kernel weights. If weights from a symmetric, nonnegative, unimodal kernel are used, the average places higher weight on observations that are closer in terms of their propensity scores, and lower weight on observations that are more distant (Caliendo and Kopeinig May 2005). The advantage of kernel matching over other approaches is a reduction in variance because more information is used to construct the counterfactual outcome. However, the possible drawback is that observations that are too far away could result in poor matches, which ultimately could lead to biased estimates. (This was not a concern for this study given the high degree of overlap in propensity scores between the treated and untreated, as will be shown in the results section). Moreover, imposing the region of common support ensures that observations that are too far away from each other are excluded from the analysis.[90]

Because kernel matching is analogous to running a weighted regression of the outcome on the treatment indicator, once the first outcome has been estimated using kernel matching the results can be used to estimate subsequent outcomes using a weighted regression, with probability weights constructed using the kernel weights generated from the matching exercise. The regression only includes the treatment variable and does not include the regressors, as the regressors have already been accounted for in the

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[89] I used a Gaussian (normal) kernel and bandwidth of 0.02.
[90] I experimented with other matching algorithms and found that the results were relatively robust across different matching algorithms, including nearest neighbour (with 1, 5 and 10 neighbours) and nearest neighbour caliper matching (with various calipers and with and without replacement). Kernel matching resulted in better balancing than other methods.

propensity score.[91] The coefficient on the regression represents the difference in the outcome for CBHI members relative to the uninsured. The regression approach yields the same results that one would get through kernel matching but has the advantage of being computationally faster.[92] Furthermore, the weighted regression results in robust standard errors and therefore bootstrapping, also computationally burdensome, is not required, whereas bootstrapping is required when using kernel matching through psmatch2.[93] This weighted regression approach is henceforth referred to as kernel matching, as it gives the same results as that from kernel matching but just uses a different methodology than if kernel matching were performed using psmatch2.

6.2.5.3 Checking the sensitivity of the results

As mentioned above, outcomes were estimated without matching, in order to assess the value of matching. This used a probit model for binary outcome variables and ordinary least squares regression for continuous variables. The equation estimated is the outcome variable regressed on a dummy variable to indicate CBHI status and the covariates that were entered into the probit model for the matching exercise. By comparing the matched and unmatched results it is possible to determine whether findings from the matched analysis differ from results obtained by using regression techniques on an unmatched sample.

The options for using PSM, alone or in combination with other methods, are numerous and are constantly evolving. Therefore, in this analysis a second method was used to check the sensitivity of the results. The kernel weights generated from the matching were applied to a weighted regression that regressed on the outcome of interest but unlike the weighted regression used for kernel matching, which regressed on the treatment indicator only, this second model regressed on *both* the treatment indicator and the covariates used to estimate the propensity score. This combination of matching and regression has been referred to as bias-corrected matching: even though matching reduces differences between the groups, the ATTs may still be biased due to discrepancies between the

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[91] A regression without the regressors and with kernel weights effectively gives the same results that one would get by looking at differences in weighted means.

[92] The consistency of the results between psmatch2 and the regression was confirmed by checking findings using psmatch2.

[93] Unmatched outcomes were estimated using psmatch2 but because no matching took place, standard errors are robust and did not need to be bootstrapped.

covariates, and the regression further adjusts for these differences. Thus, this method is suggested by Imbens and Wooldridge (2008) and Abadie and Imbens (2007) because it results in doubly robust estimates.

Using both kernel matching and the bias-corrected weighted regression, several outcomes related to utilisation, out-of-pocket expenditures, source of care and coping mechanisms were measured. Although the full sample was used to estimate the impact of insurance on use of inpatient or outpatient services, additional outcomes (e.g., number of outpatient visits, out-of-pocket expenditures on outpatient visits) were calculated on the relevant subsample (e.g., those who had an outpatient visit), rather than the full sample. This approach of using the subsample was taken because it restricts matching to those with any use of the visit of interest (e.g. inpatient, outpatient or both) and specifically answers the research questions of interest. For example, the question about out-of-pocket expenditures specifically asks whether insured *users* of health care incur lower out-of-pocket payments for health care than uninsured *users*. Thus, the relevant subsample analysis addresses double selection (e.g., selection into insurance and selection into outpatient visits). Although an alternative approach that would make inferences on the full sample was also considered for the analysis, this approach was not used because the interest of the study was in determining how actual outcomes (of expenditures and frequency of visits) differ between the insured and uninsured users of care. Furthermore, with such low utilisation rates in the sample (i.e. 18%), making inferences on the subsample of users was considered a more appropriate approach for comparing actual out-of-pocket expenditures (rather than expected out-of-pocket expenditures, which are contingent on utilisation rates).

To accurately estimate the average treatment effects using this approach, the propensity scores were estimated separately for the full sample and for each relevant subsample and matching was then performed using the sample/subsample of interest. In this analysis four different samples (i.e., the full sample; those with an inpatient visit; those with an outpatient visit; and those with any visit) were used to estimate the outcomes of interest.

To better understand the magnitude of the impact of out-of-pocket expenditures, the incidence of catastrophic expenditures was measured on the full sample. The "catastrophic" threshold is expected to approximate the point at which a household is forced to sacrifice other basic needs, deplete productive assets, incur debt, or become

impoverished (Russell 2004; O'Donnell *et al.* 2005). Although the value of the threshold is somewhat arbitrary, the threshold of 10 percent of total expenditure is commonly used in the literature (Pradhan and Prescott 2002; Ranson 2002; Wagstaff and van Doorslaer 2003; Russell 2004; Limwattananon *et al.* 2007; van Doorslaer *et al.* 2007) and was used in this analysis.[94] Given that the estimates were at the individual level, catastrophic expenditures were measured as the percent of individuals living in households in which health care costs exceed 10% of total household expenditure.

Another area of interest of this sub-study was in understanding how households cope in response to illness shocks, and whether or not CBHI households are less likely to employ coping strategies, such as borrowing or selling assets, than the uninsured. As noted in Chapter 4 questions about coping mechanisms were administered in the questionnaire. The results of these responses were analysed through PSM using the same matching technique described above. Kernel matching was performed on a subsample of individuals with an inpatient visit as it was expected that an inpatient visit was most likely to resemble a "health shock".

6.2.5.4 Examining heterogeneity of impacts by quintile

One advantage of using PSM is that it allows for heterogeneity in impacts across different groups. One particular interest of this study was measuring the impacts of CBHI on the poor. The advantage of using the weighted regression approach is that outcomes among subgroups can be readily measured without doing the matching separately on quintile subgroups. The estimates for each quintile were obtained by applying the weights from kernel matching to a weighted regression, and regressing on treatment, dummy variables for quintiles, and interactions between treatment and quintiles. To get the treatment effects for each quintile, I simply added the coefficients on treatment and the interaction variables for the respective quintile. This methodology is a straightforward method of estimating impacts on subgroups and was used in a study of voluntary health insurance in China (Wagstaff *et al.* 2009).

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[94] The other commonly used threshold is 40% of non-food expenditure (Xu *et al.* 2003; van Doorslaer *et al.* 2007).

6.3 Results

6.3.1 Descriptive statistics

A direct comparison of the CBHI and non-CBHI households and individuals was presented in Chapter 5 (Tables 5.1 through 5.3). The key findings are presented below:

- CBHI households are larger, more likely to be married, more educated and household heads are older relative to comparison households.

- CBHI households also have significantly higher household consumption levels than comparison households but similar *per capita* consumption rates.

- With respect to health status, CBHI households are less healthy, have more elderly household members, more women of reproductive age and more pregnant women, relative to comparison households.

- The household head in CBHI households is relatively more risk averse than in uninsured households (See Chapter 4, Section 4.5.5.1 for a description of the risk-aversion measure).

- Attitudes towards different sources of care are similar among CBHI and non-CBHI households.

- Individuals in CBHI households are significantly more likely to report a somewhat serious or serious illness, relative to the uninsured.

- Individuals in CBHI households are significantly more likely to use health services and incur lower out-of-pocket expenditures than the uninsured.

In addition to the findings reported in Chapter 5, descriptive analysis of the household data showed that CBHI households are significantly less likely than the uninsured to resort to coping mechanisms to pay for health care (e.g., borrowing money, receiving help from family and friends, and purchasing less food).

6.3.2 Results from propensity score estimation

The results of the probit, presented in Table 6.1, give the propensity scores and also bring to light the factors affecting enrolment, although as mentioned previously, the probit used to predict propensity scores is modelled at the individual level. Although the discussion of factors affecting enrolment will not be revisited here, the results from the individual-level probit and the household-level probit used in Chapter 5 are consistent: in

the full sample presented here, the probability of enrolment increases with increasing age of the household head, education, and income level. The probability of enrolment is higher among individuals living in households in which someone has a chronic illness or had difficulty with activities, and also increases with the number of women of reproductive age. There are differences between the full sample and the sub-samples due to double selection (i.e., selection into insurance and selection into a visit). For example, education was a significant predictor of enrolment among the full sample but not in the subsample with an inpatient visit. In other words, among those who made an inpatient visit, education levels between CBHI members and the uninsured were not significantly different. Similarly, chronic illness in the household was only significant at the .05 level for the subsample with an inpatient visit, but was significant at the .01 level for all other samples. None of the individual-level variables were significant predictors of enrolment.

Figures 6.1 through 6.4 show the histograms for the propensity scores for the uninsured and insured individuals in the full sample and subsamples. The histograms indicate that, in the full sample and across all relevant subsamples, the propensity scores of both groups follow very similar distributions and there is a large area of common support. Thus, even before matching, the groups are very similar. After matching, the distributions of the propensity scores were inspected and any observations off the common support (where the propensity score in one group is smaller than the minimum or larger than the maximum in the opposite group) were discarded. This ensures that the matched sample includes closely matched households (Rosenbaum and Rubin 1983; Ravallion et al. 2007; Wagstaff et al. 2009; Wagstaff 2010a). Using this approach, only 40 observations in the treated group were dropped from the analysis, leaving 5,296 and 9,468 CBHI and non-CBHI observations respectively (See Table 6.2 for the size of the subsamples on the common support).[95] The small number of observations dropped from the sample is unlikely to compromise the external validity of the results.

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[95] Although various trimming methods are recommended for skewed data (Crump et al. 2006), the data in both groups approximate a normal distribution and density of scores is relatively high across the distribution so trimming was not necessary.

Table 6.1 Results from probit, for full sample and subsamples

Variable	Full sample			Subsample 1 (those with an OP visit)			Subsample 2 (those with an IP visit)			Subsample 3 (those with any visit)		
	Coef.	z	p>|z|	Coef.	z	p>|z|	Coef.	z	p>|z|	Coef.	z	p>|z|
Age of household head	0.0673	4.78	<0.001**	0.0615	3.22	0.001**	0.0873	3.55	<0.001**	0.0690	3.94	<0.001**
(Age of household head)²	-0.0004	-3.25	0.001**	-0.0004	-2.10	0.036*	-0.0006	-2.64	0.008**	-0.0004	-2.67	0.008**
Education of HH head: completed any primary (omitted none)	0.2418	2.39	0.017*	0.4936	3.70	<0.001**	0.2837	1.42	0.156	0.4036	3.19	0.001**
Education of HH head: completed any secondary	0.3482	3.09	0.002**	0.5902	3.88	<0.001**	0.3939	1.80	0.072	0.5388	3.81	<0.001**
Education of HH head: completed any vocational	0.5589	4.2	<0.001**	0.7362	4.08	<0.001**	0.6028	2.21	0.027*	0.6937	4.06	<0.001**
Education of HH head: completed any post-secondary	0.5683	3.31	0.001**	0.8397	3.60	<0.001**	0.5932	1.76	0.079	0.7590	3.56	<0.001**
Household size: 6+ members (omitted 1-5)	0.1335	2.17	0.030*	0.0332	0.38	0.707	-0.0534	-0.42	0.672	0.0330	0.41	0.684
Someone in household has a chronic health condition	0.2931	3.76	<0.001**	0.3373	2.57	0.010*	0.3491	2.00	0.045*	0.3721	3.23	0.001**
Someone in HH had difficulty with activities in 3 months	0.2278	2.68	0.007**	0.1723	1.57	0.115	0.0268	0.19	0.849	0.1478	1.46	0.144
HH head is risk averse (vs. willing to take at some risk)	-0.0920	-1.7	0.089	-0.0688	-0.93	0.352	-0.1886	-1.74	0.082	-0.0823	-1.19	0.232
Number of women of reproductive age (15-49)	0.1526	4.87	<0.001**	0.2056	4.77	<0.001**	0.1483	2.26	0.024*	0.1966	4.93	<0.001**
At least one pregnancy in household	0.2678	1.96	0.050	0.3307	1.69	0.092	0.2633	0.86	0.390	0.3209	1.77	0.077
Per capita consumption - quintile 2 (omitted poorest quintile)	0.1198	1.42	0.157	0.2299	2.00	0.045*	-0.4259	-2.68	0.007**	0.0933	0.88	0.379
Per capita consumption - quintile 3	0.2393	2.81	0.005**	0.2566	2.18	0.030*	-0.1927	-1.13	0.260	0.1842	1.69	0.090
Per capita consumption - quintile 4	0.4132	4.74	<0.001**	0.4213	3.56	<0.001**	-0.0244	-0.14	0.890	0.3435	3.13	0.002**
Per capita consumption - quintile 5	0.4458	4.83	<0.001**	0.5565	4.54	<0.001**	-0.1298	-0.72	0.470	0.3899	3.43	0.001**
Job HH head: family farm/agriculture (omitted not working)	-0.0176	-0.19	0.848	0.0736	0.61	0.539	0.1725	0.97	0.333	0.0891	0.80	0.425
Job HH head: small-scale trading/ self-employed	-0.0642	-0.7	0.486	0.0984	0.84	0.402	0.0203	0.12	0.905	0.0897	0.81	0.418
Job HH head: work for someone else	0.0886	0.93	0.351	0.1858	1.49	0.136	-0.1590	-0.90	0.366	0.1134	0.99	0.323
Recommends a government hospital for moderate illness	0.2307	2.1	0.036*	0.1709	1.21	0.228	0.4298	1.91	0.056	0.2166	1.59	0.112
Urban (vs. semi-urban or rural)	-0.1189	-2.05	0.040*	-0.1628	-2.06	0.039*	-0.0254	-0.23	0.820	-0.1112	-1.52	0.128
Quality perception of contracting hospital is rated high†	-0.1221	-2.08	0.037*	-0.0459	-0.58	0.563	-0.2828	-2.53	0.011*	-0.1007	-1.37	0.169
Age of individual (individual-level outcome)	0.0002	0.56	0.578	-0.0001	-0.10	0.919	-0.0024	-0.99	0.322	-0.0007	-0.56	0.576
Individual has a chronic illness (individual-level outcome)	-0.0894	-1.68	0.092	0.0123	0.10	0.923	-0.2398	-1.25	0.213	-0.1250	-1.23	0.218
Individual is pregnant (individual-level outcome)	-0.0799	-1.68	0.092	-0.6471	-1.81	0.070	-	-		-0.5635	-1.86	0.063
Constant	-3.6388	-9.25	<0.001**	-3.7631	-6.94	<0.001**	-3.2347	-4.42	<0.001**	-3.7001	-7.41	<0.001**
Pseudo R²	0.0784			0.0845			0.0859			0.0758		
N	14,804			2084			797			2715		
Wald chi2(25)	253			150.4			79.02			160.62		
Probability > chi2	<0.001			<0.001			<0.001			<0.001		

**Significant at the .01 level; *significant at the .05 level. Notes: Standard errors adjust for clustering at the household level. Pregnancy is not included in the probit for an inpatient visit. The responses were combined into a dummy variable.

†Quality perception is measured at the village level by asking the chief to rate care at district hospital relative to other options.

Figure 6.1 Propensity score distribution for the full sample
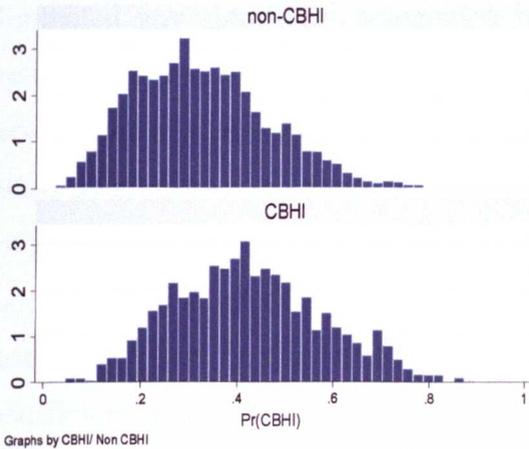
Figure 6.2 Propensity score distribution for those with an outpatient visit
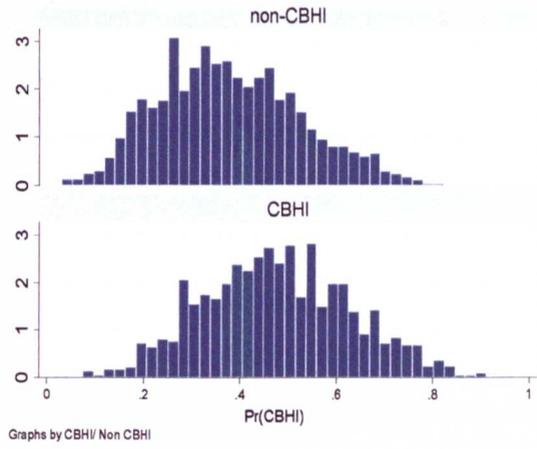
Figure 6.3 Propensity score distribution for those with an inpatient visit
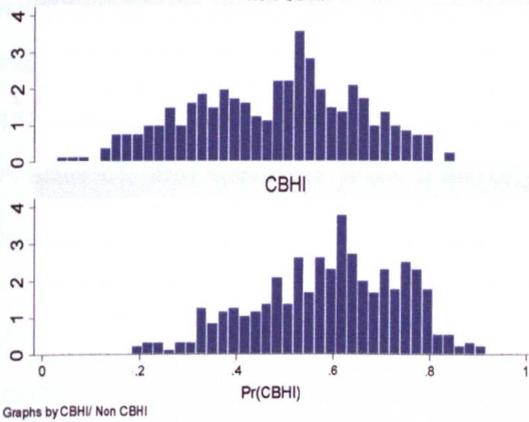
Figure 6.4 Propensity score distribution for those with any visit
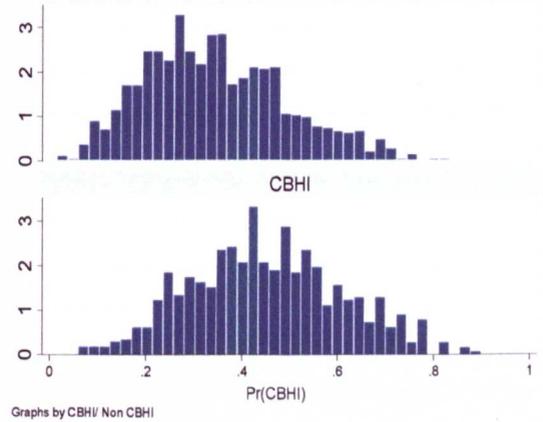
Table 6.2 Size of sample and region of common support

		CBHI	non-CBHI	Total
Full sample	On support	5,296	9,468	14,764
	Off support	40	0	40
		5,336	9,468	14,804
Those with an outpatient visit	On support	797	1,279	2,076
	Off support	8	0	8
		805	1,279	2,084
Those with an inpatient visit	On support	422	368	790
	Off support	7	0	7
		429	368	797
Those with any visit	On support	1,128	1,573	2,701
	Off support	14	0	14
		1,142	1,573	2,715

After matching, balancing tests were performed to check that the matching sufficiently eliminated any significant association between treatment status and covariates. Two methods for assessing matching quality were used. The first looked at the differences between the treated and untreated on each covariate using t-tests (Rosenbaum and Rubin 1985). Differences in covariates are expected before matching, but after matching the covariates should be balanced between groups and therefore no significant differences should remain (Caliendo and Kopeinig May 2005). However, the value of the t-test is based on the sample size and therefore on its own, this method of assessing balancing is insufficient (Ho *et al.* 2007; Imbens and Wooldridge 2008), although for large samples it should be sufficient. It is therefore useful to observe the normalised differences between the treated and untreated groups.[96] One rule of thumb offered is that the normalised difference be no more than 25% of a standard deviation (Ho *et al.* 2007). The second balancing test compared the pseudo R-squared values before and after matching. This value indicates how well the covariates explain participation in the programme (insurance), and therefore after matching, the pseudo R-squared value should be low (Sianesi 2004).

Table 6.3 reports the results of the balancing tests for the full sample. The first and second sets of columns show the differences before and after matching, respectively. Before matching, the groups are significantly different on several covariates and normalised differences on four variables exceed 25%. However, after matching, all significant differences (at the .01 level) on 25 variables are eliminated.[97] On all covariates, the normalised difference, also known as the percent bias, is well below 25% indicating that the sample is well balanced. Overall, matching reduced bias between the two groups by approximately 89 percent. The pseudo R-squared values from both matching approaches are very low, indicating that there is very little association between the covariates and treatment status. Thus, the balancing tests together indicate that the treated and untreated groups are well balanced and that the biases from observables have been significantly reduced. The groups are not perfectly balanced but the bias-corrected

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[96] The normalised difference is calculated as the average covariates normalised by the square root of the sum of the within-treatment group variances and is calculated automatically in psmatch2.

[97] One difference remains at the .05 level, but this difference is not considered statistically significant given that the sample size for this study is large enough to detect differences at the .01 level.

regression adjusts for these remaining differences. These balancing results confirm that in measuring the treatment effects of CBHI, the treated and untreated groups are comparable. The results of the balancing for each subsample are not included here but are very similar to results from the full sample (except that balancing is slightly better in the subsamples).

Table 6.3 Results of balancing tests (full sample only)

Variable	Before matching			After kernel matching			
	% diff.	t-stat	% bias (norm. diff)	% diff.	t-stat	% bias (norm. diff)	% red. bias
Age of household head	9.7	21.58**	37.2	-0.1	-0.23	-0.4	98.8
(Age of household head)²	18.5	19.87**	34.0	-0.4	-0.45	-0.9	97.4
Educ. of HH head: completed any primary (omitted none)	4.9	2.520*	4.3	1.8	0.83	1.6	62.3
Education of HH head: completed any secondary	-18.2	-8.24**	-14.2	-5.2	-1.82	-3.5	75.5
Education of HH head: completed any vocational	52.7	8.02**	13.4	3.2	0.57	1.2	91.0
Education of HH head: completed any post-secondary	89.3	7.33**	12.0	6.3	0.67	1.4	88.1
Household size: 6+ members (omitted 1-5)	26.9	13.34**	22.8	2.2	1.20	2.3	89.7
Someone in household has a chronic health condition	77.2	16.29**	27.0	-1.9	-0.55	-1.2	95.6
Someone in HH had difficulty with activities in past 3 months	60.5	11.22**	18.7	-2.5	-0.58	-1.2	93.4
HH head is risk averse (vs. willing to take at least some risk)	-7.7	-3.71**	-6.4	-1.1	-0.44	-0.9	86.5
Number of women of reproductive age (15-49)	19.8	17.94**	29.8	2.7	2.27*	4.6	84.4
At least one pregnancy in household	64.0	6.17**	10.2	6.2	0.71	1.5	85.5
Per capita consumption - quintile 2 (omitted poorest quintile)	-11.0	-3.54**	-6.1	0.4	0.11	0.2	96.5
Per capita consumption - quintile 3	0.2	0.06	0.1	0.9	0.22	0.4	-285.9
Per capita consumption - quintile 4	27.6	6.94**	11.7	-3.2	-0.87	-1.8	85.0
Per capita consumption - quintile 5	25.5	6.14**	10.4	-5.0	-1.30	-2.7	74.3
Job HH head: family farm / agriculture (omitted not working)	-11.4	-4.14**	-7.1	-2.4	-0.72	-1.4	80.6
Job HH head: small-scale trading/ self-employed	-6.3	-2.27	-3.9	-0.4	-0.13	-0.3	93.5
Job HH head: work for someone else	-5.3	-1.93	-3.3	2.9	0.87	1.7	49.3
Recommends a government hospital for moderate illness	1.6	3.31**	5.8	0.4	0.85	1.6	72.4
Urban (vs. semi-urban or rural)	2.3	0.93	1.6	-0.9	-0.32	-0.6	60.5
Quality perception of contracting hospital med to high	-3.2	-1.21	-2.1	-0.1	-0.04	-0.1	96.2
Age of individual	6.3	5.31**	9.1	0.1	0.06	0.1	98.7
Individual has a chronic illness	52.9	5.12**	8.5	-6.6	-0.80	-1.7	79.7
Individual is pregnant	33.9	1.50	2.5	7.1	0.32	0.6	74.6
Absolute difference	302.2			33.9			
% change due to matching	--			88.8			
Pseudo R-squared	0.078			0.001			
LR chi2	1517.6			18.750			
p>chi2	0			0.809			

* significant at .05 level; ** significant at .01 level. These results were obtained using psmatch2 in Stata.

6.3.4 Impacts of CBHI on utilisation and financial protection

6.3.4.1 Summary of Impacts

A summary of the impacts discussed in this section is presented in Figure 6.5. The results can be interpreted as the impacts of CBHI on CBHI members relative to the uninsured. More details of the estimates are presented in Tables 6.4 and 6.5.

Figure 6.5 Percent differences in utilisation and out-of-pocket expenditures, CBHI vs. non-CBHI
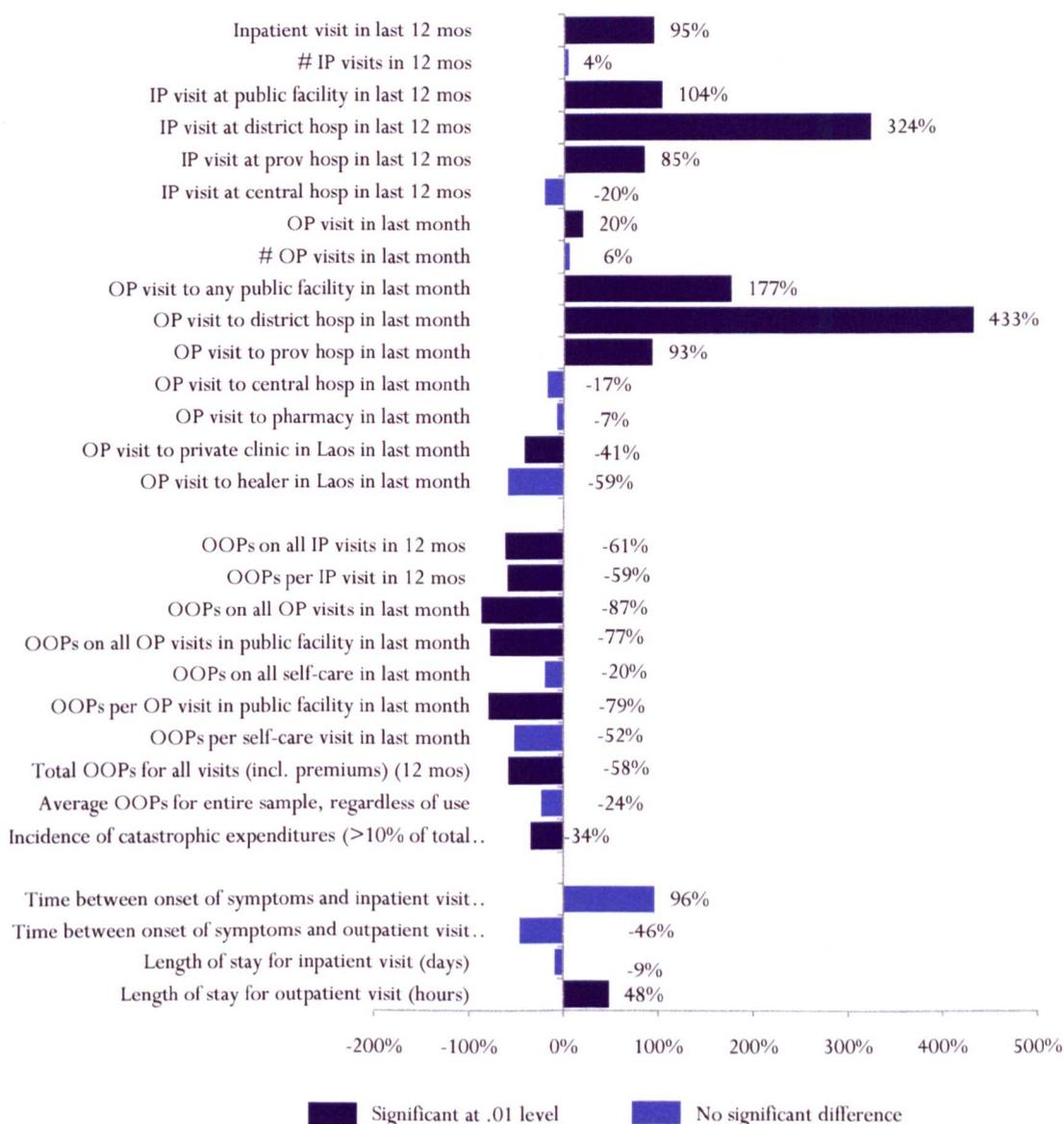
Notes: All estimates were obtained using a bias-corrected regression constructed using the kernel weights obtained from psmatch2 as well as additional covariates. With the exception of "average OOPs for the entire sample" and "incidence of catastrophic expenditure" all OOP estimates exclude the cost of the monthly premiums for CBHI members, and therefore represent the differences in cost at the point of service delivery.

6.3.4.2 Impacts of CBHI on utilisation, out-of-pocket expenditures and source of care

The impacts (with matching) of CBHI on utilisation and source of care are given in Table 6.4, while the impacts on out-of-pocket expenditures are given in Table 6.5. The first set of columns in both tables gives the raw differences in the mean of the outcomes without matching and without controlling for differences between variables. These differences are referred to as the "naive estimators" in the program evaluation literature. The next two sets of columns give the results using kernel matching and kernel matching with the bias-corrected regression. The ATTs are presented as the percent difference between the groups (calculated as the difference between the CBHI and comparison outcomes divided by the CBHI outcome). Also shown are the t-tests of the null hypothesis that there is no difference in the ATTs between CBHI and non-CBHI groups. The unmatched and matched impact estimates are similar across most outcomes, likely because the groups were so similar even before matching. The results are also robust across kernel matching and bias-corrected matching, as kernel matching on its own was successful in balancing the insured and uninsured. The impacts from the bias-corrected regression will be interpreted here.

For comparison purposes, Table 6.6 shows the impact estimates using multivariate regression but without matching: binary outcomes were estimated from a probit model and presented as marginal effects, while continuous outcomes were estimated using OLS.

The results in Table 6.4 show that the CBHI scheme has significantly increased utilisation of both inpatient and outpatient services. In fact, CBHI members were almost twice as likely as non-members to make an inpatient visit in a one year period. However, of those who had at least one inpatient visit, there was no significant difference between the insured and uninsured in the number of visits. CBHI members were also 20 percent more likely to have an outpatient visit, and used outpatient services more frequently than the uninsured (although the difference in number of visits is only significant at the .05 level in the matched estimates). The results from the regressions, shown in Table 6.6, yield very similar results to the matched estimates but the insurance effect is of slightly higher magnitude. One exception is that in the regression results there is no significant difference between the two groups in the number of outpatient visits.

Regarding source of care (Table 6.4), the matched estimates show that relative to non-members, CBHI members were four times more likely to have an inpatient visit in a district hospital and five times more likely to have an outpatient visit at a district hospital. (The estimates from the probit regression in Table 6.6 are very similar although of slightly higher magnitude.) A significantly higher use of provincial hospitals among CBHI members, for both inpatient and outpatient care, was also found. The results also showed that CBHI members were significantly more likely to use public sector facilities, and significantly less likely to use private clinics for outpatient visits. Although the naive estimators that the insured were significantly less likely to use pharmacies, these differences disappeared after matching. They also disappeared in the unmatched probit results. Qualitative findings from FGDs revealed that for mild to moderate illnesses, both the insured and uninsured use pharmacies, village health workers or clinics for their first line care, rather than the district hospitals, where quality is poor — especially for CBHI members. As discussed in Chapter 5, FGDs indicate that health care workers are more respectful towards cash-paying patients than towards CBHI members; CBHI members also report incurring longer waiting times. Moreover, the cost of transportation to the district hospital was reported as a barrier to seeking hospital care for less than severe illnesses. Both quantitative and qualitative findings indicate that seeking care in Thailand is rare among the informal sector: in FGDs, many CBHI members and non-members explained that they do not go to Thailand for their medical care because it is expensive to travel out of the country. However, a few respondents note that those who can afford to go to Thailand do so. Very few individuals across the sample make visits to traditional healers and there is no significant difference between the groups in use of these services.

Most of the comparisons on out-of-pocket expenditures shown in Table 6.5 measure differences in expenditure at the point of service delivery and exclude premiums.[98] Unless otherwise stated, the impacts are estimated on the subsample of individuals who made the respective visit. The matched results indicate that the insured spent less than the uninsured. In fact, out-of-pocket expenditures by the insured were one third the amount of the uninsured for inpatient services and one eighth the amount for outpatient services. When the cost of monthly premiums is included, CBHI members' total payments, *for those with any visit*, were still only one third of the amount incurred by the

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[98] The first 7 outcomes in Table 6.5 do not include the cost of premiums in CBHI members' expenditures.

uninsured. However, lower expenditures for the insured are limited to the small share (18%) of the sample making visits. When total expenditures (including premiums) were calculated on the full sample rather than just the subsample making visits, there was no significant difference in expenditures between the insured and uninsured. These findings are consistent with the unmatched OLS results as well as with the findings from the FGDs. Most CBHI members in FGDs agreed that being enrolled in CBHI has decreased overall expenditures and prevented high expenditures at the time of care. However, a few respondents mentioned that in the absence of illness, monthly expenditures are higher than they were prior to enrolment, due to the monthly premiums.

Matched estimates showed that 6% of insured individuals and 9% of uninsured individuals live in households with catastrophic expenditure. The lower incidence of catastrophic expenditure for CBHI individuals was significant, indicating that the scheme is providing some protection against impoverishment.[99] However, in the unmatched OLS results, the incidence of catastrophic expenditure is only borderline significant (i.e. it is significant at the .05 level but not at the .01 level). When the results on catastrophic expenditures were examined *for those who had an inpatient visit*, the impact of CBHI on catastrophic expenditures was even more pronounced: 15.8% of insured inpatient service users live in households with catastrophic expenditures compared with 27.8% of uninsured inpatient users and these results were also significant at the .01 level. Although the incidence of catastrophic expenditure was significantly lower among CBHI households, these households still incur catastrophic expenditures, especially those in which an inpatient visit is made. According to qualitative findings, catastrophic expenditures in CBHI households could be the result of households paying for care outside the CBHI scheme, either because of exclusion restrictions or because people prefer to use care elsewhere (e.g., in central hospitals without a referral when the need for care is serious, and in pharmacies or clinics for minor ailments).

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[99] When the incidence of catastrophic expenditure is measured using a threshold of >40% of non-food expenditure, the incidence decreases to 2% of CBHI households and 4% of comparison households and this difference is still significant at the .01 level.

Table 6.4 Estimates of CBHI impacts on utilisation and source of care

	Results before matching				Results after kernel matching				Results after weighted regression			
	CBHI	non-CBHI	% diff.	t-stat	CBHI	non-CBHI	% diff.	t-stat	CBHI	non-CBHI	% diff.	t-stat
Inpatient visits (IP visits)												
IP visit in last 12 months	0.080	0.039	107%	10.79**	0.080	0.042	94%	8.41**	0.082	0.042	95%	8.77**
# of IP visits in last 12 mos. (for those with visit)	1.172	1.117	5%	1.48	1.171	1.123	4%	1.18	1.163	1.118	4%	1.16
IP visit at any public facility in last 12 months	0.080	0.038	112%	11.03**	0.080	0.039	104%	9.01**	0.081	0.040	104%	9.29**
IP visit at district hospital in last 12 months	0.036	0.008	339%	12.23**	0.036	0.007	414%	10.6**	0.038	0.009	324%	10.69**
IP visit at provincial hospital in last 12 months	0.031	0.017	83%	5.58**	0.031	0.016	88%	5.15**	0.032	0.017	85%	5.25**
IP visit at central hospital in last 12 months	0.013	0.013	3%	0.22	0.013	0.017	-20%	-1.32	0.011	0.014	-20%	-1.18
Outpatient visits (OP visits)												
OP visit in last month	0.151	0.135	12%	2.65**	0.151	0.126	20%	3.91**	0.158	0.132	20%	4.26**
# of OP visits in last month (for those with visit)	1.246	1.181	6%	2.21*	1.247	1.176	6%	2.11*	1.230	1.161	6%	2.11*
OP visit to any public facility in last month	0.067	0.023	197%	13.57**	0.067	0.025	171%	10.56**	0.068	0.025	177%	11.02**
OP visit to a district hospital in last month	0.044	0.008	476%	15.09**	0.044	0.007	528%	12.53**	0.047	0.009	433%	12.72**
OP visit to a provincial hospital in last month	0.016	0.008	107%	4.66**	0.016	0.009	83%	3.42**	0.015	0.008	93%	3.53**
OP visit to a central hospital in last month	0.005	0.004	32%	1.14	0.005	0.007	-17%	-0.67	0.004	0.005	-17%	-0.53
OP visit to a pharmacy in last month	0.077	0.098	-21%	-4.22**	0.078	0.085	-8%	-1.42	0.085	0.092	-7%	-1.39
OP visit to a private clinic in Laos in last month	0.008	0.012	-34%	-2.32*	0.008	0.013	-39%	-2.69**	0.007	0.013	-41%	-2.69**
OP visit to a healer in Laos in last month	.0002	0.0006	-70%	-1.2	0.0002	0.0006	-66%	-1.17	0.0002	0.001	-59%	-1.1

Notes: % differences are presented as CBHI estimates relative to comparison estimates. All estimates account for clustering at the household level. T-statistics are robust.

***significant at the .01 level; *significant at the .05 level*

Table 6.5 Estimates of CBHI impacts on out-of-pocket expenditures and other outcomes

	Results before matching				Results after kernel matching				Results after weighted regression			
	CBHI	non-CBHI	(% diff)	t-stat	CBHI	non-CBHI	(% diff)	t-stat	CBHI	non-CBHI	(% diff)	t-stat
Out-of-pocket expenditures (OOPs), $US												
OOPs on all IP visits in last year†	$76.02	$185.96	-59%	-5.79**	$75.29	$188.24	-60%	-6.49**	$72.94	$188.24	-61%	-6.70**
OOPs per IP visit in last year †	$64.74	$158.10	-59%	-6.66**	$64.71	$164.71	-61%	-7.28**	$62.35	$152.94	-59%	-7.38**
OOPs on all OP visits in past month	$3.21	$5.65	-43%	-2.54**	$3.24	$10.00	-68%	-3.22**	$1.00	$7.60	-87%	-3.48**
OOPs on all OP visits in public facility in last month	$1.54	$3.28	-53%	-2.66**	$1.55	$5.04	-69%	-3.45**	$1.00	$4.36	-77%	-3.61**
OOPs on all self-care in last month (for all individuals)	$0.02	$0.04	-35%	-0.81	$0.02	$0.03	-23%	-0.52	$0.03	$0.03	-20%	-0.49
OOPs per OP visit in public facility in last month	$1.20	$2.76	-56%	-2.63**	$1.21	$4.21	-71%	-3.22**	$0.78	$3.67	-79%	-3.38**
OOPs per self-care visit in last month	$0.08	$0.17	-57%	-1.5	$0.08	$0.16	-54%	-1.48	$0.08	$0.16	-52%	-1.46
OOPs per individual with any visit (incl. premiums)	$62.71	$98.65	-36%	-3.33**	$62.35	$129.41	-52%	-4.36**	$47.06	$112.94	-58%	-4.6**
Average OOPs per individual (estimated on all individuals, includes premiums)	$18.54	$16.39	13%	1.02	$18.82	$23.53	-20%	-1.35	$15.29	$20.00	-24%	-1.22
Incidence of catastrophic exp. (>10% of total exp.)	0.07	0.08	-13%	-2.29*	0.065	0.096	-32%	-5.54**	0.057	0.087	-34%	-5.69**
Time between onset of symptoms and care												
Time between onset of symptoms and IP visit (days)	19.17	9.590	100%	1.14	17.890	8.471	111%	1.25	17.47	8.93	96%	1.24
Time between onset of symptoms and OP visit (hrs)	39.12	61.62	-37%	-1.29	39.117	61.624	-37%	-1.22	27.36	50.87	-46%	-1.28
Length of stay												
Length of stay for IP visit (days)	4.06	4.49	-10%	-1.11	4.04	4.46	-9%	-0.93	3.99	4.39	-9%	-0.90
Length of stay for OP visit (hours)	0.76	0.55	39%	3.42**	0.76	0.55	39%	2.74**	0.69	0.46	48%	3.10**

**significant at the .01 level; *significant at the .05 level; †Includes transportation and food

Notes: Percent differences are presented as CBHI estimates relative to comparison estimates. All estimates account for clustering at the household level and t-statistics are robust. The first 7 outcomes under OOPs exclude the cost of the monthly premium for CBHI members, and therefore represent the differences in cost at the point of service delivery. Unless otherwise stated, outcomes are estimated on the subsample of individuals who incurred the respective visit. Exchange rate (2009): US $1.00=8,500 Kip

Table 6.6 Unmatched estimates of CBHI impacts on utilisation, source of care and out-of-pocket expenditures, using probit and OLS

	CBHI	non-CBHI	% diff.	t-stat or z-stat
Utilisation and source of inpatient visits (IP visits)				
IP visit in last 12 months	0.076	0.034	**122%**	10.25**
# of IP visits in last 12 mos. (for those with visit)	1.168	1.122	**4%**	1.26
IP visit at any public facility in last 12 months	0.075	0.033	**129%**	10.53**
IP visit at district hospital in last 12 months	0.038	0.007	**408%**	9.63**
IP visit at provincial hospital in last 12 months	0.025	0.013	**99%**	5.36**
IP visit at central hospital in last 12 months	0.008	0.009	**-15%**	-0.96
Utilisation and source of outpatient visits (OP visits)				
OP visit in last month	0.147	0.123	**20%**	3.91**
# of OP visits in last month (for those with visit)	1.23	1.19	**3%**	1.37
OP visit to any public facility in last month	0.058	0.018	**217%**	11.81**
OP visit to a district hospital in last month	0.039	0.005	**607%**	13.34**
OP visit to a provincial hospital in last month	0.007	0.004	**85%**	3.02**
OP visit to a central hospital in last month	0.002	0.002	**-13%**	-0.46
OP visit to a pharmacy in last month	0.080	0.088	**-10%**	-1.49
OP visit to a private clinic in Laos in last month	0.006	0.0096	**-43%**	-2.63**
OP visit to a healer in Laos in last month	0.0002	0.0006	**-73%**	-1.45
Out-of-pocket expenditures, $ US				
OOPs on all IP visits in last year†	$70.59	$188.24	**-63%**	-7.05**
OOPs per IP visit in last year †	$60.00	$164.70	**-64%**	-7.58**
OOPs on all OP visits in past month	$1.66	$6.63	**-75%**	-3.84**
OOPs on all OP visits in public facility in last month	$1.01	$3.61	**-72%**	-3.72**
OOPs on all self-care in last month (for all individuals)	$0.02	$0.03	**-27%**	-0.64
OOPs per OP visit in public facility in last month	$0.80	$3.01	**-73%**	-3.49**
OOPs per self-care visit in last month	$0.08	$0.17	**-54%**	-1.47
OOPs per individual with any visit (incl. premiums)	$48.24	$109.41	**-56%**	-4.74**
Average OOPs per individual (estimated on all individuals, includes premiums)	$15.29	$17.65	**-13%**	-0.93
Incidence of catastrophic exp. (>10% of total exp.)	0.056	0.079	**-29%**	-2.08*
Time between onset of symptoms and care				
Time between onset of symptoms and IP visit (days)	16.65	10.54	**58%**	0.94
Time between onset of symptoms and OP visit (hrs)	28.9	56.7	**-49%**	-1.69
Length of stay				
Length of stay for IP visit (days)	3.94	4.62	**-15%**	-1.62
Length of stay for OP visit (hours)	0.695	0.435	**60%**	3.80**

*Notes: Outcomes with binary variables were estimated using marginal effects of a probit model; outcomes with continuous variables were estimated using OLS. Percent differences are presented as CBHI estimates relative to comparison estimates. All estimates account for clustering at the household level. **significant at the .01 level; *significant at the .05 level*

The results from the matching showed no significant association between insurance status and timeliness of care. This was also true in the unmatched regression results. However, both the matched and unmatched results show that the reported length of stay for an outpatient visit was longer for CBHI members. Although it is possible that CBHI members present with more complicated symptoms that require more time to treat, it is also likely that the longer time spent in the hospital is due to longer waiting times for CBHI members relative to cash-paying patients, as qualitative results from this study indicated.

6.3.4.3 Impacts of CBHI on coping mechanisms for those with an inpatient visit

The findings in Figure 6.6 show the coping mechanisms employed by individuals[100] who reported an inpatient visit. The results were obtained using kernel matching alone (without the bias-corrected regression). Overall, CBHI members were less likely than the uninsured to resort to coping mechanisms to pay for health care. More specifically, CBHI members were significantly less likely to receive help from friends, relatives or the village; to borrow money; or to sell assets to pay for health care (these two latter differences were only significant at the .05 level).

6.3.4.4 Impacts of CBHI by consumption quintile

Until now the estimates presented reflect only average treatment effects and mask any heterogeneity in impacts across socioeconomic status. The results in Table 6.7 show how the impacts differ across consumption quintiles. Across all quintiles, the insured were significantly more likely than the uninsured to use inpatient services (in the highest quintile this relationship is only significant at the .05 level). However, the only significant difference (at the .01 level) in outpatient visits was in the highest quintile, where the insured were more likely to use outpatient services. In fact, in the poorest quintile the insured were *less* likely to use outpatient services, although the difference is not statistically significant. For those individuals making at least one inpatient visit, the number of visits did not significantly differ between the insured and uninsured. However, the insured in the wealthiest quintile made a higher number of outpatient visits relative to the uninsured.

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[100] Coping mechanisms are used at the household level but are measured here at the individual level.

The impact of insurance on inpatient, outpatient, and total expenditures for those with a visit was less pronounced among the poorest 20% of the population. When the cost of premiums was included, individuals in the top four quintiles who had any visit enjoyed financial protection from the scheme (i.e., out-of-pocket expenditures were lower for the insured), and this difference was significant for the top two quintiles. However, in the poorest quintile, CBHI members with any visit actually incurred *higher* total annual expenditures than the uninsured. When the expenditures of all individuals in the sample were averaged (regardless of whether they had a visit), the insured in the poorest quintile incurred significantly *higher* out-of-pocket expenditures than the uninsured (no significant difference between CBHI and comparison individuals was found in the other quintiles). Similarly, among the poorest quintile the incidence of catastrophic expenditures was significantly *higher* for the insured than for the uninsured. Among all other quintiles, the results showed that CBHI offers some protection against catastrophic expenditures (although in the middle quintile this protection was not significant).

Figure 6.6 Use of coping mechanisms to pay for health care among those reporting an inpatient visit
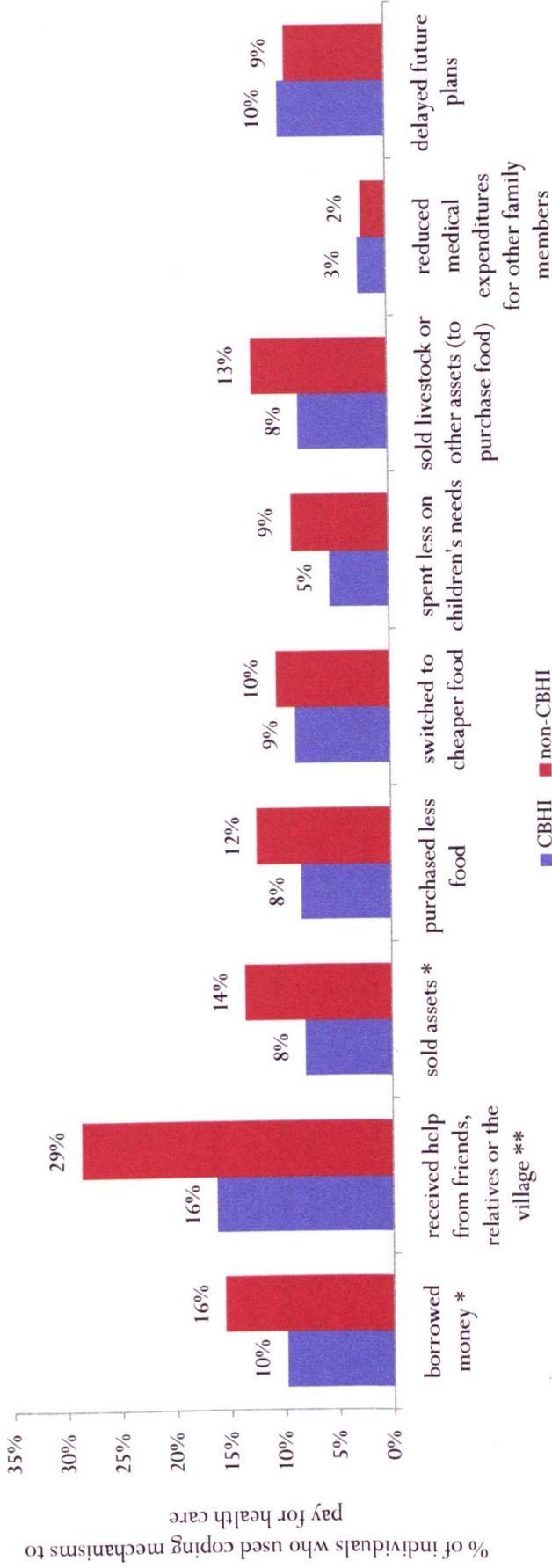
Notes: N=790; **significant difference at the .01 level; *significant difference at the .05 level. All estimates account for clustering at the household level.

Table 6.7 Estimates of the impact of CBHI, by consumption quintile

	Quintile 1 (Poorest)		Quintile 2		Quintile 3		Quintile 4		Quintile 5 (Least poor)	
	ATT	t-stat	ATT	t-stat	ATT	t-stat	ATT	t-stat	ATT	t-stat
Inpatient (IP) visit in last 12 months	0.070	7.13**	0.032	3.29**	0.033	3.52**	0.031	2.98**	0.030	2.55*
Number of inpatient visits	0.094	0.88	0.051	0.67	0.113	2.39*	0.058	0.87	-0.061	-0.57
Outpatient (OP) visit in last month	-0.002	-0.13	0.028	2.22*	0.018	1.26	0.025	1.67	0.055	3.55**
Number of outpatient visits	-0.069	-0.6	0.092	1.35	0.095	1.32	0.061	0.98	0.146	2.60**
OOPs on all IP visits in last year (+ transport and food)	-20.73	-0.61	-172.55	-3.85**	-69.77	-2.55*	-161.82	-4.69**	-133.31	-3.24**
OOPs on all OP visits in past month	-1.68	-1.9	-1.48	-0.61	-2.73	-2.19*	-6.38	-2.63**	-17.86	-2.23*
Annual OOPs per individual with any visit (incl. premiums)	4.67	0.3	-57.25	-2.31*	-30.12	-1.81*	-86.25	-3.23**	-197.12	-2.67**
Average OOPs per individual (IP, OP + premiums) (estimated on all individuals)	8.73	2.60**	-0.05	-0.01	2.52	0.74	-7.55	-1.29	-24.98	-1.69
Incidence of HH-level catastrophic exp. (>10% of total exp)	0.036	2.67**	-0.031	-2.89**	-0.012	-1.36	-0.080	-6.41**	-0.065	-4.43**

Notes: Differences in out-of-pocket expenditures are measured in US dollars. All estimates account for clustering at the household level. T-statistics are robust.

*significant at the .05 level; **significant at the .01 level

6.4 Discussion

As shown in the results section above, the matched results from the impact evaluation are very similar to the unmatched results obtained using regression. The results are robust across these two approaches, likely because the two groups were so similar even before matching. However, there are some differences in the magnitude of the effects and the results from the bias-corrected matching are likely to be the most reliable, given the large reduction in bias that was achieved through matching (see Table 6.3). Another advantage of matching over regression is that, unlike regression, PSM does not impose distributional assumptions about the relationship between covariates and the outcome variable.

Overall, the findings from this impact evaluation support the hypotheses generated from the conceptual framework. First the results suggest that CBHI is having its intended impact by increasing utilisation of outpatient and inpatient services. The magnitude of the impacts on use of *inpatient* services is particularly large. These positive impacts on utilisation are consistent with much of the previous literature on the impacts of CBHI and other voluntary health insurance programmes (Bennett *et al.* 1998; Jakab and Krishnan 2001; Schneider and Diop 2001; ILO 2002; Preker *et al.* 2002; Ranson 2002; Ekman 2004; Jütting 2004b; Palmer *et al.* 2004; Gnawali *et al.* 2009; Wagstaff *et al.* 2009; Aggarwal 2010; Mensah *et al.* 2010). In Laos, where utilisation rates are low, improved access to care is an important step forward.

In addition to increasing utilisation, the findings indicate that CBHI is encouraging use of facilities at lower levels of care. This is expected given that the scheme contracts with the district (and in some cases provincial) hospitals for first line care, but nonetheless shows that CBHI is encouraging use of the referral system. Although the results do not indicate whether greater use of services at lower levels of care represents a *shift* from the central level or a *flux of new users* to the district level (because of the cross-sectional nature of the study), it is possible that insurance can encourage users to move from the central level to the district or provincial level for their care. Such a shift can bring about cost savings to the government in the long term.

The findings show that CBHI members are more likely to use public sector facilities and less likely to use private clinics. However, there is no significant difference between the two groups in the use of pharmacies: roughly 9 percent of households in both groups reported visiting a pharmacy in the past month. The qualitative findings reveal that for mild to moderate illnesses, both the insured and uninsured continue to use pharmacies for their first-line care because of the convenience but also because quality of hospitals is poor and transportation costs create barriers to seeking care for less than severe illnesses. These findings are consistent with other studies that found that distance to facilities (Bennett *et al.* 1998; Criel *et al.* 1999; Ranson *et al.* 2006; Sinha *et al.* 2006); transportation costs (Ranson *et al.* 2006); and poor quality of care (Ekman 2004) create additional cost barriers that limit access to services even in the presence of insurance.

While the results on utilisation are positive across the sample, there is heterogeneity in impacts across consumption quintiles. The finding that the scheme has significantly increased the use of inpatient visits is consistent across all quintiles and this increased utilisation is most pronounced among the poorest quintile. However, the higher use of *outpatient* visits among the insured shown for the sample as a whole is mainly due to the relatively higher use of outpatient services among the insured in the highest quintile. There was no significant difference between CBHI and comparison individuals in the other four quintiles. In fact, among the poorest quintile, CBHI members were actually less likely to make an outpatient visit, although this difference was not statistically significant. These findings suggest that barriers to seeking care mentioned earlier (e.g., distance, transportation, poor quality) may be preventing use of less urgent services (i.e. outpatient services) among the first four quintiles.

The findings on out-of-pocket expenditures confirm that CBHI has a protective effect for members using services. Despite the fact that CBHI members use more services than the uninsured, expenditures for both inpatient and outpatient services are significantly lower among CBHI members. These results are consistent with the hypothesis generated from the conceptual framework and support other studies examining the impacts of CBHI (Preker *et al.* 2002; Ranson 2002; Jowett *et al.* 2003; Ekman 2004; Jütting 2004b; Devadasan *et al.* 2007; Aggarwal 2010) but stand in contrast to the situation in neighbouring China, where out-of-pocket payments are actually higher among the insured in urban areas (no difference was found between the insured and uninsured in rural areas). The lack of financial protection identified in these studies from China is

likely due to restrictive benefit packages, high co-payments, supplier-induced demand (as a result of fee-for-service plans) and a demand for expensive care among the insured (Wagstaff and Lindelow 2008; Wagstaff *et al.* 2009). In the CBHI scheme in Laos, members' care is paid for by capitation, which is set very low, resulting in loss of revenues to the hospitals. This capitation payment discourages supplier-induced demand among the insured — and may even contribute to under-provision of services. However, among cash-paying patients, there is evidence that health care workers in Lao hospitals are inducing demand for tests and more expensive drugs (Syhakhang *et al.* 2011). This is because transactions from cash-paying patients allow providers to earn additional allowances, especially from the sale of drugs, which are marked up by 25 percent or more at facilities.[101] Thus, differences in incentives from provider payments undoubtedly influence the type of services and drugs received by insured and uninsured patients, as the literature on provider incentives indicates (Mills *et al.* 2000; Schneider and Hanson 2007; Yip *et al.* 2010).

Although the results on out-of-pocket expenditures suggest that the scheme has achieved the objective of increasing financial protection, it is important to note that these positive impacts are experienced by the small group of individuals using services. When total expenditures (including the monthly premiums) are averaged across the entire sample (i.e., including those without a visit), there is no significant difference in out-of-pocket expenditures between the insured and uninsured, although the incidence of catastrophic expenditures among the insured is significantly lower. Thus, on a population level, the effect of CBHI on out-of-pocket expenditures is negligible, although the scheme does provide protection against catastrophic expenditures.

As shown in other studies, the impacts of CBHI on financial protection are not homogenous across socioeconomic groups (Jütting 2004a; Ranson 2004; Schneider and Diop 2004; Wagstaff *et al.* 2009). This study shows that CBHI members in the poorest quintile incur *higher* total out-of-pocket expenditures and a *higher* incidence of catastrophic expenditures than the uninsured. This lack of financial protection is at least partly due to the monthly premiums paid by CBHI members — which are flat rate and

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[101] Providers outside the insurance schemes are paid salaries from the Ministry of Health but these salaries are low. Revenues from user fees and revolving drug funds in the hospitals are sometimes used to "top-up" salaries.

are therefore regressive — but is also likely due to the fact that the insured in the poorest quintile are significantly (and highly) more likely than the uninsured to use inpatient services. Thus, the insured may be more likely to incur expenditures for drugs and supplies that are not covered by the scheme, as well as for transportation and food. These findings indicate that insurance alone is not sufficient to counteract additional barriers to financial protection among the very poor. The policy implications of these findings will be explored in more detail in Chapter 8.

The finding that cash-paying members experience shorter length of stays for outpatient visits is likely due to providers' incentives to offer preferential treatment to cash-paying patients, as a result of their dependency on user fees and revolving drug funds to finance operating costs of the hospital and possible extra payments for staff, as discussed above. Given these incentives, providers are more likely to see cash-paying patients faster than the insured. These results are consistent with the qualitative findings from this study and are also supported by the provider payment literature.

The findings on coping mechanisms for those with an inpatient visit indicate that insurance helps individuals (and households) smooth consumption, thereby reducing the likelihood that the insured will have to borrow money (often with high interest rates), sell assets or reduce expenditures in other areas (e.g., medical expenditures, food, children's needs), relative to the uninsured. These results are consistent with another study in Laos, which found that after dissaving, borrowing and receiving help from others are the two most common ways in which households cope with shocks due to illness (Wagstaff and Lindelow 2010). The lower likelihood of CBHI households resorting to coping mechanisms is also consistent with a study of CBHI in India, which found that the extent of borrowing and selling assets is significantly lower for the insured than for the uninsured (Aggarwal 2010). These findings indicate the importance of looking at factors other than out-of-pocket expenditures to understand the impact of insurance on financial protection.

Overall, the impacts of CBHI have been positive: relative to the uninsured CBHI members enjoy higher utilisation, lower out-of-pocket expenditures at the point of service delivery, a lower incidence of catastrophic expenditures overall, and less need to resort to coping mechanisms that may have long-term financial implications (i.e., selling assets, borrowing). Despite these positive effects however, it is important to consider the

results in a broader context. Only a small fraction of the population benefits from the scheme. Given the low coverage rates in the targeted areas and low utilisation rates among the insured, financial protection from CBHI is negligible on a population level (although protection against catastrophic expenditures is significant). Furthermore, the results indicate that the scheme has had very little positive impact on the poor and has even increased expenditures and catastrophic payments among this group. Thus, CBHI may be exacerbating inequalities in access to care and financial protection across income groups. These results raise concerns about the implications for poverty reduction through use of CBHI.

6.5 Limitations and strengths of methodology

The main limitation of the study is the single-difference approach, which only allows for control of observables, but not unobservables. (The argument against a panel design, which would control for unobservables, was described in Chapter 4.) It is important to consider how these unobservables may impact the findings. If any unobserved factors affecting enrolment lead to an increase in service utilisation and OOPs, the impacts of insurance will be overestimated. Similarly, if any unobserved factors affecting enrolment lead to a decrease in service utilisation and OOPs, the impacts of insurance will be underestimated. However, given the magnitude of the impacts in the current analysis, the direction and significance of the true impacts are likely to be similar to results presented here. Moreover, given the effort to account for selection into the scheme (through the ex-ante qualitative work), and the closeness of the two groups on observables even before matching, any bias is expected to be minor, but is nonetheless acknowledged.

A second limitation of the analysis is the difficulty of obtaining an accurate estimate of consumption, utilisation and out-of-pocket expenditures, due to non-sampling bias. Non-sampling bias is due to the inherent limitations of individuals to accurately recall events or expenditures in a given time period (Rannan-Eliya 2008). For example, the aggregate consumption measure used in this sub-study is likely biased, as a result of both the failure of individuals to accurately recall expenditures, and annualising smaller recall periods (e.g., food consumed in one month) to one year. Similarly, reports on utilisation of health care services and out-of-pocket expenditures are expected to be underestimated. Research on health accounting indicates that using a recall period of 12 months or more for inpatient visits can result in underreporting by as much as 30 to 50 percent, while

using a recall period of more than three days for outpatient visits can lead to underreporting of around 20 percent (Rannan-Eliya 2008). The use of proxy respondents to obtain information about all family members magnifies this problem as proxy respondents are likely to underreport events that they did not experience, or they may not have knowledge of the event (although in most households, multiple respondents verified information with other individuals in the household, which is expected to minimise this problem). Finally, given the relatively lengthy household survey, it is possible that respondents learned that not reporting certain events would result in the interview taking less time (Rannan-Eliya 2008). Although non-sampling bias is likely to affect the results, it is likely to be consistent across both CBHI and comparison households and is therefore not expected to affect the relative differences between groups. It is also important to acknowledge that the calculation of catastrophic expenditures is somewhat arbitrary and should be used only to measure relative differences between the insured and uninsured.

A final limitation is that the measurement of financial protection due to insurance does not reflect the indirect effects of illness. For example, households may choose to forgo necessary treatment or seek sub-optimal care, rather than divert a large fraction of household resources to cover health care costs (van Doorslaer *et al.* 2007). As shown in Chapter 5 (Table 5.2), this study found that approximately 7 percent of individuals in the CBHI and non-CBHI group went without care in a three month period: there was no significant difference between the groups. Another indirect cost of illness is caused by coping mechanisms such as selling assets and borrowing money. There are future costs of these coping strategies: for example, households are required to repay money they have borrowed in subsequent periods, possibly at high interest rates: when households sell assets or dissave, they forgo returns on assets and savings in the future (Wagstaff and Lindelow 2008). Finally, the cost of lost labour due to illness was not measured in the survey but based on previous research is expected to be high. For example, in Burkina Faso, indirect costs due mainly to lost labour comprised 69 percent of the total cost of illness (Sauerborn *et al.* 1995). Omitting these costs makes it difficult to pinpoint the true economic costs on households. However, as mentioned above, the methodology used to measure financial protection was the same across CBHI and comparison households and therefore the *relative* impacts of CBHI are expected to be reliable. In fact, the study found that the CBHI households were *less* likely to sell assets or borrow money and

therefore, if indirect costs were included, it is likely that the financial impacts of insurance would be even higher than those estimated on direct costs alone.

Despite the limitations, this sub-study has many strengths. First, a strong effort was made to understand the most important factors affecting selection into insurance. As a result, the survey designed for primary data collection included multiple variables of health status, risk preferences, preferences for modern care, and other factors that are not always adequately measured in other studies of voluntary insurance. The use of this rich dataset, combined with PSM in the analysis, helped to control for selection bias. The failure to control for selection bias has been a criticism of much of the earlier CBHI literature, although more recently authors examining the impacts of CBHI on utilisation and out-of-pocket expenditures have made an attempt to address selection bias, also through use of PSM and a wider range of independent variables, including health status (Gnawali *et al.* 2009; Wagstaff *et al.* 2009; Aggarwal 2010). This study therefore makes a contribution to the small but growing body of high quality evidence regarding the impacts of CBHI on utilisation and out-of-pocket expenditures. The second strength of the study is the use of qualitative data from FGDs, which lends support to the direction of the relationship between independent variables and impacts — a relationship that cannot be captured through a cross-sectional study alone. Finally, the sample size of the study is relatively large and is conducted across six districts where the scheme is operating. This represents an improvement over other CBHI evaluations that have used small sample sizes and are based on schemes with very few members (Palmer *et al.* 2004).

6.6 Concluding remarks

This study has revealed that enrolling in CBHI has increased access and increased financial protection for those enrolled. However, when disseminating results to policymakers it is important to be clear about what is being measured. To state that the scheme has been a success in increasing financial protection for CBHI members would be misleading — it is the CBHI members who *use* services that enjoy this financial protection. Given low utilisation rates in Laos, these members account for only 21 percent of CBHI members. Moreover, the scheme has had a negative impact on financial protection among the poor. Thus, there are both positive and negative impacts of the

scheme that should be acknowledged as the government plans to move forward with expansion of CBHI.

The findings from the CBHI enrolment sub-study in Chapter 5 revealed a number of challenges in expanding enrolment of CBHI: the threat of adverse selection; poor quality of care; and inequality in enrolment across income groups. Thus, it is likely that any positive impacts from CBHI will be experienced by only a small proportion of the population. As the government considers plans for scaling up CBHI and other insurance schemes to achieve universal coverage, a number of complementary approaches will be required to expand coverage and to ensure that once expanded, the scheme is having its intended impacts. These policy implications will be discussed in Chapter 8. However, prior to thinking about the policy implications of expanding coverage of CBHI and progressing towards universal coverage, the next chapter will shed light on some of the challenges of expanding enrolment in the SHI scheme, which targets the formal sector. Given the problems of increasing SHI coverage to date, this study examines the determinants of, and barriers to, enrolment. The SHI study complements the CBHI sub-studies and helps to inform actions that can be taken to expand health insurance and risk-protection in Lao PDR.

Chapter 7. Determinants of enrolment in social health insurance

7.1 Introduction

In an effort to increase coverage in the health sector, many low- and middle- income countries have adopted a model of financing which relies, at least to some extent, on social health insurance (SHI). SHI is a model of risk-pooling that is usually contributory and financed through payroll taxes that include a mix of employee and employer contributions, with subsidies often provided by the government. In Lao PDR, SHI is part of a broader social security scheme that includes other non-health benefits, and covers employees of private companies (including previously state-owned enterprises) and their dependents. Despite its mandatory nature, enrolment levels are low. While two reasons for low coverage in the *population* are the small size of the formal sector (i.e. private sector employees and their dependents make up only 8% of the population) and the fact that the scheme is only operating in four districts, the reasons for low enrolment levels in the targeted areas is poorly understood. The conceptual framework in Chapter 4 described the factors that are expected to influence enrolment of firms in SHI. Given firms' incentives to maximize profits, it is expected that smaller firms will be more likely to enrol in health insurance. Economic theory also predicts that firms that are better-off financially will be more likely to purchase insurance (because of the positive income elasticity of demand for insurance).

The conceptual framework also demonstrated how adverse selection can result in a voluntary scheme due to information asymmetries. While the mandatory enrolment of social security should theoretically counteract any adverse selection in the scheme, the scheme is effectively voluntary and it is therefore expected that firms will behave in a way that is consistent with insurance theory. For example, firms with a higher occupational risk profile are expected to be more likely to purchase health insurance, as a way of reducing uncertainty of medical expenditures in the future.

As discussed in Chapter 3, the Government of Lao PDR is progressing towards universal coverage of health care and the expectation is that SHI will play a pivotal role in increasing health insurance coverage. Thus, more information is needed about what is both driving and hindering enrolment. This chapter reports the findings of a sub-study

that examines the factors affecting enrolment in SHI[102] and brings to light employers' experiences with and perceptions of the scheme. The sub-study addresses objective 3 of the study, which is *to explore the firm-level determinants and barriers related to enrolment in social health insurance*, and specifically aims to answer the following research questions, which were derived from the conceptual framework:

1. Which employer characteristics are associated with enrolment in social security (e.g., size of firm, type of ownership, risk profile, etc.)?

2. What motivates employers to enrol/not enrol in social security?

3. What have been firms' experiences with social security (e.g., impact on business, strengths and weaknesses of the scheme)?

4. Is the benefit package offered by non-enrolled firms comparable to social security benefits?

5. Is there any evidence that firms are employing strategies to evade social security contributions?

6. What are the prospects for expanding coverage of social security in Laos?

Within the first research question, three specific hypotheses derived from the conceptual framework are tested:

Hypothesis 1: Smaller firms are more likely to enrol in social security than are larger firms.

Hypothesis 2: Firms with higher revenues are more likely to enrol in social security than are firms with lower revenues.

Hypothesis 3: Firms with a higher occupational risk-profile are more likely to enrol in social security than are lower-risk firms.

The next section presents background information about the social security target group, which helps to set the context for the sub-study and justifies the use of the chosen sampling frame. The methodology used in the analysis is then presented, followed by the results and a discussion that summarises the contribution of the study to the literature and highlights the policy implications of the findings. However, a more detailed discussion

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[102] Although the focus of the study is on SHI, SHI in Laos is part of a larger social security scheme and therefore understanding enrolment in SHI requires understanding enrolment in social security. The two terms are therefore used interchangeably throughout this chapter.

of the policy implications of expanding coverage through SHI is included in Chapter 8. This chapter then summarises the limitations of the analytical approach and offers closing remarks.

7.2 Background information on the target group

Prior to selecting a sampling frame for this sub-study, more information was needed about the social security target group. Therefore, background research was conducted to understand both how the *official* target group is defined in the social security legislation, and how the *actual* target group (i.e., the group of firms targeted by the Social Security Organization (SSO)) is identified. The background research revealed large discrepancies between the official target group and the actual target group. This section of the chapter describes these discrepancies and presents an overview of what the *potential* target group could look like in the future. This description sets the context for the sub-study and justifies the use of the sampling frame that was chosen for the study. The background research was conducted using a combination of document reviews (including a review of the social security legislation), key informant interviews with private sector employees and staff members at the SSO, and secondary data analysis of the Lao Economic Census (National Statistics Center 2007).

7.2.1 Overview of the "official" social security target group as defined by Lao regulations

According to the SSO Decree 207, the official target group for social security includes all enterprises with 10 or more employees (Social Security Organization 1999). However, the decree is difficult to enforce for two main reasons. First, Decree 207 is a ministerial decree, and therefore by nature, it is weaker than a law promulgated by the President. Second, no regulatory procedures are in place to enact penalties for non-compliant firms. Although an inspection unit at SSO was introduced in 2008 with a mandate of identifying non-compliant enterprises, at the present time only verbal warnings can be issued. Furthermore, the SSO office is understaffed (with only five employees in 2009) and has very little capacity to carry out inspections (Personal communication with Social Security Office December 17, 2008).

As a step to strengthening the regulatory framework around social security, the SSO was planning to draft guidelines for inspections and sanctions for non-compliant companies

at the time of this study, and was also planning to work with other line ministries to promulgate a law specific to social security. The new law will mandate enrolment of all enterprises *with at least one employee* (Personal communication with Social Security Office December 17, 2008). Although the Labour Law (2006) mandates that *"all labour units must participate in...social security"*, the language is vague in that it does not specifically define the term "labour unit" or the minimum number of employees that constitute a "unit"(President of the Lao People's Democratic Republic 2006).

7.2.2 Overview of the "current" target group and the potential for expansion

While the official target group, according to the SSO decree, includes all enterprises with at least ten (and eventually one) employees, the SSO currently targets only a small subset of enterprises in the country. This is due to the way in which the SSO collects information about its target group, which involves obtaining a list of businesses that are registered with the central or provincial Tax Registration Office (Ministry of Finance) and storing information about these businesses in a database. The database includes a total of 1,320 businesses, all of which are located in the four provinces where the scheme is running (Vientiane Capital, Vientiane Province, Savannakhet and Khammoune).[103] The majority of this target group (99 percent) consists of firms with 10 or more employees. However, because the database includes only companies that pay taxes to the Tax Registration Office, enterprises without a tax identification number are excluded from the target group.

In order to provide some perspective on the size of the current social security target group relative to the universe of enterprises operating in the country, I performed secondary data analysis using the Lao Economic Census (National Statistics Center 2007) — a survey that summarises information about all economic units[104] operating in the country. The findings, summarised in Figure 7.1, are helpful for understanding various options for expanding the target group in the future. The first (outer) ring represents all 209,484 economic units that operated in the country at the time of the

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[103] The scheme is currently only operating in four provinces due to financial, administrative and human resource constraints of expanding offices to other provinces. Outside Vientiane Capital, the scheme targets only a limited percentage of firms.

[104] According to the Lao Economic Census, an *economic unit* is defined as any business entity, either formal or informal, including shops that operate any economic activities. This group also includes non-profit and non-government organisations but excludes international organisations.

economic census (2006), including those units which had no permanent address or were located in communities without road access. These latter units, which are usually considered part of the informal sector[105], include mobile shops, street vendors, lottery sellers, tuk tuk drivers, and other temporary shops. The outer ring also includes international organisations and civil servants, neither of which are considered part of the private sector, and are therefore not targeted by the SSO.

When informal economic units, international organisations and civil servants are excluded, 126,913 economic units remain (represented by the second ring). However, even though economic units in this category have a permanent location, the degree of formality with which they operate varies. For example, only 40 percent of businesses in this category hold a trade registration certificate, while only 71 percent hold a tax registration certificate.[106] In identifying opportunities to expand social security, it is clear that targeting businesses that are not yet tax registered would present a challenge.

Figure 7.1 Economic units operating in Lao PDR

209,484 economic units

126,913 economic units (with permanent location)

90,457 economic units paying any tax

10,614 econ units with tax id #

388 firms currently reached

1,320 firms currently targeted
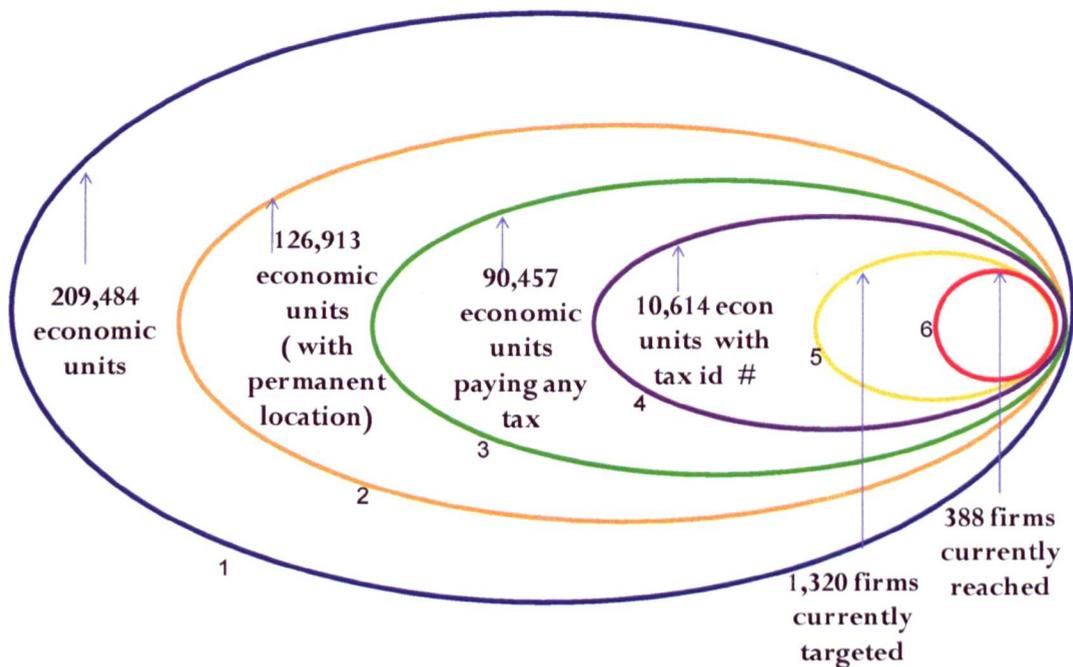
Source: Compiled by the author using data from Lao Economic Census (2005/6) and SSO Database, January 2009.

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[105] The distinction between the informal and formal sector is often blurred. The informal sector usually refers to unregistered production units that are owned and operated by individuals, and sometimes unpaid family members.
[106] While the majority of economic units without a tax registration certificate are very small (with less than five employees), 370 of these units are medium-sized (10 to 99 employees).

The third ring represents the 90,457 units that are paying some form of tax. Clearly, the fact that businesses are paying taxes indicates that they have a somewhat formal structure. However, even among this group, there are varying degrees of formality. Depending on the accounting system, businesses make their tax payments using one of three methods: a lump sum tax; a daily tax; or through contributions to the Tax Registration Office on a regular basis using a tax identification number. (The first two types of taxes are paid by firms with less advanced accounting practices). According to the Lao Economic Census, firms with a tax identification number account for only 8 percent of economic units in the country (represented by the fourth ring). Thus, by targeting only firms with a tax identification number — which is the group currently targeted by the SSO — the SSO automatically misses an opportunity to target the majority of enterprises in the country.

The SSO's database of target firms comprises 1,320 enterprises (the fifth ring). This target group is much smaller than the group of tax-registered firms shown in the fourth ring, in part because the SSO targets only firms with 10 or more employees and in 4 provinces only. Due to low compliance among the firms currently targeted by the SSO, only 388 enterprises were enrolled in social security in January 2009 (the sixth ring). These 388 companies represent only 29 percent of companies in the SSO's database of target firms (SSO January 2009). However, because most enrolled firms are large, this group accounts for 61 percent of targeted employees. Collectively these 388 companies provide insurance for 46,731 employees, and 86,690 beneficiaries[107]— approximately 1.5 percent of the Lao population.

While Figure 7.1 above does not give an indication of the proportion of the *population* that could potentially be covered, the data indicate that there is considerable opportunity to expand the *number of firms* that could be reached, at least in principle. The implications of expanding enrolment outside the currently narrow target group will be discussed later in the chapter.

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[107] The updated estimate for the number of beneficiaries covered by social security at the end of 2009 was 93,086 (MOH and WHO 2009).

7.3 Methodology

7.3.1 Overview of methodology

As described in Chapter 4 a case-comparison design was used to select a sample of 130 employers (including 65 enrolled and 65 non-enrolled firms). The sample size of 130 was chosen based on the budget and a rule of thumb that the sample should be at least 100 observations (see Chapter 4, Section 4.6.2). The SSO's database served as the sampling frame for this study and the sample was restricted to firms in Vientiane Capital and to the four largest industries: manufacturing; construction; trade; and services. Projections of different coverage scenarios for the future were also modelled in Excel and this approach is presented following the description of the firm survey.

7.3.2 Analysis of firm survey

Analysis of closed-ended questions was performed in Stata 10.1, while open-ended responses were analysed in Microsoft Excel 2007 using content (qualitative) analysis (Miles and Huberman 1994; Morgan 1997). However, the majority of the data from the survey was obtained from closed-ended questions and therefore, Stata was mainly used in the analysis. Much of analysis was descriptive but a logit model was used to understand the determinants of enrolment. The logit model is represented by the following equation, where P_{SS} represents the probability of enrolling in social security:

$$P_{SS} = 1/(1+e)^{-(b_0 + b_1 X_1 + b_2 X_2 + \dots b_n X_n + \varepsilon)}$$

The dependent variable (social security enrolment) takes on a value of 1 for a firm with social security and 0 for a non-enrolled firm. It is assumed that the logit transformation of the outcome variable has a linear relationship with the predictor variables. In the equation above, X_1 through X_n represent characteristics of firms as well as the head of the company; b_i represents the coefficient for the respective X variable; and ε represents the error term, which includes unobserved variables. The logit model is used to estimate the odds ratios, which represent the odds that a firm will enrol in social security given a certain characteristic, when other covariates are held constant. The odds of enrolling in social security are given by the notation below:

$$OR = \frac{P_{ss}}{1 - P_{ss}}$$

Sampling weights were applied to the logit model to account for the stratified random sampling approach described in Chapter 4. The post-survey weighting adjusts for the probability that the observation was selected and also accounts for the refusal rates.[108] The weights act as inflation factors to restore the strata in the sample to their respective proportions in the sampling frame (Groves *et al.* 2004). It is important to note that the SSO sampling frame is likely to be very different from the population of firms in the country due to the way in which the SSO target group was selected (i.e., the SSO sample represents only firms that pay taxes and are registered with the tax office – a narrow sample of overall firms in the country).

Some collinearity of variables in the logit model was suspected and therefore tests for collinearity were performed in Stata. The results of these tests are presented with the study findings.

7.3.3 Modelling scenarios for expanding coverage

As a complement to the firm survey, scenarios were constructed to illustrate the prospects for increasing coverage of SHI, using data from the Lao Economic Census. The scenarios are simplistic approximations that are intended for illustrative purposes only. They were created in Excel and are based on assumptions about future compliance and the feasibility of reaching differently defined target groups but neither account for population growth nor growth of the target groups. Nor do they account for the impact of increased enforcement on evasion or type of employment. However, although the scenarios are simplistic approximations, they highlight the opportunities and challenges associated with expansion of the target group.

7.4 Results

This section presents the following results: 1) background characteristics of the sample; 2) the results from multivariate analysis on the determinants of enrolment; 3) descriptive

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[108] Probability weights were calculated as the inverse of the sampling probability multiplied by the response rate, i.e., (# in the population/# in the sample) X (# sampled/(# refused + # sampled)). A check was made to ensure that the sum of the weights equalled the number of firms in the sampling frame.

findings on the perspectives of firms (regarding firms' motivations for enrolling or not enrolling in social security; members' experiences with the scheme; the provision of benefits for non-enrolled firms; and evidence of evasion of social security payments); and 4) the findings from the scenario modelling exercise, which examine the prospects for increasing coverage of SHI. Given the small sample size, a significance level of 10 percent is used to detect differences in the survey findings.[109]

7.4.1 Background characteristics of sample

Table 7.1 outlines background characteristics of the sample by insurance status. The results show that significantly more firms with social security (SS-member firms) are state-owned, and under foreign ownership or mixed ownership, while the majority of uninsured firms are domestically owned. SS-member firms also have a significantly larger workforce relative to their non-enrolled counterparts but there is no significant difference in the percentage of staff who are permanent employees. SS-member and non-enrolled firms are also similar in terms of their gender composition: in both groups a little more than one third of the workforce is female. Although similar with respect to the approximate size of their assets, a larger proportion of SS–member firms have higher company revenues. Relative to non-enrolled firms, SS-member firms are also more likely to be members of a business organisation, and to have company heads who are foreign-born and have attended post-secondary education. Overall, few employers report higher than average workplace risk[110], and among those who do, there is no significant difference between the insured and uninsured firms.

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[109] The ex post sample size calculation using the *"sampsi"* command in Stata shows that with a sample size of 130 observations (65 in each group), a 20% difference in proportions can be detected (with power=.80 and significance=0.10). The required sample size calculation does not take into account the number of variables used in the multivariate analysis.

[110] Employers were asked to report the risks their employees face in the workplace on a scale of 1 to 5, with 1 representing low risk, 3 representing average risk and 5 representing high risk. The two most frequently reported risks were injuries and car accidents.

Table 7.1 Background characteristics of SHI sample

Firm Characteristics	SS-members (n=65)	Non-enrolled (n=65)	p-value
Industry category			
Manufacturing	45.9%	29.0%	
Construction	2.4%	24.0%	.0084**
Trade	17.7%	10.5%	
Services	34.0%	36.5%	
Total	*100%*	*100%*	
Ownership (private/state)			
Ownership 1: State-owned or partially state-owned (ref=100% private)	24.7%	2.5%	0.005**
Ownership 2:			
100% domestic	53.3%	88.2%	
100% foreign	24.3%	9.4%	0.001**
Mixed partnership (domestic & foreign)	22.4%	2.4%	
Total	*100%*	*100%*	
Employees			
Mean # of permanent employees	144.11	53.01	0.068*
Mean # of temp employees	55.53	8.98	.071*
Mean # of daily wage employees	5.41	1.21	0.121
Permanent employees as a % of workforce	78.28%	76.71%	0.230
% of workforce female	37.71%	38.84%	0.856
Size of company (financial)			
Company Assets (2008)			
< 1 billion kip	31.27%	35.05%	
1-10 billion kip	43.07%	53.26%	0.184
> 10 billion kip	25.65%	11.69%	
Company Revenues (2008)			
< 1 billion kip	31.9%	54.7%	
1-10 billion kip	40.5%	36.1%	0.036**
> 10 billion kip	28.0%	9.2%	
Other firm characteristics			
>1 service outlet/factor/branch/store	71.79%	79.12%	0.429
Member of business organisation	55.82%	29.76%	0.011**
Higher than average risk	12.72%	16.13%	0.628
Age distribution (at least 70% of employees are <35 yrs)	67.4%	69.1%	0.868
Mean company turnover (annual)	8.5%	8.5%	0.982
Level of tax payment			
central	48.17%	20.14%	
provincial	40.89%	46.19%	0.011**
district	11%	34%	
Characteristics of company head			
Nationality (head is Laotian)	64.01%	86.83%	0.008**
Mean age (years)	51.76	49.28	0.307
Gender (head is male)	85.32%	76.70%	0.296
Education of head (attended university/college or higher)	86.30%	57.60%	0.003**

**significant at 5%; *significant at 10%. Reported results are based on t-tests of means for continuous variable and chi-squares for proportions/ categorical variables. All estimates account for sampling weights and non-response.*

7.4.2 Determinants of enrolment: results from multivariate analysis

The relationships between firm characteristics and enrolment in SHI, when all other factors are held constant, are presented as odds ratios in Table 7.2. The odds of enrolling are higher in the trade industry than in the services, manufacturing, or construction industries. Ownership of the firm is also significantly associated with enrolment: the odds of enrolling are approximately 16 times higher for state-owned enterprises than for private firms, which is not surprising given that social security is a government-mandated programme.[111] Although foreign-owned companies are not significantly more likely to enrol than domestic companies, the odds of enrolment for a mixed company (where ownership is shared between domestic and foreign owners) are 24 times greater than that of a domestic company. It is possible that mixed companies, due to the nature of their business, receive pressure to comply with industry regulations, or that these types of firms have a stronger compliance culture.

As described in the conceptual framework, the relationship between firm size and enrolment in SHI is complex. However, the expectation was that larger firms would be less likely to enrol in social security. However, the study found that *larger* firms are more likely to enrol: the odds of enrolment for a company with at least 60 employees are three times that of a company with less than 20 employees.

Contrary to the conceptual framework, a firm's decision to enrol is *not* significantly associated with either a firm's financial status (i.e. revenues) or a firm's risk profile. Nor is enrolment significant associated with the number of service outlets, the hiring of temporary workers or employee turnover. Although key informants interviewed prior to the survey expected pressure from leaders of business organisations to influence members to enrol in social security, this claim was not supported by the study findings. The findings also show that the odds of enrolling are more than three times higher in companies whose heads have at least a university education but that nationality and

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[111] In this sample, all but one state-owned enterprise (SOE) or partially state-owned enterprise are enrolled in social security. Therefore, the effect of state-ownership on enrolment is very strong. It is not clear whether there is an additional mechanism for SOEs to enrol in social security. For example, it is possible that SOEs are pressured to enrol or are automatically enrolled.

gender are not significantly associated with enrolment.[112]

Table 7.2 Odds ratios (ORs) of enrolment, by firm characteristic

	OR	S.E.	z	p>|z|
Industry type (reference group: services)				
Manufacturing	1.149	0.769	0.21	0.836
Construction	0.256	0.275	-1.27	0.205
Trade	4.469	3.371	1.99	0.047*
Ownership 1: State-owned (reference group: 100% private)	16.891	19.578	2.44	0.015*
Ownership 2:				
100% foreign (reference group: 100% domestic)	6.782	10.141	1.28	0.201
mixed (reference group: 100% domestic)	24.019	23.557	3.24	0.001*
Size of permanent workforce =20-59 employees (ref: 0-19 emp)	1.492	0.960	0.62	0.535
Size of permanent workforce = 60+ employees (ref: 0-19 emp)	3.296	2.308	1.70	0.088*
Revenues				
1-10 billion Kip (reference group: <1 billion kip)	1.437	0.788	0.66	0.508
> 10 billion Kip (reference group: <1 billion kip)	1.210	0.913	0.25	0.800
Firm has higher than avg perceived risk (3+ on a scale of 1-5)	0.621	0.635	-0.47	0.641
More than one service outlet/branch/factor/store	1.357	0.856	0.48	0.629
Member of business organisation (reference: no membership)	1.945	1.048	1.23	0.217
Employs any temporary workers	1.195	0.653	0.33	0.744
At least 10% employee turnover (annually)	0.476	0.280	-1.26	0.207
Taxes paid at central level (reference: taxes paid at lower levels)	0.743	0.522	-0.42	0.672
Head of company is Laotian (reference: foreign)	2.178	2.590	0.65	0.513
Head of company has a university education or higher	3.426	1.821	2.32	0.021*
Head of company is male	0.626	0.404	-0.73	0.468

*significant at 10% ; **significant at 5%;*** significant at 1%*

7.4.3 Perspectives of firms: results from descriptive analysis

This section of the results presents information regarding firms' motivations for enrolling or not enrolling in social security, members' experiences with SHI, the provision of benefits for non-enrolled firms, and evidence of evasion of social security payments. These findings are descriptive in nature and are intended to complement the results from multivariate analysis.

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[112] Collinearity was suspected between nationality and education and between nationality and ownership. Tests for collinearity of all variables were performed in Stata and all variance inflation factors were low (below 4). Following guidance in the UCLA Stata help guide, a value lower than 10 is tolerated. Another model was run without the Lao national dummy variable but the significance of other variables did not change. Thus, nationality was left in the model.

7.4.3.1 Motivation for enrolling/ not enrolling in social security

To better understand employers' decisions to enrol, employers were asked to rate a number of possible reasons for enrolment/ non-enrolment on a scale of 1 to 5, with 1 being not at all important and 5 being very important.[113] The results, summarised in Table 7.3, confirm the trends identified through multivariate analysis but also shed further light on employers' decision-making processes. Among the insured, the most important reason for enrolment was to ensure employees are covered with health insurance. Increasing employee satisfaction, and improving the health and well-being of employees were also important factors. These findings indicate that employers are most concerned with the health insurance benefits within the social security scheme. However, retirement benefits are also relatively important. In another survey question, respondents ranked health care as the most important benefit, followed by retirement benefits and sick leave. The finding that pressure from the SSO was not an important factor was not surprising given that the SSO is not currently enforcing enrolment.

Table 7.3 Most important reasons for enrolment/ non-enrolment

Reasons for enrolment	Rating (1-5)
To ensure employees have health care coverage	4.28
To increase employee satisfaction	4.11
To improve health and well-being of employees	4.08
To ensure employees have retirement benefits	4.00
Strong pressure from international bodies	3.05
Strong pressure from SSO	2.74
Strong pressure from employees	2.72
Strong pressure from business organisation	2.71
Reasons for non-enrolment	**Rating (1-5)**
Company benefits are better than SS benefits	4.11
Do not know much about social security	3.42
Quality of government hospitals not good	3.22
Do not use health care benefits/ staff do not get sick	3.22
Employees do not want SS	3.12
Cost of SS is too high	2.97
Do not trust that money is used well	2.83
High turnover among employees	2.57
Many temporary employees	2.38
Employees prefer to purchase private insurance	2.35

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[113] The possible factors affecting enrolment/non-enrolment were identified by first asking employers to list their most important reasons for enrolling/not enrolling. Respondents were then asked to rank the full list of responses.

Among the non-enrolled cohort of the sample, the most important reason for non-enrolment was that the company's benefit package is superior to social security benefits — an interesting finding given that few companies offer health insurance or other benefits to their employees, as shown in the next section of the report. Therefore, if the respondents were being truthful in the interviews, the only possible explanation of this finding is that although non-enrolled firms offer fewer benefits to their employees, the benefits they do offer are of higher quality than those offered by the SSO. However, it is more likely that in their explanations of why they were not enrolled, employers were attempting to conceal the fact that they were offering few or no benefits to their employees. Other important reasons for not enrolling were: employers' lack of knowledge of social security, the poor quality of government hospitals, and the fact that employees do not use benefits or do not get sick.

To better understand the process by which a firm decides to enrol in social security employers were asked to identify the people in charge of making the decision to enrol. Most firms reported that enrolment in social security is the decision of the director of the company, the general manager or the owner, and less often the executive board. In a few companies, the personnel manager and all staff members are involved in the decision process.

The study found that almost all SS-member firms (95 percent) intend to be enrolled in the scheme in three years, compared with 38 percent of non-enrolled firms (51 percent are unsure and 11 percent said they do not intend to be enrolled). The majority of firms that are "unsure" about enrolment or do not intend to enrol are domestic, privately owned businesses. Regarding exposure to social security awareness campaigns, only 13 percent of non-enrolled firms in the sample have ever attended a meeting where social security was promoted.

7.4.3.2 Members' experiences with social security

The impact of social security on business

As shown in Figure 7.2, the majority of respondents (72 percent) stated that social security has had a positive effect on employee well-being and satisfaction. However, the effect of the scheme on the ability to retain staff or recruit staff members has been less impressive, with only 36 percent of employers reporting a positive effect. Employers

explained that while some prospective employees inquire about benefits prior to accepting a position, most job-seekers are mainly concerned with salary.

Although 57 percent of SS-enrolled employers claim that the impact on overall business has been positive, roughly 38 percent claim that there has been no effect (while 5 percent claim that there has been a negative effect). Among firms reporting a positive effect, employers explained that social security: a) gives firms a competitive advantage over non-enrolled firms by decreasing company expenditures; b) helps to build trust with staff members; and c) increases productivity of employees. However, other employers noted that being enrolled in social security *decreases* revenues unnecessarily because the cost of contributions exceeds the benefits used by employees.

Figure 7.2 Impact of Social Security on Business
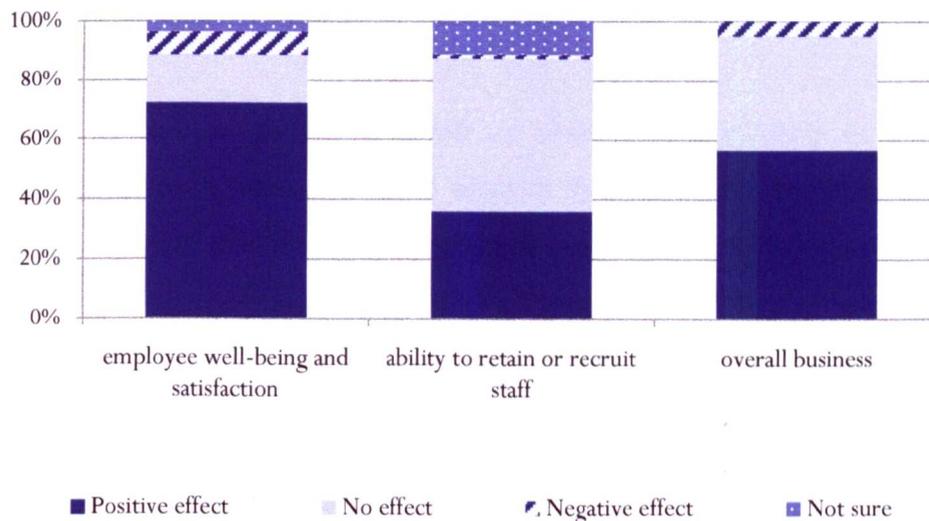
Source: Author's calculations, sampling weights applied

Members' perceptions of the strengths and weaknesses of social security

SS-member firms were asked to comment on the strengths and weaknesses of the scheme. The three most common responses are described below.

Strengths:

- *Social security reduces employers' expenditures* on benefits for which the company would otherwise pay.

- *Social security provides convenience and cost-savings to employees,* in that employees can use cards for hospital care, rather than paying cash.

- *Being enrolled in social security improves employee well-being.* Employers report that social security gives employees a sense of "security", "warm feelings", "trust", and "confidence" and "increases employee satisfaction". According to one employer, higher employee satisfaction due to social security benefits translates into higher productivity.

Weaknesses:

- *Employers do not perceive the scheme to be of good value,* either because the staff do not use benefits (most respondents made specific reference to not using health care benefits) or because contributions exceed the benefits used. Employers are particularly concerned that health insurance does not cover check-ups and feel that including free check-ups would improve the value of the scheme.

- *Quality of care at public hospitals is poor,* and according to SS-member employers, is even worse for social security members. For example, SS-member employers report that their staff members experience longer waiting times, are treated poorly by health care professionals, and receive drugs of inferior quality, relative to cash-paying patients. One respondent mentioned that because of the long waiting times and poor quality, members resort to using private clinics for their treatment.

- *Communication by SSO regarding benefit structure and the procedures associated with the scheme is poor.* Members reportedly have very little contact with SSO staff and therefore no opportunity to learn more about the scheme. According to interviewees, some SSO representatives do not clearly explain the details of the scheme. Moreover, there are reports that SSO staff members are unfriendly when providing information to members or prospective members.

Other less frequently reported complaints of the scheme include slow and cumbersome documentation processes required to submit health care claims and the difficulty of using a hospital outside their jurisdiction (or switching the designated hospital at which they must seek care).

7.4.3.3 Comparisons of the benefit packages offered by insured and uninsured firms

As stated earlier, non-enrolled employers report that the most important reason for not enrolling in social security is that their companies offer a better package of benefits than the social security package. However, the study findings showed that the non-enrolled firms offer far *fewer* benefits to their employees than do SS-member firms (See Figure 7.3). In fact, the majority of non-enrolled employers do not offer health care benefits: only one quarter of non-enrolled firms make direct payments for employees' health care, while none offer private insurance. In contrast, some SS-member firms offer extra insurance for programmes that are already included in the social security package (e.g., private health insurance, maternity benefits, coverage for injuries, and sick leave). Thus, SS-member employers are offering more generous benefit packages to their employees.

Figure 7.3 Benefits offered to SS-member and non-member employees
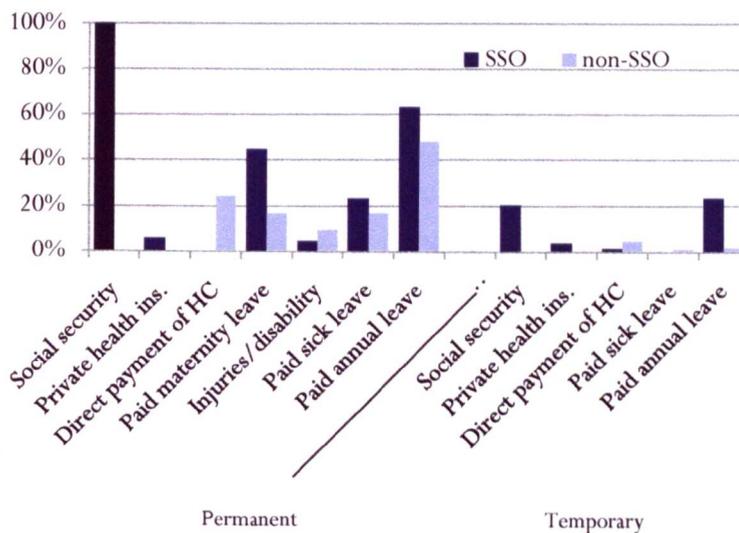
Source: Author's calculations, with sampling weights applied

Although private insurance is not commonly offered at the firm level, it is possible that *employees* in non-enrolled firms are purchasing private insurance at the household level. Key informant interviews conducted during the design phase of the study found that two private health insurance companies are rapidly expanding in Laos. One insurance company has launched new initiatives, including cooperative arrangements with International NGOs and villager groups, whereby premiums are financed by income generating activities. The premiums for health insurance are as low as US$ 2.50 per

month and cover care both within and outside Lao PDR (Personal communication with private health insurance companies in Lao PDR 2009).

With respect to temporary employees, very few in either group receive employee benefits. However, approximately one fifth of SS-member firms extend social security and paid annual leave to their temporary employees. According to employers, the length of time an employee can work as a temporary employee varies across firms, and 30 percent of firms report that there is no limit. Because the majority of temporary employees do not receive benefits, there may be a financial incentive for employers to hire temporary employees to fulfil the duties of permanent employees. The potential for such evasion is discussed in the next sub-section.

7.4.3.4 Evidence of evasion

As discussed in the literature review, one of the challenges of implementing and enforcing mandatory insurance is evasion of contributions. In Lao PDR, it was expected that any evasion tactics, such as underreporting the number of employees or reclassifying job descriptions, would be minimal, given that penalties are not yet enacted for non-compliance. Rather than employing deliberate techniques to conceal the fact that they are not enrolling, firms can simply just not enrol without consequences.

One way to detect evasion is to examine the structure of the workforce. A disproportionately high proportion of temporary workers in non-enrolled firms, relative to SS-member firms could indicate that a firm is trying to evade social security contributions by hiring temporary workers, who do not usually receive benefits. This study examined the employment contracts of workers and found that overall, SS-member firms were no more likely than non-enrolled firms to employ temporary workers: in both groups temporary and daily employees accounted for slightly less than one quarter of the workforce. After controlling for type of industry (See Figure 7.4), the difference in the proportion of permanent workers between SS-enrolled and non-enrolled firms is small and not significant in three employment categories. However, in the services industry, SS-member firms employ significantly fewer permanent workers, relative to uninsured firms. Even when differences in the size of workforce, revenues, and ownership (private vs. state-owned; foreign vs. domestic) are taken into account, significant differences still remain (p=.042). Therefore, it is possible that firms in the service industry are replacing

permanent workers with temporary workers as a means of evading social security payments. The difference in number of permanent workers employed in the trade industry is also large, but not statistically significant. However, the risk of a type 2 error (i.e., failing to reject the null hypothesis of no difference) is high, as a result of the small proportion of the sample size within the trade industry (29 observations in total).

Figure 7.4 Composition of workforce by industry and insurance status
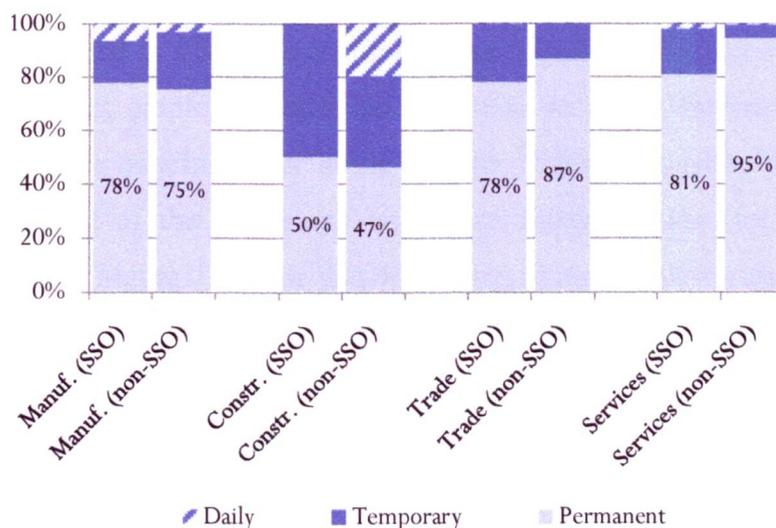
Source: Author's calculations, with sampling weights applied

What cannot be ascertained from the data in Figure 7.4 is whether all firms (not just SS-members) are evading payment of benefits. The language in the Labour Law (see Section 7.2.1) is such that even employers without social security are required to provide sick leave, maternity benefits, health care, occupational disease benefits, and pensions for their permanent workforce. These expenses must be borne by the employer for firms that do not have social security. Therefore, it is possible that firms (both SS-members and non-members) hire temporary workers, or under-report the number of permanent employees as a way of shirking the responsibility and costs associated with purchasing employee benefits. Key informant discussions with the SSO in the initial stages of this study revealed that some companies' reports on the size of the permanent workforce gradually decline over time when in fact, upon closer inspection by the SSO, the number of employees remains constant. By underreporting the number of employees, firms may feel that both employers and employees benefit: firms decrease their indirect labour costs and employees may be given the option to receive the foregone contributions as cash (Personal communication with Social Security Office December 17, 2008).

Prior to the study, key informant interviews suggested that some employers allow employees to opt-out of social security. Given that the scheme is mandatory for all permanent employees, opt-outs can be considered an evasion strategy used to reduce overall labour costs. In the international social security literature, some of the reasons given for evasion at the household or individual level include: a desire to meet current consumption needs, myopic behaviour, and lack of confidence in the scheme (McGillivray 2001). To further investigate the extent to which opt-outs take place in the Lao social security scheme, I cross-checked data on the number of permanent workers in the company (identified in a module on "employment contracts" in the survey) with the number of permanent employees enrolled in social security (reported in a separate module on "employee benefits" later in the survey). If firms are complying with social security, 100 percent of the permanent workforce should be enrolled. However, the findings presented in Figure 7.5 show that 44 percent of member firms enrolled less than 100 percent of the permanent workforce in the scheme. In fact, 94 percent of SS-member employers openly admitted to giving employees the option to enrol.

Figure 7.5 Percent of permanent workforce enrolled in social security
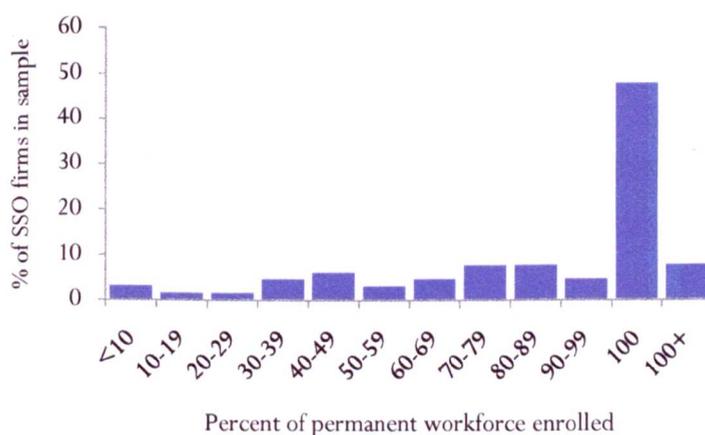
Note: *Firms that enrol both permanent and temporary employees in SS are effectively enrolling more than 100% of their* permanent *workforce.*

7.4.4 Prospects for expanding coverage of social security

Figure 7.6 illustrates scenarios that were conducted using secondary data analysis of the Lao Economic Census. The expected coverage of each scenario is shown by the bars, while the size of the target group is indicated by the dotted line. The baseline scenario (scenario 1) shows that current enrolment in the SSO target group stands at 29 percent of firms but covers 61 percent of employees. The higher coverage among the latter is a

result of covering mainly large enterprises. Given that the infrastructure required to strengthen enforcement is almost non-existent in Laos, considerable effort will be required to increase compliance within the current target group. Nevertheless, scenario 2 assumes compliance within the current target group of firms reaches 80 percent. Given the small size of the SSO's target group relative to the universe of firms in the country, as shown earlier in Figure 7.1, increasing compliance to 80 percent would not result in substantial increases in coverage on a population level.

The remaining scenarios illustrate various options for gradually expanding the target group. Scenarios 3 through 7 represent target groups that include all accessible areas throughout the country. In scenario 3, the SSO would continue to target firms with 10 or more employees, and only firms with a tax identification number. Given that most of the firms in areas that are not currently covered are small and medium-sized firms, compliance in scenario 3 is expected to decrease, relative to the compliance level in scenario 2. For illustrative purposes, compliance is assumed to decrease to 70 percent. Scenario 4 targets firms with at least 10 employees who pay any kind of tax and assumes a reduction in compliance to 65 percent. Relative to scenario 3, this scenario adds an additional 83,000 beneficiaries. However, identifying these firms may be difficult if the firms have not carried out formal licensing requirements.

Figure 7.6 Scenarios for expanding coverage of social security
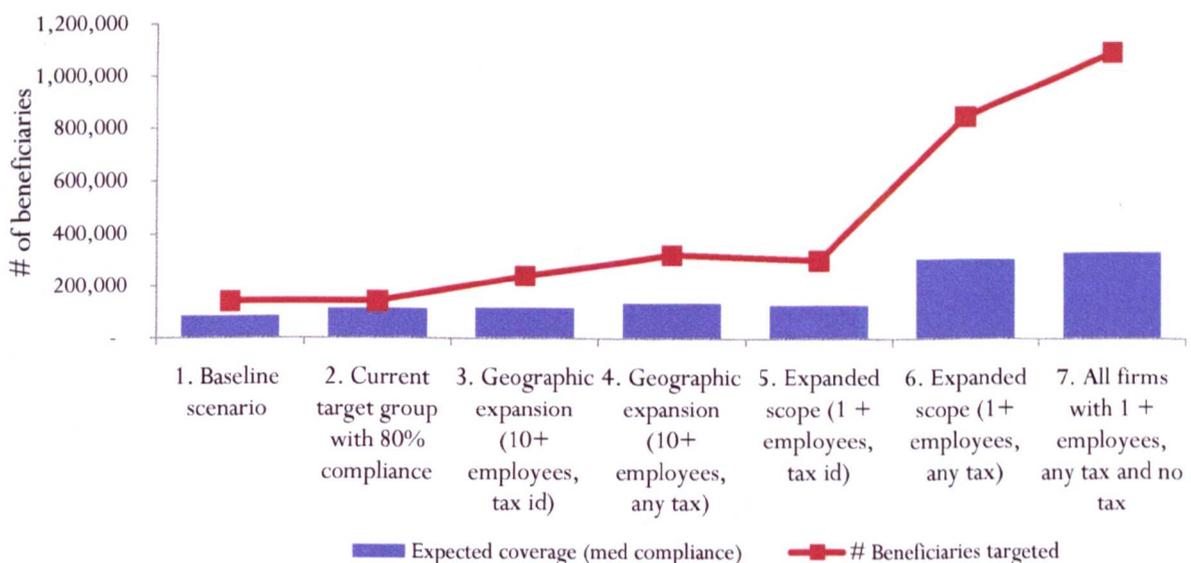
Source: The author's calculations; Note: population of Lao PDR=6.3 million, 2009

The next 3 scenarios represent expansion to groups that are increasingly more difficult to reach. Scenario 5 includes firms with one or more employee with a tax identification number, and compliance is expected to remain the same as in scenario 4 (65 percent). In Scenario 6, firms of any size and paying any kind of tax would be targeted. The assumption in this scenario is that compliance would fall to 60 percent, given the difficulty of reaching these smaller, informal firms. Nevertheless, this scenario would result in more than a doubling of coverage rates, relative to Scenario 5. Finally, Scenario 7 includes firms of all sizes, regardless of their tax payment (i.e. it includes firms that do not currently pay tax). Compliance is assumed to decrease to 55 percent for this group. As each new "hard to-reach" group is added, compliance is expected to decrease. While based on hypothetical assumptions, the scenarios indicate the challenges of increasing enrolment by simply expanding the definition of the target group. It is likely that the cost of enforcing enrolment among harder-to-reach groups, such as smaller enterprises and enterprises with less formal tax arrangements, will likely result in diminishing returns because the return on investments in enforcement, legislation and infrastructure will likely decrease as smaller and less formal firms are targeted. It may also be the case that the cost of identifying firms and enforcing enrolment exceed the revenues collected, although this claim requires further examination.

7.5 Discussion

The background research and the findings from this study bring to light a greater understanding of the social security scheme in Laos and point to several opportunities and barriers to expanding SHI. The multivariate analysis of the determinants of enrolment showed that the relationship between firm characteristics is not as straightforward as explained in the conceptual framework. The results do not support the three hypotheses generated from the conceptual framework. The conceptual framework expected smaller firms to enrol because they have a higher variance of medical expenditure and therefore more to lose from an illness of an employee. However, the results showed that *larger* firms are more likely to enrol in social security. It is possible that larger firms are more likely to enrol in social security because they are more likely to be targeted by the SSO or because they have a more formal structure that facilitates enrolment, e.g., a human resources department, etc.

Contrary to the second hypothesis (that firms with higher revenues are more likely to enrol than firms with lower revenues), there was no significant association between enrolment and the size of firm revenues. Similarly, the hypothesis that firms with a higher occupational risk-profile would be more likely to enrol in social security was not supported by the findings. However, the majority of firms rated their workplace risk as low and therefore it is possible that there was not enough variation in the sample to adequately assess the relationship between a firm's risk-profile and enrolment. It is interesting to note however that the failure to identify a relationship between workplace risk and enrolment is consistent with findings from Shanghai, which explored the relationship between risk profile and compliance with social security (Nyland *et al.* 2006).

Other determinants of enrolment were also identified by the multivariate analysis. The findings showed that privately owned firms in the services industry are the least likely to enrol in social security. These findings are consistent with the literature on the determinants of enrolment in private employer-based health insurance in the US (Gruber and Lettau 2004). Firms in the trade industry are more likely to enrol in SHI than are firms in the manufacturing, construction or services industry. These results contrast with those from a study in the US, which found that employers in the manufacturing sector are the most likely firms to purchase employer-based insurance (Buchmueller *et al.* April 2001), but the results support findings from a study in Shanghai, which also found that firms in the construction industry are less likely to comply with social security obligations (Nyland *et al.* 2006). The finding that mixed companies, but not companies that are 100 percent private, have a significantly and substantially higher odds of enrolling than a domestic company, are difficult to interpret. Further investigation into whether these mixed companies receive pressure to comply with industry regulations, or have a stronger compliance culture, would help to explain these findings.

It is important to note that the relationships between firm characteristics and enrolment may be dependent on the extent to which a given firm actually covers costs of health care and other benefits. For example, the conceptual framework assumed that in the absence of social security, firms paid for the costs of health care and other benefits directly. However, discussions during the firm surveys showed that few firms provide benefits to their employees, despite the language in the Labour Law that requires all firms to cover the cost of health care treatment and other benefits for their employees. This is because

the Labour Law is not enforced and no penalties are in place for failing to provide benefits to employees. For these firms that do not directly cover the cost of services, purchasing insurance can increase labour costs and can reduce profits. In this case, firms may attempt to evade social security payments as a way of decreasing costs and increasing profits. Thus, the decision of whether or not to enrol or evade social security payments will depend on the extent to which firms cover health care costs in the absence of social security. Nevertheless, the information generated from the multivariate analysis is informative and useful: in the short-term it could be used by SSO to identify firms that could be targeted with promotion campaigns, while in the long-term it could facilitate policing efforts by the SSO, assuming a system for enforcement is established.

The perspectives of employers summarised in Section 7.4.3 help to pinpoint some of the motivations for enrolling, or not enrolling, in social security. Firms that enrol in social security are concerned about their employees: employers want to ensure their employees have health insurance; they care about employee satisfaction; and they want to improve the health and well-being of employees. Although health insurance is the largest and most important benefit in the social security scheme and is the biggest draw to the social security scheme, retirement benefits and sick leave are the second and third most important benefits, respectively. It is important to keep in mind that, by design, enrolment in SHI is linked to a broader package of social security benefits and therefore decisions to enrol in social security are determined by the perception of the benefit package as a whole. For example, in Laos, if retirement benefits (the second most important benefit in the scheme) are not financially attractive to workers, employers may be discouraged from enrolling in social security. These findings are similar to findings from a study in Vietnam that looked at opportunities to expand SHI (which is part of a larger social security scheme) among formal sector workers. The Vietnam study found that reforming pensions, and possibly other benefits, will make social security more attractive to private sector employers and may facilitate the scheme's expansion (Lieberman and Wagstaff 2009). The same could be true in Laos, although further research along the lines of the Vietnam analysis could be undertaken.

The study uncovered some of the reasons that firms do not enrol in social security and these findings may be helpful in explaining low enrolment levels in other countries. The main reason for not enrolling was that firms offered a better package of benefits to their

employees, although further investigation of company benefits indicated that this is not the case. Other important reasons for not enrolling are that employers do not know much about social security. Although promotion activities targeted at employers could help to encourage enrolment, there are other barriers besides lack of knowledge of the scheme that prevent firms from enrolling. For example, the third most important reason for not enrolling is that the quality of government hospitals is not good. Poor quality of health care was mentioned elsewhere in the survey as one of the major weaknesses of the social security scheme and appears to be a common theme affecting enrolment in health insurance in Laos. Thus, it is likely that in the absence of substantial improvements to the health care system, poor quality of care will be a limiting factor in expanding enrolment in health insurance.

The fact that firms with relatively high workplace risks are not significantly more likely to enrol in social security indicates that adverse selection at the *firm* level is not a problem. However, the possibility of adverse selection at the individual level (which could not be assessed in this study) should be further investigated for a few reasons. First, the study found that having a healthy workforce was commonly reported as a reason for not enrolling in social security, indicating that healthy firms may be less likely to enrol in social security. Although adverse selection can be counteracted by enrolment of *firms* in the scheme (because risks are pooled across the healthy and sick), this study showed that enrolment in social security is optional for many employees. Voluntary enrolment within firms poses a challenge to expansion of social security because it decreases revenues to the SSO but also because it encourages healthy and lower-risk individuals to leave the risk pool. As in other voluntary schemes, adverse selection can threaten the sustainability and effectiveness of risk-pooling. Although adverse selection cannot be confirmed from this study, the voluntary nature of the scheme and the relative importance of health status in determining enrolment give reason to believe that adverse selection could be a problem. This would not be surprising, given that many voluntary schemes documented in the literature report evidence of adverse selection (Jakab *et al.* 2001; Wang *et al.* 2005; Wang *et al.* 2006; Chankova *et al.* 2008; Zhang and Wang 2008), including the sub-study presented in Chapter 5.

It is a concern from a social protection point of view that few non-enrolled firms offer other types of insurance to their employees (despite the fact that employers reported that they offered them). Some firms make direct payments for employees' health care but it is

unclear to what extent employees would be protected from high-cost expenditures in the event of an illness. While private health insurance for households could increase financial protection, it would likely do little to generate revenues for the health system in Laos and may lead to a high percentage of households seeking care outside the country.

Given the problems of evasion documented in social security schemes (Bailey and Turner 2001; McGillivray 2001; Wagstaff 2009) this study explored whether or not firms are evading social security benefits. The findings indicate that there may be some evasion taking place in the services industry, and it is possible that this evasion behaviour is being practiced across all firms, regardless of social security status. As the SSO plans to strengthen enforcement in the future, evasion of payments will likely become a bigger concern that will require greater attention. Evasion can lead to a significant loss of revenues for the government. For instance, in Colombia, evasion of social security payments among formal sector workers was estimated to cost US$836 million in forgone revenues in a year (2.75% of GDP) (Escobar and Panopoulou 2003), while in the Philippines and Kazakhstan, only 30 percent and 40 percent of expected revenues, respectively, were actually collected (Gottret and Schieber 2006; Jowett and Hsiao 2007).

The background information regarding the official and current target groups indicates that there are several possible routes the SSO could consider as it looks to increase coverage of social security in the future. These include: 1) expansion within the current target group; 2) expansion to new geographic areas; 3) expansion to smaller enterprises; and 4) expansion of the target group beyond the narrow group of tax-paying firms. However, the information gathered in this sub-study, as well as the findings from the scenarios point to challenges of expanding enrolment. Although the scenarios are based on several hypothetical assumptions, the projections indicate that even if compliance among the current target population increases to 80 percent (from 29 percent), increased enrolment would result in a coverage level that, on a population level, would not substantially increase the number of beneficiaries (because the current target group is so small). If the target group were expanded to "hard-to-reach" groups (e.g., firms with less than 10 employees, firms without a tax identification number, firms not paying any tax), coverage rates would likely remain relatively low because compliance for less formal and smaller firms would be more difficult to enforce, and because smaller firms do not add substantially more employees. Furthermore, it is likely that expansion of the target

group to these "hard-to-reach" groups will result in diminishing returns due to the costs of strengthening enforcement and expanding SSO resources (e.g., offices, staff, capacity building, etc.) throughout the country. It is also likely that any increase in coverage of the current scheme is likely to reach the better off, and is unlikely to help the country achieve broader goals of improved equity and poverty reduction.

The findings from this study point to some changes that could be taken in the short to medium term to facilitate expansion of the schemes. These include: introducing legislation for enforcing enrolment; making the social security benefit package more attractive; building capacity within the SSO to stimulate and enforce enrolment; and closing the gap between the "official" target group and the "current" target group for the SHI scheme. (These recommendations are discussed in more detail in a policy note written for the Government of Laos and its partners as part of this study (Alkenbrack and Lindelow 2010) (See Appendix D2 for the English summary version of the policy note). However, it is clear that efforts to strengthen and expand the reach of the social security scheme will require broader changes to make progress towards universal coverage. More details on these broader strategies are discussed in Chapter 8.

7.6 Limitations

The main limitations of the study design were mentioned in Chapter 4 and include the narrow sampling frame, which leads to low external validity of results, as well as the small sample size and cross-sectional design. In addition to the design limitations, two potential problems can seriously bias results in enterprise surveys: non-response and false responses (Jensen *et al.* 2007). A World Bank study by Jensen *et al* (2007), which focuses on corruption, looks at investment climate surveys to understand non-response and false response. Given that questions about corruption and non-compliance with social security are both likely to be sensitive topics, the findings from the corruption study are considered relevant. The study found that countries with less press freedom were more likely to either not respond or provide false responses on questions related to corruption. Given that Laos has a low freedom of press rating (184th out of 195 on the Global Press Freedom ranking[114] (Freedom House 2010), some bias in this study, due to

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[114] The Freedom of Press ranking measures the extent to which information flows freely and without fear of repercussions, and attempts to measure the legal, political and economic barriers to information flows.

non-response and false-response, is expected. However, it is difficult to estimate the direction of the bias given that detailed information about the firms that refused to participate is not available.

It is also important to emphasise that the projections outlining coverage scenarios are simplistic approximations that are intended for illustrative purposes only. As mentioned in Section 7.3.3, the scenarios are based on assumptions about future compliance and the feasibility of reaching each target group but neither account for population growth nor expansion of the target groups. Nor do they account for the impact of strengthened enforcement on evasion or employment. Validation of scenarios would require more precise data as well as consensus building with key decision-makers about the target group and expected compliance.

Despite these limitations, the findings fill a gap in the health financing literature regarding the determinants of enrolment in a mandatory SHI scheme — a topic that has not been explored in the published literature. The results also provide new evidence regarding the perspectives of private sector employers — a group that is not usually engaged in health sector reform discussions. Finally, the results contribute to health policy dialogue by highlighting the opportunities and challenges of expanding coverage through SHI in a context of high poverty, low levels of government health spending, a small formal sector, and weak regulation and enforcement.

7.7 Concluding remarks

This study has revealed important information about the determinants of enrolment in social health insurance in Lao PDR, and has uncovered several barriers to the scheme's expansion. A rich descriptive analysis of employers' perceptions and experiences of the scheme has also been useful in identifying some of the underlying motivations for enrolling or not enrolling. Although the Government of Laos expects SHI to play a pivotal role in helping the country progress towards universal coverage, the results of this study highlight a number of challenges that will hinder expansion. Thus, these findings are particularly relevant and timely for informing the health financing strategy that has recently been drafted but is yet to be finalised.

The next chapter draws together the findings from the three sub-studies and summarises the methodological limitations and strengths and the overall contribution of the findings to the literature. The remainder of the chapter focuses on policy implications of expanding coverage of health insurance and progressing towards universal coverage in Laos. Areas for further research are also discussed.

Chapter 8. Conclusions and Policy Implications

This thesis has examined the determinants of, and barriers to, enrolment in CBHI and SHI — two health insurance schemes in Lao PDR that target the informal and formal sectors, respectively. The thesis has also explored the extent to which enrolling in insurance has resulted in increased access and financial protection among the informal sector. To guide the methodology, a conceptual framework was developed based on the empirical literature and economic theory. Findings from the three sub-studies were presented in the results chapters. This final chapter synthesises the key findings from the results chapters, links them to the overall objectives of the thesis, summarises the limitations and strengths of the methodology, and discusses the overall contribution to the literature. The policy implications of expanding CBHI and SHI and progressing towards universal coverage are then discussed. This latter discussion responds to the fourth objective of the thesis, which is *to identify the opportunities for, and challenges of, expanding health insurance to the informal and formal sectors in Lao PDR and internationally.* Specifically, the policy implications aim to answer the following research questions:

1. What are the prospects for increasing coverage of CBHI?
2. What are the prospects for increasing coverage of SHI?
3. How can Lao PDR progress towards universal coverage given the current health financing arrangements?

In answering these research questions, this thesis also contributes to a broader debate regarding the effectiveness and efficiency of various health financing schemes in extending coverage, raising revenues, and pooling resources in other resource-poor settings. Thus, following a discussion of the situation in Laos, broader health financing implications are discussed. The chapter then closes with some recommendations for further research and concluding remarks.

8.1 Summary of key findings

8.1.1 The household and village-level determinants and barriers related to enrolment in CBHI (objective 1)

The findings from Chapter 5 are consistent with the conceptual framework but also bring to light new, descriptive information about households' enrolment decision-making process. The findings show that the probability of enrolment in CBHI in Laos increases with age and education level of the household head, illness in the household, a willingness to take at least some risk, higher socioeconomic status, and higher perception of quality at the district hospital. The probability of enrolment is lower in larger villages, in areas where several health care options are available, and in urban areas. Exposure to CBHI is also associated with a higher probability of enrolment. Four findings of particular interest were discussed in Chapter 5 because of their contribution to the literature on CBHI enrolment, as well as their implications for health policy in Laos. These findings are summarised below:

First, a great deal of effort was made to unravel the relationship between health status and enrolment. Using multiple measures of health status, the study confirms that illness is driving enrolment in CBHI, which is consistent with roughly half the literature on CBHI and voluntary enrolment. The policy implications of adverse selection will be discussed in Section 8.4.

Second, in the CBHI scheme in Laos, it seems that the risk-averse will be less likely to enrol. This is an important finding in that it is, on the face of it, *incongruent* with expected utility theory, which predicts that risk-averse households will be *more* likely to purchase insurance. However, this hypothesis rests on an inherent assumption that the CBHI scheme has risk-protecting features. However, as indicated by the qualitative work, CBHI may not actually be risk-reducing. For some, purchasing insurance could actually be more risky than not purchasing insurance, especially in a poorly functioning health system. Moreover, other social and economic theories have been put forth to explain the decision to enrol in health insurance in low-income contexts and these theories are useful in explaining study findings. For example, the theory of expected payoffs (Manning and Marquis 1996) explains that households will insure only if they perceive the benefits of enrolment to be higher than the costs, relative to being uninsured. Dercon and others also argue that purchasing insurance for some could

actually be more risky than not purchasing insurance, especially among the poor, for whom a given loss can be ruinous (Dercon 2002; Dercon 2007; Bendig and Arun 2011). Thus, in the Lao context, it seems that the relationship between risk preferences and enrolment behaviour is complicated by the perceptions of the scheme and the extent to which individuals view the scheme as risk-minimizing. Thus, expected utility theory has limitations in explaining the relationship between risk-aversion and behaviour but other theories can help to explain, at least in part, some of the reasons for enrolment.

As predicted by the conceptual framework, the study findings revealed inequalities in enrolment across quintiles: better-off individuals are more likely to enrol in CBHI, while the poor are the least likely to enrol. These results are consistent with much of the enrolment literature (Jütting 2003; Wang et al. 2005; De Allegri et al. 2006a; Chankova et al. 2008; Gnawali et al. 2009; Jehu-Appiah et al. 2011) as well as with economic theory, which predicts that the demand for health insurance increases with a rise in income (Folland et al. 2007). These findings suggest that complementary approaches will be needed to increase coverage of the poor: these approaches are discussed below in Section 8.4.2.

Finally, a perception of poor quality of care hinders enrolment in CBHI. This finding is consistent with previous studies on enrolment (Criel and Waelkens 2003; Basaza et al. 2008; Mathauer et al. 2008). The qualitative findings shed further light on perceptions of quality: both members and non-members are dissatisfied with the quality of care and complain of differential treatment between the insured and uninsured (e.g., longer waiting times, less respectful treatment, and receipt of poorer quality drugs for CBHI members). This differential treatment may be due to differences in incentives created by provider payment mechanisms.

8.1.2 The impact of enrolment in CBHI on access to health care services and financial protection (objective 2)

The conceptual framework predicted that enrolment in CBHI would increase utilisation and decrease out-of-pocket expenditures. Thus, the second objective of the thesis was to identify the impact of enrolment on access to health care services and financial protection for those using services. The findings suggest that CBHI is having its intended impact by increasing utilisation of outpatient and inpatient services, and that the magnitude of the effects on use of inpatient services are particularly large. These positive

impacts on utilisation are consistent with much of the previous literature on the impacts of CBHI and other voluntary health insurance programmes (Bennett *et al.* 1998; Jakab and Krishnan 2001; Schneider and Diop 2001; ILO 2002; Preker *et al.* 2002; Ranson 2002; Ekman 2004; Jütting 2004b; Palmer *et al.* 2004; Gnawali *et al.* 2009; Wagstaff *et al.* 2009; Aggarwal 2010; Mensah *et al.* 2010). In addition to increasing utilisation, the findings indicate that CBHI is encouraging use of public sector facilities and facilities at lower levels of care. However, CBHI members are no less likely than non-members to use pharmacies, which are the first choice for first-line care due to the convenience but also because quality of hospitals is poor and transportation costs create barriers to seeking care for less than severe illnesses. Thus, the study findings indicate that for mild to moderate illnesses, insurance cannot overcome the additional barriers that limit access to services. This finding is consistent with other studies in the literature (Bennett *et al.* 1998; Criel *et al.* 1999; Ekman 2004; Ranson *et al.* 2006; Sinha *et al.* 2006).

Despite the fact that CBHI members use more services than the uninsured, out-of-pocket expenditures for both inpatient and outpatient services are significantly lower among CBHI members who use services. These results support other studies examining the impacts of CBHI (Preker *et al.* 2002; Ranson 2002; Jowett *et al.* 2003; Ekman 2004; Jütting 2004b; Devadasan *et al.* 2007; Aggarwal 2010) but contrast with findings from China, where out-of-pocket payments are actually higher among the insured in urban areas (Wagstaff and Lindelow 2008; Wagstaff *et al.* 2009). The differences across countries may reflect differences in incentives from provider payments, which influence the volume and type of services and drugs received by insured and uninsured patients (Mills *et al.* 2000; Schneider and Hanson 2007; Yip *et al.* 2010; Syhakhang *et al.* 2011). As discussed above, differences in provider incentives also help to explain differential treatment between the insured and the uninsured in the CBHI scheme.

Although the findings indicate that CBHI reduces out-of-pocket expenditures for members who use services, it is important to note that these positive impacts are experienced by the small group of health care users. For the sample as a whole, there is no significant difference in out-of-pocket expenditures between the insured and uninsured, but the incidence of catastrophic expenditures among the insured is significantly lower. Moreover, CBHI members in the poorest quintile incur *higher* total out-of-pocket expenditures and a *higher* incidence of catastrophic expenditures than the uninsured. This lack of financial protection is at least partly due to the monthly

premiums paid by CBHI members but is also due to the fact that the insured in the poorest quintile are significantly more likely than the uninsured to use inpatient services and as a result, may incur higher costs on itmes or services that are not covered by insurance, e.g. transportation, food, supplies at facilities. This finding that the impacts of CBHI on financial protection are not homogenous across socioeconomic groups is consistent with other studies (Jütting 2004a; Ranson 2004; Schneider and Diop 2004; Wagstaff *et al.* 2009).

Focusing on out-of-pocket expenditures alone can have limitations when trying to understand the impact of insurance on financial protection. The findings on coping mechanisms complement the analysis on expenditures and indicate that the insured are more likely than the uninsured to be able to smooth consumption in the face of an inpatient visit. Thus, the insured are less likely to have to resort to tactics such as borrowing money, selling assets or reducing expenditures in other areas.

8.1.3 Determinants and barriers related to enrolment in social health insurance among private sector firms (objective 3)

The findings from Chapter 7 revealed that enrolment in SHI is associated with larger firm size but is not associated with occupational risk-profile or firm revenues. All three of these associations were inconsistent with the hypotheses derived from the conceptual framework. However, it is important to note that these hypotheses assumed that in the absence of social security, all firms were required to cover the cost of care for their employees, when in fact this does not happen in practice.

The findings also revealed that privately owned firms in the services industry are the least likely to enrol in social security. These findings are consistent with the US literature on private employer-based health insurance (Gruber and Lettau 2004). Firms in the trade industry are also more likely than firms in the manufacturing, construction or services industry to enrol in SHI, which contrasts with results from a study in the US (which found that manufacturing firms were most likely to enrol in employer-based insurance) but supports findings from a study in Shanghai (which showed that compliance with social security was lowest in the construction industry)(Nyland *et al.* 2006; Buchmueller *et al.* April 2001).

The descriptive findings on the perspectives of firms bring to light some of the motivations for enrolling, or not enrolling, in social security. Firms enrol in social security because they are attracted to the health insurance benefits, which improve employee satisfaction, health and well-being. However, retirement benefits and sick leave are also relatively important and therefore it is important to keep in mind that decisions to enrol in social security are determined by the perception of the benefit package as a whole. Reforms or revisions to non-health benefits, such as retirement benefits, will therefore have an impact on the overall attraction of social security.

The SHI sub-study is helpful in explaining why some firms do not enrol in social security. These factors include lack of knowledge of the scheme, poor quality of government hospitals, and the fact that employees are healthy and do not need health care. Quality appears to be a common theme affecting enrolment in social security in Laos.

The conceptual framework demonstrated how adverse selection can arise in a voluntary scheme. Although the presence of adverse selection in the SHI scheme could not be assessed from this study, employers without insurance reported that one of the main reasons for non-enrolment in SHI was that the workforce was healthy and the employees did not need insurance. The study also revealed that employees within firms can opt out of social security. These two findings give reason to believe that adverse selection could be a problem. Whether or not the employees who are opting out of insurance are the healthy and young was not investigated but this would be expected given findings from voluntary schemes in the literature (Jakab *et al.* 2001; Wang *et al.* 2005; Wang *et al.* 2006; Chankova *et al.* 2008; Zhang and Wang 2008).

The study revealed that few of the firms that are not enrolling in social security offer other types of insurance to their employees. While some firms make direct payments for employees' health care, it is unclear to what extent employees would be protected from high-cost expenditures in the event of an illness.

The findings indicate that there may be some evasion taking place in the services industry. However, it is also possible that all firms (not just those enrolled in social security) are evading benefits as a way of reducing indirect labour costs. Evasion of payments would likely become a bigger concern with strengthened enforcement: if that

is the case than evasion could lead to a significant loss of revenues for the government, as has occurred in other countries (Escobar and Panopoulou 2003; Gottret and Schieber 2006; Jowett and Hsiao 2007).

The background information regarding the official and current target groups identified the following approaches to increasing coverage of social security in the future: 1) expansion within the current target group; 2) expansion to new geographic areas; 3) expansion to smaller enterprises; and 4) expansion of the target group beyond the narrow group of tax-paying firms. However, further expansion is likely to be met with challenges. These challenges will be discussed in Section 8.4.

8.2 Summary of methodological limitations and strengths

8.2.1 Reflections on the approach for the CBHI studies

The main limitation of the methodology for the CBHI study design is the single-difference approach, which affects the two CBHI sub-studies differently. In the enrolment study, the cross-sectional data makes it difficult to infer causation between an independent variable and the outcome (enrolment). While endogeneity could be addressed using instrumental variable methods, it was difficult to find an instrument to test for endogeneity between enrolment and income, quality, and exposure to CBHI. Thus, endogeneity in the model could bias the enrolment findings. For example, households with insurance may have more disposable income as a result of having their care covered by insurance. Thus, insurance may have raised their consumption level relative to the time when they first enrolled. Thus, endogeneity between consumption and enrolment could contribute to upward bias of the effect of consumption on enrolment.

The main limitation of using single differences in the impact evaluation is that this approach does not control for unobservable variables. Although the questionnaires included details about a wide range of factors expected to influence enrolment, it is likely that some important variables were omitted, which could bias the impact evaluation findings. However, given the magnitude of the impacts identified in both sub-studies, the direction and significance of the true impacts are likely to be similar to results presented here. Moreover, a considerable effort was made to account for selection into the scheme

through the ex-ante qualitative work and the collection of primary data using a comprehensive questionnaire. The balancing tests showed the two groups to be very similar on observables even before matching in the impact evaluation. Thus, any bias due to omitted variables is expected to be minor, but is nonetheless acknowledged.

A second concern is the potential bias introduced during FGDs caused by group dynamics, the effect of the moderator, or the effect of participating in an experiment. For example, participants may have exaggerated negative opinions about CBHI in hopes of improving the scheme in the future, or may have been reluctant to speak too negatively about CBHI given that it is a government programme. However, the results of the study suggest that participants felt quite comfortable speaking truthfully about the scheme as a range of opinions were offered. The fact that the moderator had no incentive to influence the results in one way or another and was skilled at creating a comfortable environment for participants may have minimised these effects.

A third limitation is the external validity of the findings on the determinants and impacts of enrolment. The results from both CBHI sub-studies are likely representative of the target population that existed at the time of the study, given that the sample accounted for 30 percent of the enrolled households. However, due to non-random programme placement (i.e., the target group in the sample includes households in the most affluent, urban and semi-urban areas of the country where quality of health care is relatively good and where the majority of the population belongs to the Tai-Kadai ethnic group) external validity is likely to be strong for the target group that existed at the time of the study but results cannot necessarily be generalised to new and future target groups. Since the study was conducted, enrolment has expanded to more remote districts and will continue to expand in the future to groups that are expected to be very different and harder to reach in terms of the health facilities available, distance to facilities, ethnicity, preference for modern health care services, and other factors.

Non-sampling bias through household surveys is difficult to avoid and is expected to have affected estimates of consumption, utilisation and out-of-pocket expenditures in this study. Based on findings from health accounting studies, utilisation and out-of-pocket expenditures are both expected to be significantly underreported. The desire to speed up the interview process, and the use of a proxy respondent, are both expected to lead to underreporting of health care or illness episodes (Rannan-Eliya 2008). However,

measurement error is likely to be consistent across both CBHI and comparison households and is therefore not expected to affect relative differences between groups. It is also important to acknowledge that the calculation of catastrophic expenditures is somewhat arbitrary and should be used only to measure relative differences between the insured and uninsured.

Another limitation relating to the measurement of impacts of CBHI is the failure to account for indirect and future costs of illness. Households often forgo health care or obtain sub-optimal care, rather than diverting a large share of the household budget to cover health care costs (van Doorslaer *et al.* 2007) but the impacts measured in this study do not reflect such compromises. Nor do the results on financial protection adjust for the future costs of employing coping strategies to pay for health care (e.g., borrowing money or selling assets), making it difficult to pinpoint the true economic costs borne by households. The indirect costs of lost labour due to illness are also excluded but based on other study findings are expected to be large. Despite these limitations, the indirect costs were omitted across both groups of households and therefore the *relative* impacts of CBHI are expected to be reliable. In fact, the study found that the CBHI households were *less* likely to sell assets or borrow money and therefore, if these differences are considered, the financial impacts of insurance, when indirect costs are included, may actually be larger than what was measured in this study.

Despite the limitations, the CBHI study design has several strengths. A strong effort was made to understand and to control for the most important factors affecting selection into insurance, including multiple variables of health status, risk preferences, preferences for modern care, and other factors that are not always adequately measured in other studies examining the impacts of voluntary insurance. The use of this rich dataset, combined with PSM in the analysis, helped to control for selection bias. Another strength of the CBHI design is the use of qualitative data from FGDs, which were useful in interpreting the direction of the relationship between independent variables and impacts. Finally, the sample size of the study was relatively large and was conducted across six districts where the scheme is operating. This large samples size represents an improvement over other CBHI evaluations that used small sample sizes and were based on schemes with very few members (Palmer *et al.* 2004).

8.2.2 Reflections on the approach for the SHI study

In the SHI study there are a few design issues that may contribute to bias. The main limitation of the design is that the sampling frame represents only a small proportion of firms in the country and examines enrolment preferences in only four industries. This narrow sampling frame is likely to lead to low external validity of findings. Second, the small sample size leads to large standard errors, which can increase the likelihood of sampling errors. As in the CBHI sub-studies, the cross-sectional nature of the data also makes it difficult to imply causal relationships and to rule out endogeneity.

Another important limitation of the SHI study is that the refusal rate was relatively high. Although these firms were replaced using the same approach to select original firms, it is possible that the refusal of some firms to participate contributed to sampling bias. Moreover, non-compliance with social security is likely to be a sensitive topic for employers. Therefore, some bias in this study, due to non-response and false-response, is expected. However, it is difficult to estimate the direction of the bias given that detailed information about the firms that refused to participate was not available.

Finally, it is important to emphasise that the projections outlining coverage scenarios are simplistic approximations that are intended for illustrative purposes only. Validation of scenarios would require more precise data as well as consensus building with key decision-makers regarding various assumptions (e.g., definitions of the target group and expected compliance).

Despite these limitations, the results from this study provide new evidence regarding the perspectives of private sector employers. The findings also fill a gap in the health financing literature regarding the determinants of enrolment in SHI and highlight the opportunities and challenges of expanding coverage through SHI in a resource-poor, low-capacity context with high poverty rates, a small private sector, and weak regulation and enforcement.

8.3 Summary of contribution to the literature

This thesis makes several contributions to the health economics and financing literature and these contributions were discussed in the respective results chapters. The overall contributions to the literature are summarised below:

- The finding that adverse selection is driving enrolment in CBHI in Laos is consistent with many other studies on voluntary insurance and points to the challenges of overcoming adverse selection in a voluntary scheme. The use of multiple health indicators provides a broad picture of the impact of health status on enrolment — a relationship that is not always captured adequately using a single health indicator.

- Whereas expected utility theory predicts that more risk-averse households will enrol in health insurance, the findings from this study showed that households enrolling in CBHI are *less* risk-averse than uninsured households. The findings raise some questions about the risk-minimizing features of CBHI in Laos but also indicate that expected utility theory may be limited in its ability to explain the relationship between risk aversion and enrolment in health insurance in resource-poor environments, where quality is often poor and where the capacity to effectively manage the scheme is often low. Other social and economic theories (e.g., expected payoffs, income levels, cultural reasons, trust, management of schemes, and poor quality of care) should also be used to understand the factors affecting enrolment.

- The findings provide country-specific evidence about the factors driving and hindering enrolment in CBHI and SHI. Previously, very little was known about the factors determining and hindering enrolment in the Lao schemes.

- Until now, reports about the differences in quality of treatment experienced by CBHI and non-CBHI members in Laos have been largely anecdotal, with the exception of a few small studies. While neither the CBHI nor the SHI study measured *actual* quality of care, both studies explored quality perceptions of, and reported experiences with the quality of care in Laos. The preferential treatment given to the uninsured is likely a consequence of the differences in provider payment incentives and is consistent with the provider payment literature.

- The CBHI impact evaluation confirms much of the literature, which shows that CBHI increases utilisation of health care services and reduces out-of-pocket expenditures for those using services. However, the study emphasises the importance

of being clear about what is actually being measured: when impacts are averaged over the insured population, financial protection for the insured is not significantly different from the uninsured.

- The use of propensity score matching combined with single differences, a qualitative component, and a rich dataset that was designed specifically to control for adverse selection and other factors that are often omitted from CBHI and voluntary insurance evaluations, helped to address selection bias when measuring the impacts of the voluntary CBHI scheme. The CBHI impact evaluation therefore makes a contribution to the small but growing body of high quality evidence regarding the impacts of CBHI on utilisation and out-of-pocket expenditures.

- The combination of multivariate results and descriptive findings on the perspectives of firms from the SHI sub-study revealed some of the major factors affecting enrolment of firms in a mandatory social security scheme. This is the first known study to investigate the determinants of firm-level SHI enrolment: findings from this study can be used to help governments understand why enrolment levels in many mandatory schemes remain low and may facilitate policing efforts by regulatory bodies.

- The findings outline some of the difficulties of expanding coverage using voluntary health insurance (including schemes that are mandatory but are not enforced). The discussion of the policy implications of expanding enrolment and progressing towards universal coverage, which will be discussed in the next section, contributes to the international debate on the roles of CBHI and SHI in health financing systems.

8.4 Policy implications of study findings

8.4.1 What are the prospects for increasing coverage of CBHI and SHI in Laos?

Although the CBHI and SHI schemes target very different population groups, there are several common themes emerging from the sub-studies that relate to the motivation for enrolment and members' experiences with the schemes. These themes have direct implications for the opportunities and challenges of strengthening the schemes and expanding coverage. With respect to strengthening the schemes in the short- to medium-term, there are various programmatic changes that could be taken by the MOH and the SSO. Several of these options were briefly mentioned in Chapters 5 and 7 and were also outlined in two separate policy notes that were disseminated to the Government of Laos

and its partners prior to the development of the draft health financing strategy (See summary versions of the policy notes in Appendix D).

While several strategies could be taken to strengthen CBHI and SHI, it is important to recognise that programmatic improvements are unlikely to have much impact on enrolment levels given the broader challenges identified in this thesis. Four key challenges that relate to both CBHI and SHI are discussed below.

Further expansion of the schemes will become more difficult given the status quo

In both insurance schemes studied in this thesis, the geographic reach of the schemes has been limited to areas where impact is likely to be the greatest. For example, CBHI has been introduced in the most affluent urban and semi-urban areas, where quality of care and access to hospitals are relatively good, and the social security scheme has been introduced in areas with the highest concentration of private sector firms. However, within the targeted areas, the schemes are still only reaching a small percentage of their target groups, even though both schemes have been in place for more than a decade. For example, CBHI is reaching only a fraction of the population (less than 10 percent in the targeted districts), while SHI is reaching 29 percent of firms in its current target group. Further expansion of CBHI to remote areas, with low population density and a population that is not accustomed to the concept of insurance or use of modern health care services, will likely pose even greater challenges. Although there is scope for expanding the size of the SHI target group to smaller enterprises and groups that have alternative tax arrangements (i.e., those that pay lump sum taxes, etc.), it is likely that such expansion to these "hard-to-reach" groups will result in diminishing returns due to the costs of strengthening enforcement and expanding SSO resources (e.g., offices, staff, capacity building, etc.) throughout the country.

Voluntary enrolment hinders expansion and threatens financial viability and sustainability of schemes

Like most voluntary schemes documented in the literature, adverse selection is present in the CBHI scheme. This is particularly worrisome because all members play a flat-rate premium regardless of their risk profile. Thus, adverse selection can drive up the cost of health care per insured member and can ultimately threaten the sustainability and financial viability of the scheme.

Although SHI is in theory a mandatory scheme, it functions much like a voluntary scheme in that firms opt out of enrolment and, within firms, employees can opt out of social security benefits. Voluntary enrolment within and across firms poses a challenge to expansion of social security because it decreases revenues to the SSO but also because of the threat to sustainability and effectiveness of risk-pooling.

Poor quality of care discourages enrolment in health insurance

As revealed in this study, perceptions of poor quality of care are major obstacles to expansion of both CBHI and social security. Both insured and uninsured individuals in the studies expressed concerns about the quality of care. For example, in the CBHI study, FGD participants complain that health care staff members do not have the skills to adequately diagnose health problems, productivity is low among health care workers, and quality of equipment in the facilities is poor. However, the differential treatment between the insured and cash-paying patients is particularly worrisome and is likely tied to the incentives underlying the provider payment arrangements. For services rendered to the insured, contracting hospitals are paid by capitation, the rates of which are very low, and therefore health care workers have an incentive to under-service CBHI members because the hospitals bear the risk of the insured patient. As mentioned in Chapter 3, health care worker salaries are paid directly by the MOH but hospitals rely on the high profit margins on drugs to finance the operating costs of the hospital and possible top-ups for staff. Excessive reliance on these fees therefore provides strong incentives for supplier-induced demand for the uninsured, including over-prescription of non-generic medications, as shown by a recent study in Laos (Syhakhang *et al.* 2011). Thus, poor quality of care poses a barrier to expansion of the schemes, but also to utilisation of health services for the insured. Given the importance of quality, it is likely that little progress will be made to increase enrolment or utilisation in the absence of quality improvements.

Introduction of health insurance may be exacerbating inequities between the poor and the rich and between uninsured and insured employees

The findings from the CBHI study indicate that the poor are the least likely to enrol in CBHI. Moreover, while the scheme has significantly increased utilisation of inpatient services for the poor, the insured in the poorest quintile spend more money out-of-pocket than non-members and are more likely to incur catastrophic expenditures. These findings

justify the need for further protection among the poor. With the exception of a few villages where health equity funds are operating alongside CBHI schemes, there are no subsidies in place to cover the cost of CBHI premiums for the poor. Nor is a systematic targeting scheme in place for identifying poor households.[115]

Although the impact on equity in the SHI scheme was not evaluated, the study does indicate that firms without social security do not provide other types of health insurance to their employees and it is therefore unclear to what extent employees would be protected from high-cost expenditures in the event of an illness. The fact that a large percentage of the target population (including the poor) in both the CBHI and SHI schemes is left without insurance raises concerns about the country's ability to increase access to services and improve financial protection. Thus, there is a need to increase coverage to this uninsured group and introduce complementary approaches (i.e., subsidies) to ensure the poor enrol (or have adequate coverage through another mechanism). Furthermore, there is a need to ensure that for the poor who are enrolled in CBHI, the impacts of the scheme on financial protection are positive.

From the synthesis of the issues highlighted by the sub-studies, it is clear that there are challenges to increasing coverage of both CBHI and SHI in Laos. Given these challenges, what options are there for building on the experiences to date to make broad-based progress towards universal coverage? Answers to this question will be explored in the following sub-section.

8.4.2 Looking forward: How can Lao PDR progress towards universal coverage given the current health financing arrangements?

There is no blueprint on how best to achieve universal coverage. However, there are various lessons learned from countries that have made progress towards this goal. Based on these lessons, some of the most important policy recommendations for advancing towards universal coverage in Laos are outlined below. Most of the recommended strategies will undoubtedly already have been considered by policymakers: the extent to which such strategies are already being implemented is discussed and further

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[115] Although the government has drafted guidelines to assist local authorities in identifying and monitoring poor households, there is presently significant variation in the criteria used by villages, as this study showed. Moreover, the list of poor households is not consistently maintained across villages.

recommendations are made. Although the health financing strategy for 2011 to 2015 has already been drafted and the government seems committed to continuing with the current health financing arrangements, it is still not too late to consider modifications to the strategy — or even substantial overhauls. Health financing reform discussions in Laos will be ongoing for some time to come and strategic planning should be an iterative process that evaluates progress at various stages and remains open to different approaches along the way. Although the recommendations below are specific to Laos, they can also inform development of strategies in other countries, given that CBHI and SHI are common elements of many countries' health financing systems.

Increase government investment in the health system

As indicated in Chapter 3, government health financing in Laos is extremely low by international standards, with only 19 percent of spending on health coming from the government budget[116] (World Bank 2010b). Government expenditure on health amounts to less than 1 percent of GDP, which is very low by international standards. Most of this public expenditure covers salaries for health care workers, and therefore facilities are dependent on revenues from the revolving drug funds and user fees to cover recurrent costs (WHO 2010a). This situation may explain the increased attention on health insurance and risk-protection schemes to mobilise resources for the health sector. However, to make progress towards universal coverage, substantial increases in general tax revenues to subsidise health services will be needed, but given the poor economic situation of the country and the limited ability to generate revenues through taxes (due to a small informal sector, low wages, etc.), government resources are limited. Fortunately, fiscal space is set to increase in coming years due to growing natural resource revenues and improved tax administration. As shown in Chapter 3, economic growth is climbing faster than other countries in the region (with a growth rate of 6.4 percent in 2009).[117] However, the extent to which the health sector will benefit from increased government revenues will depend on the ability of the Ministry of Health, the Ministry of Labour and Social Welfare, and other government and non-government bodies to make a strong case for increasing government spending on health.

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[116] This amount also includes funding from donors.

[117] As mentioned in Chapter 3, much of the economic growth is due to the construction of Nam Theun 2 (NT2) — the new hydropower facility that is expected to contribute to 40% of GDP growth in the next few years. Other industries, such as manufacturing, and services are also experiencing growth.

In addition to the expected sources of increased revenues, there may also be opportunities to raise additional revenues from levies, such as products that are harmful to health (e.g., tobacco, alcohol) (WHO 2010b). These taxes have been used in other countries (e.g., the Philippines) to help subsidise the poor (Jowett and Hsiao 2007). Diversification of financing will be required to increase investments in the health sector.

Assuming revenues to the health sector can be increased, investments could be used in a variety of ways. First, subsidies could be directed at the poor and near-poor to make premiums more affordable and address the current inequalities in access to health services. However, based on global experiences, as well as the evidence from Laos that indicates that reaching the poor and informal sector through CBHI and SHI will be challenging, it may be more worthwhile to focus on investing resources not in the schemes themselves but directly in the public health care system. For example, these subsidies could be targeted to specific high priority health services (e.g., maternal and child health[118]), or geographical areas (e.g., the poorest regions) (Powell-Jackson and Lindelow 2010). Subsidies could also be used to increase the capitation paid to providers for services rendered to insured patients, making it partly based on volume or other measures of performance (recommendations for improving quality and introducing incentives are also discussed in a separate recommendation below).

In addition to increased investment that will (hopefully) come from increased fiscal space, increased investments from donors will also be required to increase access to health services, especially given the large size of the population living below the poverty line (37 percent in 2008) (Tangcharoensathien *et al.* 2011). Improvements in the predictability of donor investments, which are highly volatile, will also be needed.

In summary, there are various approaches to subsidising coverage of health services and these options are not mutually exclusive. However, the issues need to be studied and discussed in more detail among policymakers in Laos.

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[118] Laos has recently begun piloting a scheme in which deliveries in hospitals are offered free of charge to all women.

Foster political will and government stewardship

It is clear from global experiences (reviewed in Chapter 2) that political will and government stewardship are prerequisites for achieving high coverage of health insurance. For example, in Rwanda, national policies were developed for expanding coverage of health insurance and this expansion has been a key element in poverty reduction strategies. This focused policy framework has allowed donor funding to be channelled to the health sector, which has strengthened the entire health system (Logie *et al.* 2008; De Allegri *et al.* 2009). In Thailand, the process of extending coverage within the schemes and eventually harmonising them was well articulated through laws and strategies and strong political support at the central government level.

In Laos, the political will to achieve universal coverage is strong, and this support is reflected in the National Socio-Economic Development Plan, the National Health Sector Development Plan, and the Health Financing Strategy that has recently been drafted. A decree is also being developed to govern the process of merging the schemes in 2015 and several specific coverage targets have been set for each target population (e.g., 50% of the informal sector reached with CBHI by 2015; 55% of the civilian population[119] covered by health insurance by 2015)(MOH Lao PDR 2010). However, the specifics of how coverage in each of the target groups will be increased have not been articulated. Given the challenges of increasing coverage of health insurance that were revealed in this thesis, many of the coverage targets seem unrealistic and it would be worth reconsidering whether or not these coverage targets could be more realistically achieved through other risk-pooling approaches, such as general taxation.

While the political commitment for expanding health insurance is strong, this commitment lacks specific guidance from the government that will be necessary to develop a clear pathway to universal coverage. Although the health financing strategy represents a good start, details within the strategy need to be further developed. Furthermore, coordination and alignment of donor activities with government priorities will be required to channel resources appropriately. To date, donor programmes have

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[119] The civilian population excludes the military and police. When these groups are included the proposed coverage is roughly 60% of the population.

largely been driven by donor agendas and are used to fund vertical programmes, which are largely fragmented (MOH Lao PDR 2010).

Subsidise enrolment for households outside the formal sector using general tax revenues

International experience suggests that it is impossible to achieve high coverage rates under a voluntary scheme (WHO 2010b). This is because the young and healthy will opt out, and because it will be difficult to encourage enrolment of the informal sector. Yet the health financing strategy in Laos continues to view CBHI as a mechanism for covering the informal sector on the path to universal coverage.

One of the key recommendations made in the 2010 World Health Report is mandatory coverage of risk pools. However, as shown by the SHI sub-study, a mandatory scheme can function much like a voluntary scheme in the absence of legislation and enforcement and in the context of poor quality. A study from China also points to the difficulties of mandating enrolment in CBHI: the household enrolment policy is not enforced and as a result one third of enrolled households are only partially enrolled, and within these partially enrolled households only the sick individuals are enrolling (Wang *et al.* 2006). A more effective approach to "mandatory" enrolment, also recommended in the World Health Report, may be to cover various sub-populations under one scheme using taxation. Although the government of Laos appears committed to a strategy that is centred around expanding voluntary schemes in a vertical manner, and eventually bringing them together, it is not too late to consider lessons from other countries in the region that have been relatively successful at expanding coverage. For example, lessons from neighbouring Thailand showed that even after CBHI (which existed prior to reforms in 2001) was heavily subsidised and the benefit package made more attractive, enrolment was still low, adverse selection persisted, and the scheme was not financially viable due to insufficient risk-pooling (Prakongsai *et al.* 2009). The informal sector, which is largely engaged in agricultural production, did not have regular cash income for the premium collection and therefore enforcing compliance among the informal sector would have been difficult and expensive (Tangcharoensathien *et al.* 2007). At the same time, the Low-Income Scheme, which was intended to exempt the poor and other vulnerable groups from user charges, was facing difficulty with leakages to the non-poor and a large proportion of the poor not identified. Thus, the "Universal Coverage" (UC) scheme was established to bring beneficiaries of the Voluntary Health Card, the Low-

Income Scheme and the 30 percent of the population that was uninsured under one mandatory scheme that is financed through taxation (Tangcharoensathien *et al.* 2004).

A similar approach to the UC scheme in Thailand could be considered in Laos, whereby a single scheme would target the poor, the informal sector and those not covered by the formal sector schemes. The scheme could be managed by a single autonomous agency – the same agency that would manage the formal sector schemes. However, the benefit package of the subsidised programme may have to be somewhat less generous to deter formal sector workers from operating informally. The programme could be financed entirely out of general revenues (and donor funding) and would be administratively more efficient than trying to expand or mandate enrolment among the informal sector, the poor, and those not covered by the formal sector. Moreover, as shown in Thailand, coverage could increase relatively quickly. Furthermore, Thailand's tax-financed universal coverage scheme has proven to be much more equitable than a voluntary contributory scheme or a targeted scheme (Prakongsai *et al.* 2009). Thus, a universal coverage scheme may be a more feasible and efficient means of extending coverage than targeting mechanisms, especially given that the administrative and technical capacity in Laos is so weak.

Invest in quality improvements and introduce incentives for providers

As described in the conceptual framework in Chapter 4, improvements to the supply of health care ultimately affect the demand for health care and insurance and therefore help to expand the health financing system. The results from this thesis also revealed that (perceived) quality of care is an important factor affecting enrolment in insurance, and among those insured, quality of care (and inferior treatment towards insured patients) discourages utilisation for mild to moderate illnesses. Thus, it is clear that improvements to quality will be needed to progress towards universal coverage, regardless of the approach taken to get there. There are several areas in which quality improvements could be made.

As revealed by focus group discussions in Chapter 5, health care workers often lack the skills to diagnose problems and productivity is low. Investments in pre-service training and in-service trainings could help to increase the capacity of health care workers. However, there is also a maldistribution of qualified health workers throughout the

country (i.e., health workers have a strong preference for urban areas because of the opportunities to earn supplementary income in private clinics (Dodd *et al.* 2009)). Introducing incentives for practicing in rural and remote areas could help to attract more qualified individuals into the public system and would help to improve the geographical distribution of human resources (Kanchanachitra *et al.* 2011).

While the findings from this thesis point to a need to directly invest in facilities and human resources to improve quality of care, there are also opportunities to influence the quality of service delivery. The goal of moving towards strategic purchasing and away from the status quo of passive purchasing will be important and is articulated in the draft health financing strategy, although details have yet to be defined (MOH Lao PDR 2010). One approach to strategic purchasing would be for the MoH to contract only with facilities that meet certain criteria in terms of service delivery. Another approach is to revise the payment schemes in order to motivate health care providers to serve the interests of the patient and to provide good quality care, and eliminate differential treatment between the insured and uninsured, which is one of the main concerns about quality raised in the thesis. This can be done by including performance-based incentives (as part of a capitation, salary or fee-for-service payment), in which part of the payment is tied to specific targets that will encourage quality and provision of preventive care (e.g., vaccinations, health education, maternal and child care, patient satisfaction). Payments could also be tied to cost control and service volume, in order to fulfil other goals of cost reduction and increased efficiencies (Yip *et al.* 2010).

Increase efficiencies in health care provision and financing

Although this thesis did not directly explore the efficiency of the health insurance schemes or the health care system, the background analysis conducted as part of the thesis revealed that there are several opportunities for increasing efficiencies in the health sector. If the Government is set on progressing towards universal coverage through multiple schemes that serve distinct population groups then it will be important to harmonise schemes as much as possible to prepare for an eventual merge (McIntyre, 2008). One of the key features of the universal coverage (UC) scheme in Thailand is that it is managed, along with other schemes, by a single autonomous agency — the National Health Security Office (NHSO) — which is separate from the Ministry of Public Health. Funding is also channelled through contracting units which consist largely of primary

care providers. This system represents a clear purchaser-provider split (Hughes and Leethongdee 2007).

In contrast to the harmonised structure of the Thai schemes, the Lao schemes are managed by two separate ministries and separate departments within those ministries. For example, the Civil Servant Scheme is managed by a newly established *State Authority of Social Security (SASS)*, under the Ministry of Labour and Social Welfare, while the Social Security scheme is managed by the SSO. The CBHI and HEF schemes are housed by the Ministry of Health, which is also tasked with paying providers and providing services directly. Management by a single agency would result in higher efficiencies but will be a challenge given the current fragmentation of the schemes. To prepare for the merging of the CSS and the Social Security scheme in 2015, SASS and the SSO are to be merged under a single governing board by 2013 (MOH Lao PDR 2010). This would be an important step towards improved coordination and reduced administrative costs and would also increase purchasing power and facilitate better supervision of quality. However, given the current low coverage rates and the challenges highlighted in this thesis, it is unlikely that simply merging the schemes will facilitate expansion of enrolment.

Other approaches to increasing efficiencies include shifting the balance of the health care system from urban to rural areas and from hospitals to primary care at health care centres. Contracting with health centres could increase access in rural areas and could decrease overall expenditures, assuming investments in quality improvements are made at health centres.

The margins on drugs are currently one of the biggest drivers of costs in the public health care system in Laos and the draft health financing strategy proposes regulation of drug prices and reduced margins on the price of drugs and services (MOH Lao PDR 2010). This approach would decrease incentives for providers at hospitals to over-prescribe drugs and services. However, given that hospitals are reliant on this revenue, the profit margins on drugs and services would have to be replaced by increased government (and donor) financing.

Introduce legislation and strengthen regulatory structure

If the Government of Laos intends to continue its efforts to expand coverage and compliance of SHI, much attention needs to be given to introducing legislation and strengthening the regulatory structure. SHI effectively functions as a voluntary scheme at present (for firms, and also for employees within firms) and the lack of legislation or regulatory structure makes it impossible to enforce. To increase compliance, the organisation managing a mandatory social security scheme must be granted the right to inspect employer records, the right to assess and collect contributions, and the right to exercise enforcement penalties (McGillavry, 2001). Although the SSO has begun inspections of non-compliant firms, it will be in no position to penalise firms until a law is enacted. Completion of the guidelines for inspections, which are due to be drafted, will also be important for strengthening enforcement but without a law, inspections and sanctions will carry little weight.

Before expanding the legislation it will be important to differentiate the "official" target group from the potential target group and identify various options for expansion. Currently there is ambiguity over which firms should be enrolled and the lines between the formal and informal sector are blurred, as shown from the secondary analysis of the Lao Economic Census in Chapter 7. The costs and benefits of expanding the scheme geographically — as well as expanding to smaller enterprises, or to firms with alternative tax arrangements — should therefore be considered.

Although introduction of legislation and greater enforcement would facilitate expansion to a certain extent, there are high costs to stronger enforcement, as offices would need to be established throughout the country (currently in Laos only one national office and two provincial offices exist) and infrastructure and legislation required for enforcement would need to be developed. The costs would likely increase considerably once smaller and less formal firms are targeted. Furthermore, stricter enforcement can exacerbate incentives for informality and evasion, the costs of which can be significant (Wagstaff 2010b). For instance, in Colombia, evasion of social security payments among formal sector workers was estimated to cost US$836 million in forgone revenues in a year (2.75% of GDP) (Escobar and Panopoulou 2003), while in the Philippines and Kazakhstan, only 30 and 40 percent of expected revenues, respectively, were actually collected (Gottret and Schieber 2006; Jowett and Hsiao 2007). Moreover, the

background information reviewed in the SHI sub-study showed that the capacity within the SSO to increase expansion of the scheme is weak.

Strengthening enforcement will also require improvements to tax registration. The SHI study revealed that only 8 percent of firms in Laos currently have a tax identification number. Thus, monitoring tax payments will remain a challenge, even if enforcement is enhanced. Bringing firms into the formal tax system may help to simplify tax collection and monitoring of social security payments. One way in which the government could increase the number of firms with formal tax registration would be to issue a tax identification number at the same time that a business registers for a license. Currently in Lao PDR, two separate procedures, with separate agencies, are required to obtain a business registration certificate and a tax identification number. Furthermore, as noted in the World Bank's survey of "Doing Business in Laos", there are various bottlenecks in the business registration process that could be simplified, thereby making it easier to monitor payments (The World Bank 2009).

Invest in system capacity

Some of the recommendations made above will require investments to increase capacity. For example, management of health insurance schemes, improved budgeting of the health sector, and strengthened enforcement by the SSO, all require training and capacity building. Donor funding could be channelled to fund specific activities.

In Laos, there is also a need to build capacity among research institutes and government bodies that produce data (e.g., the National Statistics office) and coordinate and use research (e.g., the National Institute of Public Health) to ensure that evidence is used to guide decision-making and policy formulation. An important feature of the transition to universal coverage in Thailand was the national institutional capacity to generate evidence to guide health policy decisions and the strong links between the research community, civil society and policy makers (Tangcharoensathien *et al.* 2004). In China, experiments by local and international researchers on different models of health insurance and different payment schemes are also driving the policy agenda.

Identify priorities regarding the breadth, depth and height of coverage

A final recommendation for the Government of Laos is to recognise the trade-offs between various aspects of coverage. The 2010 World Health Report explains that achieving universal coverage requires progress to be made in three general areas: the breadth of coverage (the extent to which the population is covered by health insurance schemes or other prepayment arrangements); the depth of coverage (the package of services covered by the scheme, for example, inpatient, outpatient and other high-cost services); and the height of coverage (the level of financial protection) (WHO 2010b) (Tangcharoensathien *et al.* 2011). To progress towards universal coverage, governments will need to prioritise between these three areas. Currently in Laos, the breadth of coverage is low, while the depth and height of coverage are relatively high (i.e., health insurance schemes are quite generous, covering outpatient and inpatient services; in the CBHI scheme, financial protection is positive for the insured who use services). Given that the contribution rates are relatively low, it may be worth redefining the benefit package to be more in line with the contributions. Alternatively, contribution rates could be set at a higher level to offer more generous benefits, but doing so would risk excluding a significant share of households in the target population. It may be more important to cover a large population with a basic package of services, than to provide a high level of service and financial protection to a small group of people (Tangcharoensathien *et al.* 2011). Such trade-offs between various aspects of coverage should be discussed and debated among policy makers in Laos.

In summary, there are various approaches that can be taken to make progress towards universal coverage in Laos and other countries. The lessons drawn from international experiences can help policy-makers decide on a strategy that is best suited to the country context. However, as emphasised in the 2010 World Health Report, *"a health financing strategy needs to be home-grown — pushing in the direction of universal coverage out of the existing terrain"*. To progress towards universal coverage it will be important for policymakers to remain flexible throughout the process, and develop their own capacities to adapt, implement, and monitor health financing policies (WHO 2010b).

8.4.3 Broader policy implications beyond Lao PDR

Several policy implications emerge from this thesis that are applicable not only to Laos but to other low- and middle-income countries striving to extend coverage of health insurance and risk-protection schemes. First, the findings from this thesis and the international literature indicate that, with few exceptions, achieving high coverage rates among the informal sector through a voluntary CBHI scheme is neither feasible nor efficient. Furthermore, voluntary schemes often lead to inadequate risk-pooling across the healthy, sick, rich and poor, and adverse selection can threaten countries' ability to raise revenues and achieve financial sustainability.

A second conclusion that can be drawn from the thesis findings relates to equity of health insurance coverage. Even if the poor are exempted from the cost of CBHI or are targeted through some other mechanism, such as health equity funds, targeting mechanisms may not be feasible in environments where capacity is weak. Recognizing the limitations of contributory or targeted schemes in increasing coverage among the poor and the informal sector, it will be important for countries to also consider alternative or complementary financing mechanisms, such as a universal tax-financed scheme. Decades of experience with different schemes in Thailand showed that a tax-financed universal coverage scheme is a more effective and efficient approach to extending coverage than a voluntary contributory scheme or a targeted scheme (Prakongsai *et al.* 2009).

The study findings indicate that while removing financial barriers (e.g., through a universal coverage scheme or a targeted approach) could positively impact coverage and equity, improvements in financial access alone will not be sufficient to address inequities in access. In most low-income settings, inadequate access is largely a result of geographical barriers, and therefore improving service coverage through strengthening of primary health care will be crucial in ensuring equitable access for the poor, rural population (Prakongsai *et al.* 2009).

The thesis has also shown that the extent to which a mandatory scheme can effectively cover the formal sector depends on increased formalisation of the labor market and effective enforcement mechanisms. Thus, in environments where enforcement and regulatory capacity are weak, considerable financial investments will be needed to strengthen enforcement and build capacity to effectively manage and regulate schemes.

While donor funding could be channelled to fund specific activities, in countries with a small formal sector, covering this group through a combination of taxation and donor funding could be administratively more efficient than trying to expand or mandate enrolment among the formal sector. Universal coverage of this group would also address the high rates of evasion that are prevalent in many countries.

Finally, moving to universal coverage requires political will and increased funding. As in Laos, increasing funding in resource-poor areas will likely require an expansion of fiscal space and increased investments from donors. There may also be opportunities to increase efficiencies. For example, combining the management of schemes in a single agency, focusing on a limited benefit package and gradually expanding as fiscal capacity increases, and shifting the balance of the health care system from urban to rural areas and from tertiary to primary care would bring about efficiencies.

8.5 Areas for future research

This thesis has generated new information about health financing in Lao PDR and other low- and middle-income countries and has also made a contribution to the empirical and theoretical literature. The findings from the study also point to new areas of research that could be undertaken and these are discussed below.

Consider the indirect costs when measuring the impact of health insurance on financial protection

As mentioned in the limitations section for the CBHI survey, the approach used to measure the financial impact of CBHI did not take into account the indirect costs of illness, such as the future costs of borrowing or selling assets, or income foregone due to illness. To capture fully the economic impacts of health insurance on financial protection, future studies should consider these indirect and future costs. These costs are expected to be high: in a rural setting in Burkina Faso, indirect costs accounted for 69 percent of total illness costs (Sauerborn *et al.* 1995). While, measuring the indirect costs of illness has methodological challenges, Russell has used longitudinal qualitative methods to understand the impacts of illness on household livelihood over time and suggests that qualitative research has a comparative advantage over quantitative methods when examining the complex and dynamic nature of the impact of illness on household vulnerability (Russell 2005). Similar work combining quantitative and qualitative work

could be undertaken to better understand the extent to which health insurance provides financial protection when the indirect costs of illness are taken into account. In addition, innovative strategies for protecting households from the indirect costs of illness implemented alongside insurance schemes need to be introduced and evaluated.

Explore the secondary effects of insurance on use of preventive care and MCH services

The impact evaluation presented in this thesis examined the effects of CBHI on utilisation and out-of-pocket expenditures in general but did not differentiate between preventive and curative care. In fact, few studies from low- and middle-income countries explore the association between insurance and preventive care: among those that do, most focus on reproductive and maternal and child health (MCH) services, many of which are preventive. For instance, a study from West Africa found a significant association between CBHI membership and use of prenatal services in Mali but no association in Senegal (Smith and Sulzbach 2008). A descriptive study in Rwanda found higher use of prenatal services among members of a CBHI scheme but no difference in immunisation rates between CBHI and non-CBHI members (Schneider and Diop 2001). A more recent study evaluated the impact of the National Health Insurance Scheme in Ghana on use of MCH services and the findings show that the insured were more likely to use prenatal care, deliver in a hospital, and have better birth outcomes (Mensah *et al.* 2010) than the uninsured. However, the literature on the impacts of insurance on use of preventive care is still scant. Part of the reason for the shortage of data on this subject is that many preventive services are provided for free for the insured and uninsured and therefore it is not possible to measure the direct effect of insurance in increasing access to these services. However, it is possible that insurance can have a secondary effect by serving as an entry point to promote healthy behaviour and use of preventive services. A few authors have alluded to this indirect effect (Jütting 2004b) but the idea requires further exploration. Further research in this area would therefore shed light on the extent to which the secondary (as well as primary) effects of health insurance can be a vehicle for increasing access to preventive and MCH services — a topic that is particularly pertinent as countries strive to achieve the Millennium Development Goals.

Examine further the relationship between risk attitudes and enrolment in health insurance

The finding that risk-averse households are actually less likely to enrol in CBHI warrants greater attention. Although a body of literature examines how the poor cope with risks, and how insurance can be delivered more effectively to reduce risks among the poor (Dercon 2002; Dercon and Clarke 2009), the relationship between risk-aversion and enrolment in insurance has not been well documented. Further research in other settings could be used alongside the findings from this thesis to more clearly identify this relationship. At the very least, attempts to measure and account for risk-aversion should be made in future impact evaluations as it is likely to be an important determinant of enrolment that should be observed in order to reduce bias in treatment effects.

Investigate different ways to improve service quality

The findings from this thesis indicate the importance of improving the quality of health care supply. Revising provider incentives in Laos to influence quality of care may be one way to influence quality improvements. To inform how incentives should be restructured, research examining the factors that motivate health workers could be undertaken in Laos and used to guide health policy decisions. It would also be useful to experiment with different designs of provider payment mechanisms and evaluate their impact on quality and efficiency of service delivery. For example, a variety of pay-for-performance schemes could be introduced and results could be evaluated to drive the policy agenda, as is currently being done in China.

Assess the costs and benefits of various scenarios for covering the formal sector

The SHI sub-study used projections to estimate the extent to which SHI could be expanded but these projections are based on many assumptions and are crude estimates only. A useful exercise for the Government of Laos, and other countries looking to expand reach of the formal sector, would be to assess the costs and benefits of various approaches to expanding coverage. For those groups that are considered too costly to reach (e.g., firms with less formal tax arrangements, firms with less than 10 employees, areas with a low concentration of private sector workers), arrangements could be made to extend coverage under some other mechanism (e.g., taxation).

Model scenarios to establish clear linkages between health investments and the achievement of national and international goals to be used for advocacy purposes

There are good prospects for increasing fiscal space in Laos but as in other countries, there is no guarantee that increased fiscal space will translate into increased revenues for the health sector. In many countries, even when health is a priority, the Ministry of Health often lacks the analytical capacity to make the economic case for increased funding to the health sector (Goldsbrough 2007). Moreover, there is not always an understanding among the Ministry of Finance as to how investments in health can translate into benefits for the economy overall. Projections on how increases in fiscal space could be used for health services and the effects of this spending on the economy, poverty reduction, achievement of MDGs and other national and international goals, will be key and (assuming health investments are shown to be beneficial, which is highly likely) can be used to advocate increased government financing for health (with the assistance of civil society organisations). This resource allocation exercise would be useful in Laos and in other countries where the health sector is underfunded.

8.6 Concluding remarks

Like many low- and middle-income countries, out-of-pocket payments by households in Lao PDR continue to account for a large share of health care spending, which can deter use of services and increase the risk of financial catastrophe and impoverishment. Recognition of this problem has led the Government of Laos to focus greater attention on the expansion of contributory health insurance schemes to both the formal and informal sectors, with the ultimate goal of achieving universal coverage. This thesis has examined two of those schemes: community-based health insurance (CBHI) and social health insurance (SHI) using a conceptual framework that was based on empirical literature and economic theory. The findings bring to light the factors that are driving and hindering enrolment in CBHI and SHI in Laos, while filling several gaps in the health financing literature. The CBHI impact evaluation showed that insurance has had a positive effect on utilisation and financial protection but that the low coverage rates and low utilisation among those insured brings into question the scheme's ability to increase financial protection at a population level. Moreover, the findings indicate that CBHI is not facilitating the achievement of national and international goals such as poverty reduction, reduced inequities, and improved access to health care among the poor. Although the

SHI scheme is a central element of the government's draft health financing strategy, several challenges that hinder future SHI expansion were identified in this thesis.

The main policy implication of the study findings is that expansion of health insurance in a resource-poor setting with low capacity to administer and regulate schemes will pose considerable challenges and that alternative or complementary approaches should be considered. Based on the study findings and the knowledge of health financing in Laos, the thesis has recommended several reforms that should be used to stimulate dialogue among Lao policy makers as the draft health financing strategy is finalised. Although the findings and policy recommendations made here are specific to Laos, lessons can be applied to other low- and middle-income countries striving towards universal coverage. The thesis has also contributed to a broader health financing debate regarding the limitations of contributory schemes in extending coverage, promoting equity, and pooling and generating revenues for the health sector.

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Appendix A:

Approval letters, notices and consent forms

Appendix A1. Ethics approval notices

1 7 FEB 2009

Lao People's Democratic Republic
Peace Independence Democracy Unity Prosperity

Ministry of Health
National Ethic Committee
On Health Research

APPROVAL NOTICE

0 1 6

Date: 13February 2009

N: _____/NEHCR

Magnus Lindelow
The World Bank Office
Patouxay, Nehru Road
Vientiane, Lao PDR
(856-21) 450 011
Email: mlindelow@worldbank.org

Reference: **"Determinant and Impacts of Health Insurance Enrollment in Lao People's Democratic Republic"**

Dear Mr. Magnus Lindelow,

Members of the Ethics Committee of the Lao People's Democratic have reviewed and approved your research. You might begin your research as of 14 February 2009.

Please note the following information about your approved research protocol:

Approval Period	: *14 February 2009 to 31 July 2009*
Approved Subject Enrollment Number:	*3,000 Households*
Implementing Partners	: *The Health Services Improvement Project, Department of Planning and Budgeting, Ministry of Health, and the Social Security Office, Ministry of Labor and Social Welfare*
Sponsor	: *The World Bank*

Please note that the Ethics Committee reserves the right to ask further questions, seek additional information, or monitor the conduct of your research and the consent process.

Good luck for your research

Sincerely

President

Prof.Dr Bounthong SOUTHAVONG

LONDON SCHOOL OF HYGIENE
& TROPICAL MEDICINE

ETHICS COMMITTEE

APPROVAL FORM
Application number: 5420

Name of Principal Investigator   **Sarah Alkenbrack**

Department   **Public Health and Policy**

Head of Department   **Professor Anne Mills**

Title: **The Determinants and Impacts of Health Insurance Enrolment in Lao**
                P.D.R

This application is approved by the Committee.

Chair of the Ethics Committee .... *T. W. Meade* ....

Date ....3 February 2009...

Approval is dependent on local ethical approval having been received.

Any subsequent changes to the application must be submitted to the Committee
via an E2 amendment form.

Appendix A2. Formal government approval letters

Approval letter from the MOH to carry out CBHI study

ສາທາລະນະລັດ ປະຊາທິປະໄຕ ປະຊາຊົນລາວ
ສັນຕິພາບ ເອກະລາດ ປະຊາທິປະໄຕ ເອກະພາບ ວັດທະນາຖາວອນ

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ກະຊວງສາທາລະນະສຸກ
ກົມແຜນການ-ການຮ່ວມມືປະມານອງຈັນ,
ໜ່ວຍຄຸ້ມຄອງໂຄງການ

ເລກທີ   1078   /PMU
ວັນທີ : 3/11/08

ເຖິງ: ທ່ານລັດຖະມົນຕີວ່າການກະຊວງສາທາລະນະສຸກ
          ໂດຍຜ່ານ ທ່ານຫົວໜ້າກົມແຜນການ-ການຮ່ວມ
ເລື່ອງ: ການສະເໜີເຮັດການຄົ້ນຄວ້າຂອງທະນາຄານໂລກ ພາຍໃຕ້ຫົວຂໍ້:
        "ເຖິງໂຍທີ່ພາໃຫ້ປະຊາຊົນເຂົ້າເປັນສະມາຊິກຂອງຄັງປະກັນສຸຂະພາບແລະ
        ຜົນກະທົບຂອງການເຂົ້າເປັນສະມາຊິກຄັງປະກັນສຸຂະພາບ ຢູ່ ສ ປ ປ ລາວ"

ອີງຕາມການສະເໜີຂອງທ່ານ Magnus Lindelow ທ່ອງໜ້າທີມງານທະນາຄານໂລກທີ່ຊຶ້ນຳໂຄງ
ການ ຍົກສູງຄຸນນະພາບການບໍລິການສາທາລະນະສຸກ ຄັ້ງວັນທີ 4/11/08, ກ່ຽວກັບທະນາຄານໂລກມີ
ຊ່ວງຮ່ວມປະມານພິເສດທີ່ບໍລວມຢູ່ໃນຮ່ວມປະມານຂອງໂຄງການ ຍຄສ ເພື່ອເຮັດການຄົ້ນຄວ້າກ່ຽວກັບ "ເຖິງ
ໂຍທີ່ພາໃຫ້ປະຊາຊົນ ເຂົ້າເປັນສະມາຊິກຂອງຄັງປະກັນສຸຂະພາບແລະຜົນກະທົບຂອງການເຂົ້າເປັນສະ
ມາຊິກຄັງປະກັນສຸຂະ ພາບ ຢູ່ ສ ປ ປ ລາວ", ເຊິ່ງຜ່ານການຄົ້ນຄວ້າຂອງໜ່ວຍຄຸ້ມຄອງໂຄງການເຫັນວ່າ
ຈຸດປະສົງແມ່ນເພື່ອຄົ້ນ ຄວ້າ ແລະສຶກສາເບິ່ງເຖິງ ແລະ ສາເຫດທີ່ພາໃຫ້ປະຊາຊົນເຮົາເຂົ້າເປັນ ສະມາ
ຊິກ ແລະ ບໍ່ເຂົ້າເປັນສະ ມາຊິກຂອງບັນດາຄັງປະກັນສຸຂະພາບຕ່າງໆ ພ້ອມທັງສຶກສາເບິ່ງຈຸດດີ, ຈຸດອ່ອນ
ຂອງແຕ່ລະຄັງປະກັນ ສຸຂະພາບທີ່ພວມປະຕິບັດຢູ່ ສປ ປ ລາວ ເຮົາ ເພື່ອເປັນບ່ອນອີງໃຫ້ແກ່ທັງ ກະຊວງ
ສາທາລະນະສຸກ ແລະ ບັນດາຜູ່ວຽກງານອີງການຈັດຕັ້ງສາ ກົນຕ່າງໆທີ່ພວມຊ່ວມກັບສ້າງຍຸດທະສາດແລະ
ນະໂຍບາຍກ່ຽວກັບການຮ່ວມສາທາລະນະສຸກ ຢູ່ ສ ປ ປ ລາວ.

ສະນັ້ນ, ທາງໜ່ວຍຄຸ້ມຄອງໂຄງການເຫັນວ່າການຄົ້ນຄວ້ານີ້ແມ່ນມີຕົນປະໂຫຍດໂດຍກົງໃຫ້ແກ່
ກະຊວງ ສາທາລະນະສຸກເພື່ອສ້າງນະໂຍບາຍການຮ່ວມສາທາລະນະສຸກ ແລະເພື່ອ ປັບປຸງບັນດາຈຸດອ່ອນ
ຕ່າງໆຂອງຄັງປະກັນສຸຂະພາບ ແລະ ເພື່ອເພີ່ມສະມາຊິກຂອງກອງທຶນໃຫ້ຫລາຍຂຶ້ນກວ່າເກົ່າ.

        ດັ່ງນັ້ນຈິ່ງຂໍສະເຫນີມາຍັງທ່ານເພື່ອພິຈາລະນາອານຸມັດຕາມສົມຄວນດ້ວຍ

                                                                          ດ້ວຍຄວາມນັບຖືຢ່າງສູງ
ທ່ານທ່ອງໜ້າກົມແຜນການ-ການຮ່ວມ   ຫົວໜ້າໜ່ວຍຄຸ້ມຄອງໂຄງການ

ທ່ານ ຮ.ວ່າສະມົດ ມິ່ງຄົນວິໄລ   ດຮ ສິສະໝອນ ແກ້ວລາ
ທ່ານລັດຖະມົນຕີວ່າການກະຊວງສາທາລະນະສຸກ   Dr Sisamone KEOLA

ດຮ. ເຮືອງວິ່ງສີ

Appendix A2. Formal government approval letters

Notice letter from central MOH office to provincial MOH offices

ກະຊວງສາທາລະນະສຸກ   ເລກທີ 11 2/ກຜງ

ກົມແຜນການ- ຈົບປະມານ   ວັນທີ 11 FEB 2009

ໃບສະເໜີ

ເຖິງ : ທ່ານຫົວໜ້າພະແນກສາທາລະນະສຸກ ນະຄອນຫລວງ ວຽງຈັນ, ແຂວງ ວຽງຈັນ ແລະ ແຂວງ ຈໍາປາສັກ

ເລື່ອງ : ການລົງເກັບກໍາຂໍ້ມູນ ກ່ຽວກັບ ການປະກັນສຸຂະພາບຊຸມຊົນ

ອີງຕາມ ການຕົກລົງເຫັນດີ ຂອງທ່ານ ລັດຖະມົນຕີ ຊ່ວຍວ່າການ ກະຊວງ ສາທາລະນະສຸກ ສະບັບ ເລກທີ 1078 ລົງວັນທີ 3/11/09 ວ່າດ້ວຍການເກັບກໍາຂໍ້ມູນ ສາຫລວດລິກສາກ່ຽວກັບປະກັນສຸຂະພາບຊຸມຊົນ .

ທາງທະນາຄານໂລກ, ອົງການອະນາໄມໂລກ ແລະ ກະຊວງສາທາລະນະສຸກ, ບໍລິສັດອິນໂດໄຊນາ ຣິເສີດ ຈະໄດ້ດໍາເນີນການລົງເກັບກໍາຂໍ້ມູນສໍາລັບບົດລິກສາກ່ຽວກັບການ ປະກັນສຸຂະພາບຊຸມຊົນ ຢູ່ ຂັ້ນບ້ານໃນ ສປປ ລາວ. ການເຮັດການສຶກສາລາຫວດ ຈະໄດ້ດໍາເນີນຢູ່ໃນເມືອງດັ່ງຕໍ່ໄປນີ້: ເມືອງສີສັດຕະນາກ, ເມືອງທາດຊາຍຟອງ ນະຄອນຫລວງ ວຽງຈັນ, ເມືອງວຽງຄໍາ, ເມືອງໂພນໂຮງ, ເມືອງແກ້ວອຸດົມ ແຂວງ ວຽງຈັນ ແລະ ເມືອງຈໍາປາສັກ ແຂວງ ຈໍາປາສັກ.

ອິນໂດໄຊນາ ຣິເສີດ ແມ່ນບໍລິສັດທ້ອງຖິ່ນ ທີ່ຈະເຮັດການສຶກສາໃນຄັ້ງນີ້ ແລະ ໄດ້ຮັບອະນຸມັດຈາກກະຊວງ ສາທາລະນະສຸກ ເພື່ອລົງເກັບກໍາຂໍ້ມູນຈາກການສອບຖາມປະຊາຊົນລວມ 3,000 ຫຼັງຄາເຮືອນ ແລະ ສໍາພາດ ນາຍບ້ານຂອງແຕ່ລະບ້ານເປົ້າໝາຍ . ທາງຄະນະເກັບກໍາຂໍ້ມູນ ຈະຕ້ອງໄດ້ປະສານງານກັບພະນັກງານຈາກ ທ້ອງການ ສາທາລະນະສຸກເມືອງ ທີ່ກ່ຽວຂ້ອງ. ດັ່ງນັ້ນ, ພວກຂ້າພະເຈົ້າ ຢາກຂໍຮຽນສະເໜີ ໃຫ້ທ່ານແຕ່ງຕັ້ງ ພະນັກ ງານທ້ອງການ ສາທາເມືອງຂອງທ່ານຜູ້ໜຶ່ງ ເພື່ອຊ່ວຍພວກຂ້າພະເຈົ້າໃນການເກັບກໍາຂໍ້ມູນ ແລະເຮັດການສຶກສາ ເທື່ອນີ້. ການເກັບກໍາຂໍ້ມູນຈະໄດ້ປະຕິບັດໃນລະຫວ່າງ ວັນທີ 15 ເດືອນ ກຸມພາ ຫາ ວັນທີ 30 ເດືອນ ເມສາ 2009 .ທາງບໍລິສັດ ອິນໂດໄຊນາ ຣິເສີດ ຈະເຮັດຕາຕະລາງລະອຽດ ພ້ອມທັງ ວັນ ເວລາ ແຈ້ງມາໃຫ້ທາງເມືອງ ແລະ ບ້ານ ຊາບກ່ອນ ທີ່ພວກຂ້າພະເຈົ້າຈະລົງຫາປະຊາຊົນ ໃນແຕ່ລະບ້ານ

ດັ່ງນັ້ນ, ຈຶ່ງຂໍໃຫ້ ພາກສ່ວນ ທີ່ກ່ຽວຂ້ອງໄດ້ໃຫ້ການຮ່ວມມື ແລະ ໃຫ້ຄວາມສະດວກແກ່ທາງທີມງານດ້ວຍ. (ກະລຸນາເບິ່ງໃບອະນຸມັດທີ່ໄດ້ຕິດຄັດມາພ້ອມນີ້).

ຂໍສະແດງຄວາມຂອບໃຈຕໍ່ການຮ່ວມມືຂອງທ່ານໃນເທື່ອນີ້.

ຫົວໜ້າກົມແຜນການ- ຈົບປະມານ

ຄໍາເຜັດ ມະນີວົງ

Appendix A3. Letter requesting cooperation from private sector firms

The World Bank
INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

South East Asia Unit
World Bank Office, Vientiane
Patou Xay-Nehru Road
Vientiane, Lao PDR

Telephone: (856-21) 414209
Fax: (856-21) 414210

February 26, 2009

To whom it may concern

Subject: Invitation to participate in a survey of labor relations and employee benefits in Lao PDR

The World Bank is conducting a study to learn more about labor relations and employee benefits in Lao PDR. We would like to ask for your cooperation in gathering information on these issues by inviting you to participate in a survey that will be administered by a team of researchers at Indochina Research, a local research firm based in Vientiane.

The survey will take about 1 hour and will collect information about your company such as number of employees, types of employment contracts, the types of benefits offered, and the reasons for offering certain benefits. This information will help to inform us about employers' preferences for different benefits and will also tell us about changes that could be made to government programs to better respond to employers' needs.

We would like to reassure you that all information collected in this study will be completely confidential. We will produce a report based on summary results. The report will not include the name of your company, or any other characteristic that will permit identification of individual companies. The process of ensuring confidentiality is explained further in the information sheets and consent forms that the interviewer will share with you prior to the survey.

I hope that you will participate in this important study. We look forward to learning more about your experiences and would like to thank you in advance for your time.

Thank you very much for your consideration.

Sincerely,

Patchamuthu Illangovan
Country Manager, Lao PDR
The World Bank

Appendix A3. Letter requesting cooperation of private sector firms

Understanding enrolment and impact of community-based health insurance (CBHI)

London School of Hygiene and Tropical Medicine & Indochina Research Laos

Information Sheet for Village Heads

Purpose of study

Hello. My name is _____ and I am from an organization in Laos called Indochina Research. We are doing a study in your community to understand how people feel about community-based health insurance (CBHI) and we would like permission to interview households in your village. The study will help program planners understand why some people decide to join CBHI, why others do not join and why some people drop out of the scheme. This information is important for making the scheme better in the future. The information from the study will also help program planners and policymakers understand whether or not CBHI is benefitting people.

Procedures

Before we ask households to participate in the study, we would like to collect information about the village. With your permission we would like to ask you to help us obtain this information by participating in an interview. The questions we would ask you are about types of employment in your village, use of health care services by people in your village and the distance to different sources of health care. The interview will take about 20 minutes.

Potential Risks and Benefits to Households

The questions in this study are not expected to cause discomfort to households. However, I want you to know that anything the household interviewees tell me will be kept a secret. No one will be able to identify data from your specific village. If households decide to participate but later change their minds, they can stop at any time. They will not be penalized for not participating in this survey.

The village will not receive any money or other benefits in exchange for answering the survey questions. Your answers will be put together with the answers from many other families in this community to help us understand how CBHI and the health care system can be improved.

Confidentiality

Everything that you or the household interviewees tell me is a secret. The paper that I use to write down all your answers will be kept in a safe place where nobody except the research team can see it. We are then going to take all the answers that people give us and put them all together to write a report, so nobody will know your individual answers.

Questions

If you have questions about the research, feel free to ask me anything. You can also contact me after the interview at _____. Do you have any questions for me right now?

Understanding enrolment and impact of community-based health insurance (CBHI)

Consent Form for Village Heads

I confirm that I have been informed of this study and I understand what will be required of me and my village if we choose to participate.

My questions concerning this study have been answered by the interviewer.

I understand that at any time I, or the households in my village, may withdraw from this study without giving a reason and without being penalized.

I agree to take part in this study.

Name of Village Head: _____

Location of Village: _____

Location of District: _____

Signature of Village Head: _____

Name of Interviewer: _____

Signature of interviewer_____ Date

Understanding enrolment and impact of community-based health insurance (CBHI)

Information Sheet for Households

Purpose of study
Hello. My name is _____ and I am from an organization in Laos called Indochina Research. We are doing a study in your community to understand how people feel about community-based health insurance (CBHI). The study will help program planners understand why some people decide to join CBHI, why others do not join and why some people drop out of the scheme. This information is important for making the scheme better in the future. The information from the study will also help program planners and policymakers understand whether or not CBHI is benefitting people.

Procedures
I would like to ask you some questions, if that is okay with you. The questions in the survey are about your home, your health, your expenditures, and your preferences for health insurance and health care. It will take about 45 minutes to 1.5 hours. I would also like to interview one mother in the household to ask her about use of health services for women and children. The questions are about women in this household who are expecting a baby or who have had a baby in the past two years. I will ask you questions about women's use of maternity care and health care for babies. This part of the interview will take about 20 minutes.

You can decide if you would like to participate in the survey or not. If you decide to participate but later change your mind, you can stop at any time. You will not be penalized for not participating in this survey.

Potential Risks and Benefits
The questions I will ask you are not expected to cause discomfort. However, I want you to know that anything you tell me will be kept a secret. No one will see your answers to these questions. If for any reason you want to discontinue the interview at any time, please let me know. If after the interview, you would like to withdraw from the study you can contact my research organization and we will remove your questionnaire from the study.

You will not receive any money or other benefits in exchange for answering the survey questions. Your answers will be put together with the answers from many other families in this community to help us understand how CBHI and the health care system can be improved.

Confidentiality
Everything that you tell me is a secret. The paper that I use to write down all your answers will be kept in a safe place where nobody except the research team can see it. We are then going to take all the answers that people give us and put them all together to write a report, so nobody will know your individual answers.

Questions
If you have questions about the research, feel free to ask me anything. You can also contact me after the interview at _____. Do you have any questions for me right now?

Appendix A4. Consent forms and information sheets

Understanding enrolment and impact of community-based health insurance (CBHI)

London School of Hygiene and Tropical Medicine & Indochina Research Laos

Consent Forms for Households

1. Do you confirm that you have been informed of this study and what will be required of you if you choose to participate?

> Yes >>>>>>>> move to next question
> No>>>>>>>>> go through consent process again and clarify procedures/questions

2. Have your questions concerning this study been answered by the interviewer?

> Yes>>>>>>>>>>move to next question
> No>>>>>>>>>>answer any questions that the prospective interviewee may have

3. I understand that at any time I may withdraw from this study without giving a reason and without being penalized.

> Yes>>>>>>>>>>move to next question.
> No>>>>>>>>>>explain procedures again.

4. I agree to take part in this study.

> Yes>>>>>>>>> begin interview.
> No>>>>>>>>> do not proceed with interview. Thank participant for their time and leave household.

Interviewer: Please confirm that you have followed the consent procedures by signing below.

Name of Participant: _____

Name of Interviewer: _____

Signature of Interviewer_____ Date _____

Appendix A4. Consent forms and information sheets

Understanding enrolment and impact of community-based health insurance (CBHI)

Information sheet for focus group participants

Purpose of study

Hello. My name is _____ and I am from an organization in Laos called Indochina Research. We are doing a study in your community to understand how people feel about community-based health insurance (CBHI). The study will help program planners understand why some people decide to join CBHI, why others do not join and why some people drop out of the scheme. This information is important for making the scheme better in the future. The information from the study will also help program planners and policymakers understand whether or not CBHI is benefitting people.

Procedures

Our team will be conducting household interviews and many of you have already/ will be asked to participate in these interviews. We would also like to hold a focus group discussion with you so that we can learn more about your views on CBHI.

You can decide if you would like to participate in the focus group discussions or not. If you decide to participate but later change your mind, you can stop at any time. You will not be penalized for not participating in the discussions.

If you do participate, the information from these discussions will be used collectively to write a report. However, sometimes it is helpful to quote parts of the conversation to help convey messages in the report. We will therefore ask you for your permission to include information from the discussions (either summaries or quotes of parts of the conversation) in the final report. Your name would not be included in the report and nobody would know who made the comments that are used in the report.

Potential Risks and Benefits

The discussion is not expected to cause discomfort. I also want you to know that your names will not be attached to the final report. Therefore, the results of the group will be compiled and but nobody will have any way of knowing individual answers after they leave this group.

Questions

If you have questions about the research, feel free to ask me anything. You can also contact me after the interview at _____. Do you have any questions for me right now?

Appendix A4. Consent forms and information sheets

Understanding enrolment and impact of community-based health insurance (CBHI)

Consent form for focus group participants

1. Do you confirm that you have been informed of this study and what will be required of you if you choose to participate?

   Yes >>>>>>>> move to next question
   No>>>>>>>>> go through consent process again and clarify procedures/questions

2. Have your questions concerning this study been answered by the interviewer?

   Yes>>>>>>>>>move to next question
   No>>>>>>>>>answer any questions that the prospective interviewee may have

3. I understand that at any time during the discussion I may withdraw from this study without giving a reason and without being penalized.

   Yes>>>>>>>>>move to next question.
   No>>>>>>>>>explain procedures again.

4. I understand that either summaries or specific quotes from individual conversations may be used in the final report but that my name will not be attached to these findings. I give permission to use this information in the final report.

   Yes>>>>>>>>>move to next question.
   No>>>>>>>>>thank the participant for his/her time but do not recruit subject to focus group discussion.

5. I agree to take part in this study.

   Yes>>>>>>>>> begin interview.
   No>>>>>>>>> do not proceed with interview. Thank participant for their time and leave household.

Interviewer: Please confirm that you have followed the consent procedures by signing below.

Name of Participant: _____

Name of Interviewer: _____

Signature of interviewer_____ Date _____

Appendix A4. Consent forms and information sheets

Understanding employee benefits in Lao PDR
London School of Hygiene and Tropical Medicine & Indochina Research Laos

Information Sheet for Enterprises

Purpose of study

Hello. My name is _____ and I am from an organization in Laos called Indochina Research. We are doing a study with the World Bank to learn more about employee benefits in Lao PDR. In this study we will collect information about your business such as number of employees, ownership, types of employment contracts and the type of benefits you offer to your employees.

Procedures

I would like to ask some questions about your business. The survey will take between 45 minutes to one hour.

Potential Risks

The questions I will ask you are not expected to cause discomfort. However, if at any time you want to skip a question or withdraw from the study, you can contact me. Everything you tell me will be kept confidential and no information about your particular firm will be revealed. Our team has procedures in place so that nobody will ever know the answers to your questions. If after the interview, you would like to withdraw from the study you can contact me and I will remove your firms' questionnaire from the study.

Potential Benefits

You will not receive any money or other benefits in exchange for answering the survey questions. Your answers will be put together with the answers from other businesses to help us understand preferences for benefits. No names of firms will be included in any reporting of the results.

Voluntary Participation

You can decide if you would like to participate in the survey or not. If you decide to participate but later change your mind, you can stop at any time. You will not be penalized for not participating in this survey.

Confidentiality

Everything that you tell me is a secret. The questionnaire that I use to record your answers will be kept in a safe place where only the research team can see it and all results will remain confidential. We are then going to take all the answers that people give us and put them all together to write a report, so nobody will know your individual answers.

Questions

If you have questions about the research, feel free to ask me anything. You can also contact me after the interview at _____ Do you have any questions for me right now?

Appendix A4. Consent forms and information sheets

Understanding employee benefits in Lao PDR

Consent Form for Enterprises

By signing on the line, I confirm that I have been informed of this study and I understand what will be required of me if I choose to participate.

My questions concerning this study have been answered by the interviewer.

I understand that at any time I may withdraw from this study without giving a reason and without being penalized.

I agree to take part in this study.

Name of participant: _____

Signature of participant: _____

Name of interviewer: _____

Signature of interviewer_____ Date _____

Appendix A4. Consent forms and information sheets

Appendix B:

Details of methods

Appendix B1. Details of sampling for CBHI survey

1. *Purposive selection of districts.* The sample was drawn from 6 districts: Sissatanak; Hatxaifong; Champasak; Keoudom; Viengkham; and Phonehong. Given the low enrolment rates, six districts were needed to achieve the desired sample size. The selection criterion was that CBHI should have been launched in the district at least two years prior to the survey. Seven out of the 10 districts where the scheme was operating met this criterion; the seventh district was excluded due to the likelihood of contamination of the comparison group, due to multiple donor projects taking place in that area, and the cost constraints of conducting field work in a district that was relatively far away.

2. *Selection of clusters (villages) using probability proportional to size:* A two-stage cluster sample was selected using probability proportional to the *number of CBHI households* in each village. To assist with this step, the CBHI office in the MOH first sent personnel to update village enrolment rates in all 6 study districts and to compile a list of all CBHI villages and their respective numbers of CBHI members enrolled. All villages with at least 10 enrolled households were considered eligible, amounting to 98 eligible villages. (Two percent of households lived in villages with less than 10 households and were excluded from the sample). Villages were then sorted alphabetically and two columns were created: the number of CBHI households and the cumulative number of CBHI households. In order to reach a sample size of 1000 households 125 clusters was required (1000 CBHI households / 8 households in each cluster=125 clusters). A sampling interval was then used to systematically select the clusters.[1] Some large villages were selected multiple times.

3. *Random selection of households:* A CBHI household was eligible for the study if it had been enrolled for at least one year. Comparison households were eligible as long as they were not members of another scheme or had not been enrolled in another scheme for at least one year. After selection of villages, the research team visited the village and met with the village chief and CBHI village collector. The village collector keeps a roster of CBHI households that is updated monthly and this was used as the sampling frame and was checked against the numbers collected by the MOH team prior to the survey. A list of all eligible CBHI households was compiled and non-eligible households were excluded from this list. Where villages were selected multiple times, multiples of 8 CBHI and 16 comparison households were randomly selected (e.g. 3 clusters in one village x 8 households in each cluster=24 CBHI households to be selected in the village). To carry out this random selection, a sampling interval was used to select households (i.e. sampling interval=# eligible CBHI HHs in village/ # HHs to be selected in village). The starting point was selected by asking the village chief to select a number between 1 and the sampling interval.

The comparison households in each cluster were selected in the same way as CBHI households but using the village registry, which is updated annually. Before selection, all non-eligible households (e.g. CBHI households; recent drop-outs) were excluded from the sampling list where possible. However, sometimes the eligibility of a household was unknown and for this reason additional screening was required at the household level.

Forms created to assist the research team in the sampling process are included in Appendix B2.

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[1] The sampling interval was calculated based on the total number of households in eligible villages and number of clusters required to reach a sample size of 1000. (i.e. 2483 households/125 clusters = 19.8)

Appendix B1. Details of sampling for CBHI survey

Appendix B2. Village sampling forms for CBHI survey

Village Sampling Form for CBHI Households

Name of Village _____ **Name of District** _____

Step 1. Record total number of CBHI households in village (including new enrollees):

(A)

Step 2. Make a numbered list of all households that have been enrolled in CBHI for one year or more and record the number of households in box B.

(B)

Step 3. Record number of CBHI households to be interviewed in this village (see quota):

(C)

Step 4. Calculate sampling interval: _____ / _____ =

(B)   (C)   (D)

Round to the nearest whole number (e.g. 5.32 will be rounded to 5)

Step 5. Choose a random number between 1 and the sampling interval (D). Record here:

(E)

Step 6. Select all households: Household number (E) in the list is the starting point for the sampling

1st selected HH number   =   (E) + (D)

2nd selected HH number = (E) + (D) + (D)

Continue until quota (C) is fulfilled. If you reach the end of the list continue to add households from the beginning of the list.

Step 7. Record the location of the households and go to the household and ask for informed consent.

Step 8. Please report below any problems you had with the CBHI sampling:

_____

_____

_____

Appendix B2, cont'd. Village sampling forms for CBHI survey

Village Sampling Form for Comparison Households

Name of Village _____   Name of District _____

Step 1. Get a list of all households in the village. Make sure it has been updated within the last year. If no updated list is available, make the list from all units in the village.

Step 2. Record the date when household list was last updated _____

Step 3. Record the total number of households in the village.

(F)

Step 4. Record the number of comparison households to be interviewed in this village (see quota):

(G)

Step 5. Calculate sampling interval: _____ / _____ =

(F)   (G)   (H)

Round to the nearest whole number (e.g. 5.32 will be rounded to 5)

Step 6. Choose a random number between 1 and the number of households in the village. Ask the village chief to pick the number. Then use that number as the starting point. Record random number in box J:

(J)

Step 7. Select households: Household number (J) in the list is the starting point for the sampling.

   1st selected HH number   = (J) + (H)

   2nd selected HH number = ((J) + (H) + (H)

   Continue until quota (C) is fulfilled. If you reach the end of the list continue to add households from the beginning of the list.

Step 8. Record the location of the households and go to the household and ask for informed consent.

Step 9. Please report below any problems you had with the CBHI sampling:

_____

_____

Appendix B3. Construction of wealth index using principal components analysis

In constructing a wealth index using principal components analysis (PCA), instructions from an article by Vyas and Kumaranayake (2006), which explains the methodology developed by Filmer and Pritchett (2001), was used. A chapter on "Measurement of Living Standards" in a book by O'Donnell et al (2008) was also helpful in informing the methodology.

1. Examine descriptive statistics of variables

The CBHI questionnaire asked households to report on ownership of 20 household possessions (e.g. houses, motorcycle, bicycle, sewing machine, television, rice cooker, etc.) and asked 9 questions about housing conditions and materials (e.g. materials of walls, roof and floor, source of water during dry and rainy seasons, type of latrine, etc.).
I first carried out descriptive analysis for all variables to examine means, frequencies and standard deviations. Variables with a standard deviation of less than 0.15 were not included in the asset index. Three variables were dropped and I performed PCA using 24 variables.

2. Identify variables for asset index based on comparisons of assets in urban and semi-urban/rural areas

In the next step, PCA was performed separately in urban and semi-urban areas. Following guidance by Filmer and Pritchett (2001) variables were dropped if they only identified location (i.e. if they are highly weighted in one area but not the other). The variables that differed substantially between urban and rural regions were discarded.

The final asset index was then constructed using 11 variables, including 9 household assets and 2 variables to indicate housing materials and conditions. Spearman's rank tests were conducted to test for correlations between consumption and each variable used in the asset index and all correlations were significant. The index was generated using the first principal component, which is generally considered to be an adequate measure of welfare (O'Donnell et al, 2008). This component accounts for 35 percent of the variability in wealth in the sample. The results from Stata are shown after Step 5, below.

3. Check correlation between final asset index and consumption variable

The final index was checked for its correlation to the household consumption index and the correlation was significant (Spearman's rho=.60; prob> |t|<.001). This correlation is reassuring and indicates that the asset index is a valid predictor of consumption. Most asset indices based on principal components analysis have a weak relationship with consumption, with correlation coefficients between 0.2 and 0.4 (O'Donnell et al, 2008).

4. Create wealth quintiles

The asset index was then parcelled into quintiles and sampling weights were applied.

5. Sensitivity analysis

The asset index was run several times by removing and adding different variables and results were relatively consistent across all permutations. The final asset index was considered optimal because it accounted for the most variation in wealth, it included variables that were important in both urban and rural areas, and it had the highest correlation with the consumption variable.

```
. pca $assets

Principal components/correlation              Number of obs    =      3000
                                              Number of comp.  =        11
                                              Trace            =        11
      Rotation: (unrotated = principal)       Rho              =    1.0000
```

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	3.81181	2.50663	0.3465	0.3465
Comp2	1.30518	.272145	0.1187	0.4652
Comp3	1.03303	.259397	0.0939	0.5591
Comp4	.773637	.020394	0.0703	0.6294
Comp5	.753243	.0850819	0.0685	0.6979
Comp6	.668161	.0176009	0.0607	0.7586
Comp7	.650561	.110867	0.0591	0.8178
Comp8	.539693	.00414459	0.0491	0.8668
Comp9	.535548	.0331447	0.0487	0.9155
Comp10	.502404	.0756722	0.0457	0.9612
Comp11	.426732	.	0.0388	1.0000

Principal components (eigenvectors)

Variable	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6	Comp7	Comp8	Comp9	Comp10
dhha_vehicle	0.1994	0.6368	0.1587	-0.0303	0.1457	-0.1718	-0.0446	-0.5680	-0.3815	0.0244
dhha_moto	0.3495	-0.1214	-0.1086	-0.3515	0.0682	0.2500	-0.4198	0.3005	-0.4392	0.3569
dhha_fridge	0.3793	-0.0993	-0.1655	-0.1546	-0.1662	-0.0968	-0.3561	-0.0868	-0.0490	-0.3956
dhha_washing	0.2071	0.6393	0.0655	-0.1160	0.0078	-0.1307	0.0576	0.6464	0.2911	-0.0784
dhha_elerice	0.3578	-0.1139	-0.2573	0.0018	-0.1034	-0.3855	-0.2544	-0.2335	0.5103	-0.0331
dhha_tv	0.3284	-0.2391	0.3825	0.0401	-0.1464	-0.0771	0.3132	0.1522	-0.3187	-0.5707
dhha_radio	0.3264	-0.1263	0.3180	-0.2035	-0.4239	-0.1511	0.3826	-0.1017	0.1070	0.5598
dhha_mobile	0.3035	-0.1092	-0.0784	-0.3550	0.6527	0.2940	0.3840	0.2599	-0.0811
dhha_cable	0.2391	-0.0809	0.5970	0.4967	0.2672	0.1985	-0.3816	0.0078	0.2313	0.1198
dhhlatrine	0.2860	-0.0951	-0.3966	0.5548	0.2825	-0.3541	0.2534	0.1861	-0.2742	0.2151
dgoodhousing	0.2791	0.2180	-0.3129	0.3385	-0.3969	0.6730	0.1587	-0.1178	0.0691	-0.0439

Variable	Comp11	Unexplained
dhha_vehicle	0.0843	0
dhha_moto	0.2716	0
dhha_fridge	-0.6817	0
dhha_washing	-0.0386	0
dhha_elerice	0.5028	0
dhha_tv	0.3334	0
dhha_radio	-0.2258	0
dhha_mobile	-0.0685	0
dhha_cable	-0.0939	0
dhhlatrine	-0.1363	0
dgoodhousing	0.0765	0

Appendix B3. Construction of wealth index using PCA

Appendix C:

Questionnaires and focus group discussion guides

Appendix C1. CBHI household questionnaire

TABLE OF CONTENTS

Confidential
CBHI in Lao PDR, Household Questionnaire, 2009

Section 1. Identification (Please fill out BEFORE INTERVIEW)

Province _____ Code [ ][ ]

District _____ Code [ ][ ]

Village _____ Code [ ][ ]

Household ID   CBHI=1/ non-CBHI=2

[ ][ ][ ][ ]   [ ]

Unit Number _____ House Number _____ Telephone Number: _____

Area: Urban........1   Semi-Urban...........2   Rural 3

Section 2. Results (Please fill out AFTER INTERVIEW)

Household Visit #1			Household Visit #2			Household Visit #3		
Day	Month	Year	Day	Month	Year	Day	Month	Year
[ ]	[ ]	[ ][ ][ ]	[ ]	[ ]	[ ][ ][ ]	[ ]	[ ]	[ ][ ][ ]

Result: [ ]   Result: [ ]   Result: [ ]

1= interviewer complete   3= not eligible after screening   5= House not found

2= interview partially complete   4=HH members not present   6=HH refused interview (specify reason)_____

_____

Name of main respondent: _____

Circle the main respondent for the interview: 1) head of household; 2) spouse of head of household; 3) other member

Please sign when interview is complete:

Interviewer's name _____ ID _____ Date [ ]

Field supervisor's name _____ ID _____ Date [ ]

Office supervisor's name _____ ID _____ Date [ ]

	Visit 1	Visit 2	Visit 3		Use of Translator?:
Start Inteview Time:	:	:	:		Yes, all/almost parts 1
End Inteview Time:	:	:	:		Yes some parts 2
Total Time:	:	:	:	:	No 3

Name of data entry _____ Date entered _____ / _____ /2009

Month   Day

Name of supervisor (central level) _____ Date entered _____ / _____ /2009

Month   Day

Appendix C1. CBHI household questionnaire

Before we proceed with the interview I would like to ask some questions to see if your household is eligible for the survey.

Screening Questions

For CBHI members

1A Does your household belong to any of the following health insurance schemes or health equity fund? (Circle all that apply)

CBHI..1
Civil service scheme.............................2
Social security scheme..........................3
Membership card for free health care services (ex. health equity fund, exemption from government, card from NGO)..............4
Private health insurance.........................5
Employer pays for health care.................6
Other (specify)......................................7
None...99

Interviewer: If CBHI is NOT mentioned ask question 1B. If CBHI IS mentioned skip to question 1C.

1B Have you ever been enrolled in CBHI?

Yes....1 >>go to 1C

No......2

Interviewer: If "No" there is a problem. This is supposed to be a CBHI household. Check to make sure you are at the correct household. Then discuss with the field supervisor.

1C When did you become a CBHI member for the first time?
Month _____ Year _____

Interviewer: If less than 1 year ago, discontinue the interview. Go to supervisor and report that this household is ineligible. If more than one year ago go to 1D.

1D When did you make your last payment to CBHI?
_____

Interviewer: If more than three months ago, discontinue interview. Go to field supervisor and report that this household is ineligible.

Comparison Group (non-insured households)

2A Does anyone in your household belong to any of the following health insurance schemes or is your household exempt from paying user fees at the hospital? (Circle all that apply)

CBHI..1
Civil service scheme.............................2
Social security scheme..........................3
Membership card for free health care services (ex. health equity fund, exemption from government, card from NGO)..............4
Private health insurance.........................5
Employer pays for health care.................6
Other (specify)......................................7
None...99

Interviewer: If 1-7 is mentioned, household is not eligible for interview. Report to supervisor and choose a new household. Make a record that this household is not eligible. If 99 is circled go to 2B.

2B Has anyone in your household ever been enrolled in a health insurance scheme, health equity fund or been exempted from user fees at the hospital?

Yes.........1   No.........2

If the answer is Yes, continue to 2C. If the answer is No, skip 2C and 2D and proceed straight to the interview.

2C Which scheme/fund/exemption did your household or family member belong to?

CBHI..1
Civil service scheme.............................2
Social security scheme..........................3
Membership card for free health care services (ex. health equity fund, exemption from government, card from NGO)..............4
Private health insurance.........................5
Employer pays for health care.................6
Other (specify)......................................7

2D When was the last time your household or family member was a member of a health insurance scheme, equity fund or exemption program?
Month _____ Year _____

Interviewer: If less than one year ago, discontinue interview. Go to field supervisor and report that this household is ineligible.

Appendix C1. CBHI household questionnaire

Part 1: Household composition : I would now like to ask questions about everyone who is registered as one family in the family registration book.
(Interviewer: Only record the names of people who have slept in the household for 6 months out of the year.)

	Background Characteristics						Education	
1.0	1.01	1.02	1.03	1.04	1.05	1.06	1.07	1.08
	Who usually lives in the household?	What is (NAME)'s relationship to the head of household?	Is (NAME) male or female?	How old is (NAME)?	If NAME is 15 years or older: What is (NAME)'s marital status?	What is (NAME)'s ethnic origin?	What was the highest level and class (NAME) completed in school?	Is (NAME) currently attending school?
							0. Never attended/no grade comp	
		Head of household 1					1.. Primary class 1	
		Spouse 2			Never married 1	Show card	2.. Primary class 2	
		Parent/parent in law 3			Married 2	with ethnicity	3.. Primary class 3	
		Son/daughter 4	Completed	Divorced 3	codes	4.. Primary class 4	
		Son/daughter in law 5	age	Separated 4		5.. Primary class 5	Yes = 1
		Brother/sister 6	(If <1 year	Widowed 5		6.. Primary class 6	No = 2
		Brother/sister in law 7	record 00)			7.. Lower secondary class 1	
		Grandchild/niece/nephew 8	Male = 1	(If under 15 please		8.. Lower secondary class 2	If no,
		Adopted/foster/stepchild 9	Female=2	record "1")		9.. Lower secondary class 3	skip to
		Other relatives 10				10.. Upper secondary class 4 1.10	
	Record all names	Non relative 11				11.. Upper secondary class 5	
						12.. Upper secondary class 6	
						13. Vocational training	
						14. Institute, college or university	
						15. Other (specify _____)	
						98.. Don't know	
HH ID								

Appendix C1. CBHI household questionnaire

1.09	1.10	1.11	1.12	1.13	1.14
Which level of school is (NAME) attending?	How would you describe (NAME)'s health compared to other people of his/her age? (Looking at the health card, please give a number between 1 to 5 where 1 is poor and 5 is excellent). (SHOW CARD)	Does (NAME) currently have any disability or chronic condition that requires regular medication or health care or will likely require regular health care in the future?	During the past 3 months has (NAME) had any difficulty carrying out daily activities (ex. Work, play, studies)?	For how long did (NAME) have difficulty carrying out his/her daily activities? (GIVE APPROXIMATION)	Compared with (NAME)'s health 12 months ago, would you say that (NAME)'s health is.......?
1. Primary class 1	Poor..........1		Yes......1	less than 1 week...1	Much better now..........1
2. Primary class 2	Not good.........2		No.......2	1-2 weeks.........2	Somewhat better now 2
3. Primary class 3	Average.........3				About the same 3
4. Primary class 4	Good.........4	Yes......1	If No, skip to 1.14	more than 2 weeks but	Somewhat worse..........4
5. Primary class 5	Excellent......5	No.......2		less than 4 weeks....3	Much worse 5
6. Primary class 6					
7. Lower secondary class 1				1-2 months.........4	
8. Lower secondary class 2				more than 2 months....5	
9. Lower secondary class 3					
10. Upper secondary class 4					
11. Upper secondary class 5					
12. Upper secondary class 6					
13. Vocational training					
14. Institute, college or university					
15. Other (specify_____)					
98. Don't know					

Appendix C1. CBHI household questionnaire

Part 2: Employment and Income from Work

I would now like to ask you about the employment and household activities of all family members who are at least 10 years of age. (INTERVIEWER: LIST ALL HOUSEHOLD MEMBERS 10+ IN COLUMN 1 AND ANSWER QUESTIONS FOR EACH MEMBER. THEN CONTINUE TO THE NEXT PERSON.)

2.01	2.02	2.03	2.04	2.05	2.06	2.07
	Which of the following best describes (NAME)'s employment status?	Please describe the type of job (NAME) is doing.	Please tell me which of the following best describes (NAME)'s employment contract.	During the past 12 months, how many months did you work for money?	How many hours per week do you work on average?	What is your total income during a typical month?
		SHOW CARD				
	Unemployed..........0		Day laborer.................1			
LIST ALL HH MEMBERS AGE 10+ IN SAME ORDER AS PART 1	Household duties....1		Contract of less than one month...............2		**INTERVIEWER:**	**INTERVIEWER:**
	Family farm-based agriculture..............2		Contract of 1-3 months..............................3		If necessary, help to calculate by asking about daily and weekly hours. Eg. How many hours per day do you usually work? How many days per week do you work?	Include the value of in-kind payments, money from family, friends, etc.
	Small scale trading or family business/ self-employed..............3		Contract of more than 3 months but less than 12 months.........4			
	Work for someone else................4		Long-term contract (12 months or more.............5			
	If 0 or 1, skip to 2.07		Other................6			
HH ID NAME		Type of employment	Type of contract	Months	Hours	KIP

Appendix C1. CBHI household questionnaire

3. Household possession of durables

I would now like to ask about items your household may own.
Which of the following goods does this household own?

Record "1" even if household has more than 1 of each item

ID	Item	Yes=1/ No=2		
1	Plots of land			
2	Houses			
	Transport equipment			
3	Vehicle (Car, Van ..-.)			
4	Motor cycle			
5	Bicycle			
	House equipment			
6	Refrigerator/freezer			
7	Sewing machine			
8	Washing machine			
9	Vacuum cleaner			
10	Electric rice cooker			
11	Steam rice cooker			
	TV, radio, phones			
12	Television			
13	Radio/ VCD, etc			
14	Telephone			
15	Mobile phone			
	Other goods			
16	Satellite disc or cable connection			
17	Computer			
18	Air conditioner			
19	Fan			
20	Water pump			

Appendix C1. CBHI household questionnaire

3: Housing conditions

I would now like to ask about the types of materials used in your house.

3.03 What are the two main construction materials of external walls?

Interviewer: Make observations.

	FIRST	SECOND
Brick	1	1
Concrete	2	2
Unbaked brick	3	3
Wood	4	4
Bamboo	5	5
Tin	6	6
Mud	7	7
Other	8	8

>>>, specify_____

3.04 What is the primary material of the roof?

Interviewer: Make observations.

Concrete	1
Wood	2
Metal sheets/zinks	3
Tile	4
Grass	5
Leaves	6
Other	7 >>>, specify_____

3.05 What is the primary material of the floor?

Interviewer: if there are 2 primary materials, select the highest cost

Marble/ceramic	1
Floor tile/cement	2
Concrete/brick	3
Wood	4
Bamboo	5
Earth/clay	6
Other	7 >>>, specify_____

3.06 a What is the main source of <u>drinking</u> water in the rainy season? **(PROMPT RESPONSES FROM LIST)**

b What is the main source of <u>drinking</u> water in the dry season? **(PROMPT RESPONSES FROM LIST)**

	a) Rainy	b) Dry
Piped water in/outside	1	1
Well/borehole protected	2	2
Well/borehole unprotected	3	3
River, dam, lake etc	4	4
Rain water from tank/jar	5	5
Bottled/bought drinking water	6	6
Other	7	7

>>>, specify_____

Appendix C1. CBHI household questionnaire

3.07	What kind of latrine is mainly used?												
	Interviewer: Make actual observation if necessary												
	Modern toilet 1												
	Normal toilet 2												
	Dry toilet 3												
	Other .... 4 >>>, specify_____												
	None 5												
3.08	What kind of kitchen does this household mainly use?												
	Interviewer: Make actual observation if necessary												
	Inside the house 1												
	Outside roofed 2												
	Outside unroofed 3												
	Other .... 4 >>>, specify_____												
3.09	What is the household's main source of energy for cooking?												
	Electricity 1												
	Paraffin 2												
	Wood 3												
	Coal 4												
	Charcoal 5												
	Sawdust 6												
	Gas 7												
	Other .... 8 >>>, specify_____												
3.10	What is the household's main source of energy for lighting?												
	Electricity from public network 1												
	Electricity from generator 2												
	Electricity from battery 3												
	Kerosene lamp 4												
	Candle 5												
	Other .... 6 >>>, specify_____												

Appendix C1. CBHI household questionnaire

Part 4: Food Expenditure

Please tell me about all the expenditures your HOUSEHOLD has made on food items in the past 4 weeks. This does not include money spent in restaurants or on take-away (restaurant food is counted in section 4B). For these questions I want to make sure I am who is responsible for buying food in the market. (INTERVIEWER: Confirm that this person is the person who shops or can answer questions about food expenditures).

4.01			FOOD PURCHASES				HOME PRODUCTION AND IN-KIND RECEIPTS				GIFTS AND CHARITY	Interviewer: please explain and convert local unit to standard unit
		4.02	4.03	4.04	4.05	4.06	4.07	4.08	4.09	4.10	4.11	4.12	
Have you consumed ...[NAME OF FOOD]... during the past 12 months? For each "yes" response, ask all questions from 4.02 to 4.12		How many months in the past 12 months did you purchase ...[FOOD]..? IF NONE WRITE ZERO	In a typical month during which you purchased ...[FOOD]... on average how much does your household consume?	How much would you normally have to spend to buy this?	How much per unit would you spend to buy this?	How much does it cost in total? (Interviewer: can calculate and put in later)	How many months in the past 12 MONTHS did you consume ...[FOOD]... that you grew or produced yourself, or received as in-kind wages? IF NONE WRITE ZERO	In a typical month during which you ate ...[FOOD]... how much did your household consume of ...[FOOD]... (i.e. food from home-production and/or in-kind receipts)?	How much per unit would your household have to spend in the market to buy this ...[FOOD]... (ie amount consumed in a typical month reported in 4.09)?	How much does it cost in total? (Interviewer: can calculate and put in later)	During the last 12 months did you receive (FOOD) that other people gave to you? How much was it worth? If no, fill in zero.	
	YES	NO		QUANTITY	UNIT	KIP/UNIT	KIP		QUANTITY	UNIT	KIP/UNIT	KIP	KIP	Local unit	Explanation

Bread, Cereals and Rice
Glutinous rice	1	2
Ordinary rice	1	2
Noodles	1	2

Meat
Beef	1	2
Pork	1	2
Chicken/poultry	1	2
Hunted animals	1	2
Other meat products (incl. insects)	1	2

Fish
Fresh fish	1	2
Dry fish	1	2
Fermented fish	1	2
Other fish products/seafood	1	2
Water animals (ex. Frogs)	1	2

Milk/cheese/ eggs
| Eggs | 1 | 2 |
| Milk products | 1 | 2 |

Fruits
Banana	1	2
Oranges	1	2
Mango	1	2
Watermelon/melon	1	2
Other fruits	1	2

Vegetables
Onion	1	2
Garlic	1	2
Cucumber	1	2
Chili	1	2
Chinese cabbage/ cabbage	1	2
Long beans	1	2
Leafy vegetables (spinach, mint)	1	2
Bamboo shoots	1	2
Tomatoes	1	2
Other vegetables	1	2

Potatoes
Cassava	1	2
Sweet potatoes	1	2
Other potatoes	1	2

Nuts
| Coconuts | 1 | 2 |
| Peanuts | 1 | 2 |

Other items
Oil	1	2
Sugar	1	2
Spices	1	2

Drinks
Tea	1	2
Other beverages (non-alcoholic)	1	2
Beer (other alcoholic beverages)	1	2
Other (specify below)	1	2

Appendix C1. CBHI household questionnaire

PART 4: Non-Food Expenditure

I would now like to ask you about other expenditures your household made in the last 3 months.

4.13 What is the money value of the amount purchased or received in-kind by your household during the past 3 months ITEM	CODE	4.14 AMOUNT IN KIP SPENT IN THE PAST 3 MONTHS
Gasoline	210	
Firewood and charcoal (purchased)	211	
Firewood and charcoal (own produced)	212	
Electricity	213	
Kerosene	214	
Batteries	215	
Diesel oil	216	
Bath Soap	217	
Cleaning soap (dish, detergent)	218	
Shampoo	219	
Toothpaste	220	
Medicine (and medical consultations)	221	
Restaurants and take away food	222	
Cigarettes	223	
Contributions to monks	224	
Telephone and telephone cards	225	
Transportation	226	
Water charges	227	
Rent/mortgage	228	
Other expenses	229	
Other expenses	229	

I would now like to ask you about other expenditures that your household made this year.

4.15 What is the money value of the amount purchased or received in-kind by your household during the past 12 months: ITEM	CODE	4.16 AMOUNT IN KIP SPENT IN THE PAST 12 MONTHS
Clothing, cloth and footwear	230	
Household goods (pots, furniture)	231	
Education (Books, fees, uniforms, contributions)	232	
Traditional ceremonies	233	
Funeral and wedding costs	234	
Remittances and gifts	235	
Village collection fees (police, etc.)	236	
Other annual costs	238	
	239	
	240	
	241	
	242	
	243	
	244	
	245	

Appendix C1. CBHI household questionnaire

Part 5: Community Based Health Insurance

I would now like to ask you questions about community based health insurance. (INTERVIEWER: TRY TO GET THE **HEAD OF HOUSEHOLD** TO RESPOND TO THESE QUESTIONS. IF NOT POSSIBLE, ASK SOMEONE WHO PARTICIPATES IN DECISION-MAKING, EX. SPOUSE OF HEAD OF HOUSEHOLD.)

Part 1: Questions for CBHI Members Only (for non-CBHI households skip to Part 2)

5.00	Please tell me the three most important reasons that you enrolled in CBHI. (INTERVIEWER: DO NOT READ ANSWERS. RANK FROM 1 TO 3)		
	Illness among household members.........................	1	1st
	Pregnancy among household member............................	2	_____
	Financial protection against unexpected illness.................	3	
	CBHI is better value for money than user fees.......................	4	2nd
	Friend or relative encouraged your household to join................	5	_____
	Village leader encouraged your household to join....................	6	
	Other (specify_____)...................	7	3rd
	Other (specify_____)...................	8	_____
	Other (specify_____)...................	9	

5.01

Now I'm going to read out a list of possible factors that may have influenced your household's decision to enrol in CBHI. Please tell me on a scale of 1 to 5 how important these factors were in helping your household decide to enrol. Number 1 represents "

Reasons you joined CBHI:		not impt.				very impt.
a	Illness among household members	1......2......3......4......5				
b	Pregnancy among household member	1......2......3......4......5				
c	Financial protection against unexpected illness	1......2......3......4......5				
d	CBHI is better value for money than user fees	1......2......3......4......5				
e	Friend or relative encouraged your household to join	1......2......3......4......5				
f	Village leader encouraged your household to join	1......2......3......4......5				

5.02	When you enrolled in CBHI, how many of your close relatives and friends had already joined? (INTERVIEWER: READ FROM LIST)		
	None	1	
	Some friends and/or relatives	2	
	Many friends and/or relatives	3	

5.03	Have you ever quit the scheme or been forced to quit because of a late payment?
	Yes...........1
	No.............2>>>>>>>**SKIP TO Q5.05**

5.04	How many times have you rejoined the scheme (including the last time)?
	_____ times

5.05	On a scale of 1 to 5, how would you rate your level of satisfaction with the CBHI scheme if 1 is not at all satisfied and 5 is very satisfied? (SHOW CARD)
	1........................2..........................3.............................4.............................5
	SKIP TO PART 3

Appendix C1. CBHI household questionnaire

Part 2:	Questions for non- CBHI Members				
5.06	Have you ever heard of community-based health insurance?				
	Yes.................1				
	No...................2...**if no go to module 6**				
5.07	How many of your close relatives and friends are enrolled in CBHI? (INTERVIEWER: READ FROM LIST)				
	None	1			
	Some friends and/or relatives	2			
	Many friends and/or relatives	3			
5.08	Have you ever been a member of a CBHI scheme?				
	Yes...............1				
	No................2>>>> skip to 5.11				
5.09	How many times have you been enrolled in the scheme?				
	_____ times				
5.10	In total, how long were you a member of CBHI?				
	Months_____ Years_____				
5.11	Please tell me the three most important reasons that you are not enrolled in CBHI or have dropped out. (INTERVIEWER: DO NOT READ OR PROBE. RANK FROM 1ST TO 3RD)				
	not enough money...	1		1st	
	not good value for money...	2		_____	
	nobody was sick/ no need for health care...............................	3			
	village collector does not come..	4		2nd	
	health facility with CBHI too far away.....................................	5		_____	
	prefer to use other facilities..	6			
	not happy with quality at district hospital (or provincial hospital if in Viengkham district)	7		3rd	
	do not trust that CBHI contributions are put to good use.........	8		_____	
	don't know how it works...	9			
	friend/relative or neighbour told me about a bad experience......	10			
	do not trust that I will get the benefits I'm entitled to receive...........	11			
	does not cover all expenses/ many exclusions with CBHI	12			
	must pay money on top of CBHI contribution to get faster service	13			
	Other (specify_____)...................	14			

Appendix C1. CBHI household questionnaire

5.12		

I'm going to read out a list of possible reasons that your household is not enrolled in CBHI. Please tell me how much this factor influenced your decision NOT to enrol. Number 1 represents "not at all a factor" and number 5 represents "very important fact

not enough money..	1......2......3......4......5
not good value for money..	1......2......3......4......5
nobody was sick/ no need for health care.....................	1......2......3......4......5
village collector does not come....................................	1......2......3......4......5
health facility with CBHI too far away..........................	1......2......3......4......5
prefer to use other facilities......................................	1......2......3......4......5
not happy with quality at district hospital (or provincial hospital if in Viengkham district)..	1......2......3......4......5
do not trust that CBHI contributions are put to good use	1......2......3......4......5
don't understand how scheme works............................	1......2......3......4......5
friend/relative or neighbour told me about a bad experience..........	1......2......3......4......5
do not trust that I will get the benefits I'm entitled to receive............	1......2......3......4......5
does not cover all expenses/ many exclusions with CBHI..............	1......2......3......4......5
must pay money on top of CBHI contribution to get faster service....	1......2......3......4......5
other (specify.......................)..	1......2......3......4......5

Part 3: Exposure, perceptions and trust of CBHI (for everyone)

5.13	Has anyone in your household ever attended a CBHI promotion campaign?

Yes..................................1

No...................................2

5.14	Do you trust that the money contributed to CBHI will be used in the right way?

Yes, I feel that money will be used in the right way.........1

No, I don't think money will be used in the right way..........2

Uncertain about how money will be used............3

5.15	Do you trust that if someone pays money to the CBHI scheme they will get the benefits they pay for when they need them?

Yes...................1

No....................2

Uncertain..........3

5.16	Do you think the CBHI scheme is good value for money?

Yes, it is good value for money..............................1

Somewhat good value..2

No, not at all..3

Don't know/no idea...99

Appendix C1. CBHI household questionnaire

5.17	Do you think staff at the district hospital act differently toward CBHI members?:		
	Yes, CBHI members are treated worse than non-members......................1		
	Yes, CBHI members are treated better than non-members......................2		
	No, they are treated the same as non-members..3		
	Don't know/ no idea..99		

5.18	Please tell me how you rate the following aspects of quality at the district hospital. Use a scale of 1 to 5 to give your answer, where 1 is poor and 5 is excellent (SHOW CARD) (For Viengkham district ask about provincial hospital)		
	How do you rate the way staff act toward patients?	1......2......3......4.....5	
	How do you rate the quality of the facilities and equipment?	1......2......3......4.....5	
	How do you rate the skills/ competence of staff?	1......2......3......4.....5	

Future plans for enrolment (for both members and non-members)

5.19	Do you plan to be enrolled in the scheme in 1 year from now?		
	Yes.........1>>>>SKIP TO 5.21		
	No...........2		
	Unsure.....3		

5.20	What are the 3 most important reasons that you do not plan to be enrolled or are unsure about enrolling in CBHI in the future? (DO NOT PROBE OR READ. RANK FROM 1st TO 3rd)		
	not enough money..	1	1ST
	not good value for money..	2	_____
	nobody was sick/ no need for health care.............................	3	
	village collector does not come...	4	2nd
	health facility with CBHI too far away....................................	5	_____
	prefer to use other facilities...	6	
	not happy with quality at district hospital (or provincial hospital if in Viengkham district)	7	3rd
	do not trust that CBHI contributions are put to good use.........	8	
	don't know how it works..	9	_____
	friend/relative or neighbour told me about a bad experience......	10	
	do not trust that I will get the benefits I'm entitled to receive..........	11	
	does not cover all expenses/ many exclusions with CBHI	12	
	must pay money on top of CBHI contribution to get faster service	13	
	Other (specify_____).....................	14	

5.21	Do you think it would be a good idea to have every household to be required to join CBHI and pay a monthly premium to cover care in		
	Yes, good idea to make CBHI a requirement by all...........	1	
	Undecided. I don't know if it's a good idea or not..............	2	
	No, people should be able to enroll on a voluntary basis ...	3	

Appendix C1. CBHI household questionnaire

6. Health Seeking Behaviour and Attitudes

For the next few questions I'm going to ask you about advice you would give to a friend. This friend does not have any health insurance. Please tell me what you would advise them to do in the following situations. (*Interviewer: Get the respondent to think*)

6.00	6.01	6.02	6.03
You just learned that your friend was in a traffic accident and the person is in quite severe pain and his right arm is bleeding badly and may be broken. What would you advise him to do FIRST? (Please choose one option only)	You just learned that your friend is not feeling well. She has a fever, chills and a headache and isn't sure if it's just a minor illness or if it could be dengue fever. What would you advise her to do FIRST? (Please choose one option only)	You just learned that your friend's 2 year old son has diarrhea that has lasted for a few days. She wants to know what she should do. What would you advise her to do FIRST? (Please choose one option only)	How would you describe the quality of the district hospital relative to other choices you have? (in Viengkham ask about quality of provincial hospital) Would you say......? (INTERVIEWER: PLEASE READ RESPONSES)
treat himself..........................1	treat herself............................1	treat herself............................1	
go to traditional healer..............2	go to traditional healer..............2	go to traditional healer..............2	Services are good and I would advise a friend to go there for care.............1
go to pharmacist.....................3	go to pharmacist.....................3	go to pharmacist.....................3	
go to village health volunteer.......4	go to village health volunteer.......4	go to village health volunteer.......4	Services are OK but I would advise a friend to go elsewhere first..........2
go to health center in village.........5	go to health center in village.........5	go to health center in village.........5	
go to district hospital.................6	go to district hospital.................6	go to district hospital.................6	Services are poor and I would never advise a friend to go there.............3
go to provincial or central hospital...7	go to provincial or central hospital...7	go to provincial or central hospital...7	
go to facility in Thailand..............8	go to facility in Thailand..............8	go to facility in Thailand..............8	
other (specify.................).....9	other (specify.................).....9	other (specify.................).....9	

Appendix C1. CBHI household questionnaire

7. Medical Care Checklist

Ask questions 7.00 to 7.04. Then in the right hand column identify which modules you need to complete for this household. Proceed to the required modules.

7.00	In the past 3 months has there ever been a time where someone in your household has had an illness or injury? (including minor illnesses and ailments)	Yes........1 No........2	>>>> if yes, complete FOREGONE CARE module (MODULE 8)
7.01	Has anyone in your household had an inpatient visit in the last 12 months? (that is they stayed overnight in a health facility).	Yes........1 No.........2	>>>> if yes, complete INPATIENT module (MODULE 9)
7.02	Has anyone in your household visited any of the following places to seek health services or purchase drugs or herbs in the last four weeks? (INTERVIEWER: PLEASE READ LIST OF SOURCES OF CARE - THIS WILL HELP PEOPLE TO REMEMBER.)	Yes........1 No........2	>>>> if yes, complete OUTPATIENT module (MODULE 10)
7.03	Please tell me if there are any women in your household who have either given birth in the past two years or are currently pregnant. (GO BACK TO ROSTER TO CHECK FOR CHILDREN 2 YEARS AND BELOW)	Yes........1 No..........2	>>>> if yes, complete MATERNAL HEALTH module (MODULE 11)
7.04	Are there any children in your household who are less than 2 years old? (GO BACK TO ROSTER TO CHECK FOR CHILDREN 2 YEARS AND BELOW)	Yes........1 No..........2	>>>> if yes, complete IMMUNIZATION module (MODULE 12)

Appendix C1. CBHI household questionnaire

8. Foregone Care

Now I would like to ask you about anyone in your household who was sick or had an injury in the last 3 months. Please tell me the names of all these people and then I will ask a few questions about each separately.

HH ID	Names of people in household who have had an illness or injury?	8.00 Was (NAME)'s illness or injury serious, somewhat serious or not serious?	8.01 Did (NAME) seek advice or treatment for his/her illness or injury or purchase drugs?	8.02 Please tell me all the places NAME visited for this illness. (SEE CODE LIST)	8.03A	8.03B	8.03C
					If no health clinic or hospital has been mentioned ask: What are the main reasons that (NAME) did not seek treatment at a health facility? (Please rank the top 3 reasons by order of importance).		
	Record all names	Not serious............1 Somewhat serious...2 Serious.................3	Yes..........1 No...........2 If no, skip to 8.03	*(Note that there may be more than one place per illness episode. Please enter all mentioned)*	too busy.................................…..1 not serious enough.................…..2 too difficult to get there...............3 knew how to treat problem...........4 problem already diagnosed and just need medicine.........................5 not good quality...........................6 would not be helpful....................7 do not trust hospital staff..............8 too expensive...........................…9 other (specify)..........................…10		
					1st reason	2nd reason	3rd reason

Appendix C1. CBHI household questionnaire

9. Inpatient visits

I would now like to ask you about people in your household who have slept overnight in the hospital in the last 12 months. (INTERVIEWER: *Make sure you record ALL visits that took place. Beside the name of the person record the name of the facility.*)

#	Question
9.00	Please tell me the names of all the people who had inpatient visits in the last 12 months. Please also record the name and code of the facility. (*Use the card with the list of facilities to record the correct code*) If the same person has had more than one visit enter a line for EACH visit. After recording names ask the remaining questions about each visit individually. Begin with the first inpatient visit and ask all questions before moving to next visit
9.01	(facility code)
9.02	What was the main reason for the visit? (record a reason for each visit). (SHOW CODES FOR "REASONS FOR CARE" ON CARD).
9.03	How much time elapsed between the time (NAME) first noticed symptoms and the time (NAME) sought care?
9.04	Which types of health staff provided inpatient care? (RECORD ALL THAT APPLY) Village health volunteer..1 Nurse......2 Assistant doctor ....3 Medical doctor ....4 TBA..........5 Midwife..........6 Traditional practitioner...7 Other (specify)..........8 Unknown.................9
9.05	How much time did (name) stay in the hospital? Round to the nearest half hour. 1 day= 24 hours
9.06	During this visit, how many adults accompanied (NAME) to look after (NAME) in the hospital? (not including patient)
9.07	How much time did this person/these people stay with (NAME) in the health facility? (add all the hours of all adults and round to the nearest half hour. Eg. If 2 people X 24 hours = 48 hours total)
9.08	What mode of transportation did (NAME) use to travel to this facility from your home? (ask about the facility listed in the first column) walk...1 bicycle.....2 car......3 motorcycle...4 bus.........5 boat.......6 animal....7 other (specify)....8
9.09	How much time does it take you to travel to this facility? (one way) If people don't know try to give an approximation

Name of person	Name of facility	Fac. Code	Reason for Care	M / W / D	Type of staff	Hrs/Mins	# of adults	Hrs/Mins		Hrs/Mins
				M __ W __ D		H __ M		H __ M		H __ M
				M __ W __ D		H __ M		H __ M		H __ M
				M __ W __ D		H __ M		H __ M		H __ M
				M __ W __ D		H __ M		H __ M		H __ M
				M __ W __ D		H __ M		H __ M		H __ M
				M __ W __ D		H __ M		H __ M		H __ M
				M __ W __ D		H __ M		H __ M		H __ M
				M __ W __ D		H __ M		H __ M		H __ M
				M __ W __ D		H __ M		H __ M		H __ M
				M __ W __ D		H __ M		H __ M		H __ M

Appendix C1. CBHI household questionnaire

9.10	9.11	9.12	9.13	9.14		9.15	9.16	9.17
Please tell me what NAME spent on the health care visit (If NAME had no expense for each category please record 0).						Please tell me about other indirect expenses you made for this visit. (If NAME made no expenses for each category please record 0)		Did NAME seek treatment somewhere else for this illness episode before he/she had the inpatient visit?
Consultation or service fee (incl room)	Diagnostic tests	Drugs in facility	Gifts/extra pay	Other hospital cost	Total Cost of visit	Food/ Accomodation	Transportation	
	(example: x-ray, ultrasound, blood analysis, ECG or other lab tests)	(in this facility only)	(example: to receive special treatment or better quality services) If			(include food and accomodation for NAME and all relatives who accompanied NAME on this visit)	(including fuel charges and transportation of anyone who accompanied you eg. if bus fare is 5,000 Kip and two people went, the amount entered would be 10,000 Kip) (include cost of one way)	Yes.....1 No.....2
Kip	Kip	Kip	Kip	Kip	Kip	Kip	Kip	Yes=1 No=2

Appendix C1. CBHI household questionnaire

10 Outpatient visits

Now I would like to ask you more details about each of the visits that your household members have made. Record the id codes and names of all people who have had an outpatient visit in the past 4 weeks. Make sure you record ALL visits that took place. Bes

	10.00	10.01	10.02	10.03	10.04	10.05	10.06	10.07	10.08
	Please enter the names of the people who have had outpatient visits in the last 4 weeks. If the same person has had more than one visit enter a line for EACH visit, even if it is at the same facility. For example, if an individual went to a pharmacy once, the district hospital twice and then visited the central hospital please enter 4 separate lines. After recording names ask the remaining questions about each visit individually. Begin with the first outpatient visit and ask all questions before moving to next visit		What was the main reason for the visit? (record the MAIN reason for each visit). (SEE CODES FOR "REASONS FOR CARE" ON CARD).	How much time elapsed between the time (NAME) first noticed symptoms and the time (NAME) sought care? Record 99 if not applicable (for example, if the visit was a check up or a preventive care visit).	Which types of staff provided outpatient care or advice? (CIRCLE ALL THAT APPLY) Village health worker....1 Nurse.......................2 Assistant doctor ....3 Medical doctor............4 TBA...........................5 Midwife......................6 Traditional practitioner...7 Pharmacist.................8 Drug seller.................9 Other (specify)...........10 Unknown.................11	If NAME visited a pharmacist or drugseller, continue to next question. If NAME visited a health professional or traditional practitioner skip to 10.06. FOR VISITS TO PHARMACY or DRUG SELLER ONLY: How much did (NAME) spend on drugs (or herbs) during this illness episode? Skip to 10.18	How much time did (NAME) spend in the facility? (Please round to the nearest half hour.)	During this visit, how many adults accompanied (NAME) on the visit to the facility? not including patient	How much time did this person/these people stay with (NAME) in the health facility? (add all the hours of all adults and round to the nearest half hour. Eg. If 2 people X 3 hours = 6 hours total)
HH ID	Name of person	Source Code	Reason for Care	M___ W___ D	Type of staff	Kip	Hours/Minutes	# of adults	Hours/Minutes
				___M___ W___ D			___H___ M		___H___ M
				___M___ W___ D			___H___ M		___H___ M
				___M___ W___ D			___H___ M		___H___ M
				___M___ W___ D			___H___ M		___H___ M
				___M___ W___ D			___H___ M		___H___ M
				___M___ W___ D			___H___ M		___H___ M

Appendix C1. CBHI household questionnaire

10.09	10.10	10.11	10.12	10.13	10.14	10.15	10.16	10.17	10.18	10.19	10.20
What mode of transportation did (NAME) use to travel to this facility from your home? (ask about the facility listed in the first column)	How much time does it take to travel from your home to this facility? (one way)	Please tell me what NAME spent on the health care visit.(If NAME had no expenses for each category please record 0).						Please tell me about other indirect expenses you made for this visit (If NAME made no expenses for each category please record 0)	Do you still owe money for this visit? If so, please record amount (If not please enter "0").	Did NAME seek treatment somewhere else for this illness before he/she had this visit?	Did NAME seek treatment somewhere else for this illness AFTER he/she had this visit?
		Consultation or service fee	Diagnostic tests	Drugs or Herbs	Gifts/extra pay	Other cost	Total Cost of visit	Transportation			
If people don't know try to give an approximation			(example: x-ray, ultrasound, blood analysis, ECG or other lab tests)	(in this facility only)	(example: to receive special treatment or better quality services) If person doesn't know give approx. value of gift	please specify		(including fuel charges and transportation of anyone who accompanied you eg. if bus fare is 5,000 Kip and two people went, the amount entered would be 10,000 Kip) (include cost of one		Yes.....1 No....2	Yes.....1 No....2
walk....1 bicycle.....2 car.....3 motorcycle...4 bus........5 boat........6 animal.....7 other (specify)....8											Record next outpatient visit and ask all questions.
	Hours/Minutes	Kip	Kip	Kip	Kip	Kip	Kip	Kip	Kip	Yes=1 No=2	Yes=1 No=2
	__H__M										
	__H__M										
	__H__M										
	__H__M										
	__H__M										
	__H__M										
	__H__M										

Appendix C1. CBHI household questionnaire

11. Maternal Health

"I would now like to ask you some questions about maternal and child health care in this household. Please identify the children who are 24 months or below." (Check ages on roster to make sure the responses are accurate). "I would also like to know whethe"

If twins, record 88 for the second twin for all questions related to expenses.

11.00	11.01	11.02	11.03	11.04	11.05	11.06	11.07	11.08	11.09	11.10	11.11								11.12	11.13
ID	Please list all live births that your household has had in the last 2 years (including babies that may no longer be alive). Please also tell me about anyone who is currently pregnant	Who is the natural mother of (NAME OF CHILD)?		In what month and year was (CHILD) born?	What is the birth order of this child? (1st born, 2nd born, 3rd born, etc.)?	Is (CHILD) still alive? Yes=1 No=2	How old was (MOTHER) when she gave birth to (CHILD)? (Give approx. if respondent does not know exact age)	While (MOTHER) was pregnant with (CHILD) did she see anyone for antenatal care for the pregnancy (that is visits by a If No, skip to 11.20	How many times did (MOTHER) receive antenatal care during this pregnancy? (try to	How many months pregnant was (MOTHER) when she first received antenatal care for this pregnancy? (Try to	Where did (MOTHER) receive antenatal care for this pregnancy? (USE CODES ON CODE SHEET) (USE MULTIPLE CODES IF NECESSARY)								a) Which types of staff provided antenatal care? (RECORD ALL THAT APPLY) Village health volunteer..1 Nurse.....2 Medical Assistant ..3 Medicaldoctor.....4 TBA.....5 Midwife.....6 Traditional	As part of (MOTHER)'s antenatal care during this pregnancy, were any of the following done at least once?

11.11	A	B	C	D	E	F	G	H	11.12
	1st visit	2nd visit	3rd	4th	5th	6th	7th	8th	Type of health staff

11.13

	A	B	C	D	E	F	G	H
	Were you weighed?	Was your height taken?	Was your blood pressure measured?	Did you give a urine sample?	Did you give a blood sample?	Did you receive a tetanus shot?	Did you receive an ultrasound?	Did you receive any vitamin supplements?
	Y=1 N=2	Y=1 N=2	Y=1 N=2	Y=1 N=2	Y=1 N=2	Y=1 N=2	Y=1 N=2	Y=1 N=2

Enter all live births below

ID	Name of Child	Name of mother	Code	Birthday	Birth Order	Yes=1 No=2	Mother's age at birth	Yes=1 No=2	# times	# Months	1st visit	2nd visit	3rd	4th	5th	6th	7th	8th	Type of health staff	
				M___Y___			years													Y=1 N=2 ...
				M___Y___			years													
				M___Y___			years													
				M___Y___			years													
				M___Y___			years													
				M___Y___			years													

Enter current pregnancies: Please list all women who are currently pregnant in your household.

Name of women	Code	How many months pregnant is (NAME)?	Birth Order	How old will (MOTHER) be when she gives birth?	Has (NAME) seen anyone for antenatal care for this pregnancy? Yes=1 No=2	# months	1st visit	2nd visit	3rd	4th	5th	6th	7th	8th	Type of health staff	A	B	C	D	E	F	G	H
		_____ months	not applicab	years												Y=1 N=2	Y=1 N=2	Y=1 N=2	Y=1 N=2	Y=1 N=2	Y=1 N=2	Y=1 N=2	Y=1 N=2
		_____ months		years																			
		_____ months		years																			
		_____ months		years	If No, skip to 11.20																		

For data entry we will need to create a variable that says pregnant or not pregnant so that we can differentiate pregnancies and births

Appendix C1. CBHI household questionnaire

11.14	11.15	11.16	11.17A	11.17B	11.17C	11.17D	11.17E	11.17F	11.17G	11.17H	11.18A	11.18B	11.18C	11.18D	11.18E	11.18F	11.18G	11.18H	11.19
On average how much time did (NAME) spend in the facility? (Please round to the nearest half hour.)	What mode of transportation did (NAME) usually use to travel to this facility from your home? walk...1 bicycle....2 car....3 motorcycle....5 4 bus....6 boat....6 animal....7 other (specify)....8	How much time does it usually take to travel from your home to this facility? (one way)	How much money did (MOTHER) pay for these visits? (INCLUDING CONSULTATION, DIAGNOSTIC TESTS, LAB TESTS, DRUGS, ETC.) (ADD COST OF EACH VISIT BELOW)								During these visits did (MOTHER) pay extra money to receive special treatment, faster or better quality services? If no, place a 0 in the box, if yes record the value of the gift.								On average, how much did it cost to travel to this facility? (one way) (including fuel charges and transportation of anyone who accompanied you)
Hours/Minutes	Code	Hours/Minutes	1st visit	2nd visit	3rd visit	4th visit	5th visit	6th visit	7th visit	8th visit	1st visit	2nd visit	3rd visit	4th visit	5th visit	6th visit	7th visit	8th visit	Kip
__H __M		__H __M																	
__H __M		__H __M																	
__H __M		__H __M																	
__H __M		__H __M																	

Hours/Minutes	Code	Hours/Minutes	1st visit	2nd visit	3rd visit	4th visit	5th visit	6th visit	7th visit	8th visit	1st visit	2nd visit	3rd visit	4th visit	5th visit	6th visit	7th visit	8th visit	Kip
__H __M		__H __M																	
__H __M		__H __M																	
__H __M		__H __M																	

Appendix C1. CBHI household questionnaire

Births — These questions are for facility deliveries only.

11.20	11.21	11.22	11.23	11.24	11.25	11.26	11.27	11.28	11.29
Where did (MOTHER) give birth to (CHILD)?	Who assisted with the delivery? (RECORD ALL THAT APPLY)	Why did (MOTHER) decide to give birth in that location? RECORD UP TO THREE IF MENTIONED	How much did your household spend on the delivery (not including gifts)?	How much (if any) did (MOTHER) pay as an extra payment or gift? (if MOTHER gave an in-kind gift, what was the approximate value of the gift?)	How much time did (MOTHER) spend in facility?	What mode of transportation did (MOTHER) use to travel from your home to the facility where (NAME) delivered the baby?	How much time does it take you to travel to this facility? (one way)	How much does it cost to travel to this facility? (one way) (including fuel charges and transportation of any one who accompanied NAME to the facility)	How much did your household spend on food and accomodation for NAME and any one who accompanied NAME to the facility?
	Doctor.........1 Medical assistant...2 Nurse.........3 Midwife.........4 TBA.........5 Traditional healer...6 Relative.........7 Friend.........8 Other (specify)...9 Nobody.........10 Some type of medical professional (doctor/nurse or midwife).........11	(See code sheet for sources of care) Most affordable.........1 Best place to be in case of complications.........2 Close by/accessible.........3 Better quality than an other places.........4 Like providers better here.........5 Female provider available.........6 More comfortable here.........7 Other (specify).........9			If woman delivered at home this is the end of the interview. If woman delivered in a facility, ask remaining questions.	walk....1 bicycle...2 car.....3 motorcycle...4 bus.........5 boat.........6 animal....7 other (specify)....8	If people don't know try to give an approximation	eg. if bus fare is 5,000 Kip and two people went, the amount entered would be 10,000 Kip)	
			Kip	Kip	Hours		h ___ min	Kip	Kip
Facility Code							h ___ min		
							h ___ min		
							h ___ min		
							h ___ min		
							h ___ min		

Where does (WOMAN) plan to give birth?(If don't know ask preferred location)	Who will assist with the delivery?	What is the main reason (WOMAN) wants to give birth in that location?

Appendix C1. CBHI household questionnaire

12 Immunizations (2 years or younger)

Copy the same names and ID codes from section 11 (maternal health) to the spaces below.

ID	12.00	12.01	12.02	12.03	12.04	12.05	12.06	12.07	12.08	12.09	12.10	12.11	12.12	12.13	12.14
	Name of child/baby	Do you have a yellow card that shows which vaccinations (NAME) has received? INTERVIEWER: ASK TO SEE CARD AND USE TO FILL OUT QUESTIONS. IF NO CARD SKIP TO 12.02 AND CONTINUE WITH QUESTIONS / Does this card include all the vaccinations (NAME) has ever received? (IF YES FILL IN THE MODULE WITH INFORMATION FROM THE CARD; IF NO, ASK ALL QUESTIONS AND RECORD RESPONSES)	Has (NAME) received a measles immunization? (MCV1 or AR/MSV) If No or DK skip to 12.06 Yes....1, No...2, Don't know...99	In what month and year did he/she receive this immunization? M / Y	Where did (NAME) receive this immunization? SEE SOURCE SHEET	Did you get this information from a card or from respondent? 1=card 2=respondent	Has (NAME) received a BCG vaccination against tuberculosis? (usually given at birth) If No or DK skip to 12.10 Yes....1, No...2, Don't know...99	In what month and year did he/she receive this? M / Y	Where did (NAME) receive this immunization? SEE SOURCE SHEET	Did you get this information from a card or from respondent? 1=card 2=respondent	Has (NAME) received a polio vaccine (usually pink or white drops in the mouth? (it is called OPV or IPV) If No or DK skip to 12.15 Yes....1, No...2, Don't know...99	If yes, how many dose has (NAME) received?	When was the last dose given? M / Y	Where did (NAME) receive these drops? SEE SOURCE SHEET	Did you get this information from a card or from respondent? 1=card 2=respondent
		Yes............1 / No............2													
		Yes............1 / No............2													
		Yes............1 / No............2													
		Yes............1 / No............2													
		Yes............1 / No............2													
		Yes............1 / No............2													
		Yes............1 / No............2													

Appendix C1. CBHI household questionnaire

12.15	12.16	12.17		12.18	12.19	12.20	12.21	12.22		12.23	12.24	12.25	12.26		12.27	12.28	12.29	12.30
Has (NAME) received a DPT vaccination? (this is an injection that is usually given at the same time as polio drops and may be combined with Hep B (DPT - HepB) If No or DK skip to 12.20 Yes.....1, No....2, Don't know....99	If yes, how many shots has (NAME) received?	In what month and year did he/she receive the last shot?		Where did (NAME) receive this immunizati on? SEE SOURCE SHEET	Did you get this information from a card or from respondent?	Has (NAME) received a Hepatitis B vaccination? (this is an injection that is usually given after childbirth and then again before 12 months) (Include DPT -HepB here as well) IF NO OR DK SKIP TO 12.25 Yes.....1, No....2, Don't know....99	If yes, how many shots has (NAME) received?	When was the last shot given?		Where did (NAME) receive this immunization ? SEE SOURCE SHEET	Did you get this information from a card or from respondent?	Has (NAME) received any vitamin A supplements? IF NO or DK, SKIP TO 12.29 Yes.....1, No....2, Don't know....99	When was Vitamin A last given?		Where did (NAME) receive Vitamin A? SEE SOURCE SHEET	Did you get this information from a card or from respondent?	Is (NAME) protected from tetanus? (CHILD PAB) IF NO or DK, GO TO NEXT CHILD OR NEXT MODULE. Yes.....1, No....2, Don't know....99	Did you get this information from a card or from
		M	Y		1=card			M	Y		1=card		M	Y		1=card		1=card
					2=respondent						2=respondent					2=respondent		2=respondent

Appendix C1. CBHI household questionnaire

13. Coping mechanisms to pay for health care

Now I would like to ask you questions about how you have paid for health care during the past 12 months.

13.00	In the past 12 months did your household borrow money to pay for health care?			
	Yes	1	
	No	2	
	If no, skip to 13.04		
13.01	Who did you borrow most from?			
	Private Bank	1	
	State Bank	2	
	Employer	3	
	Money lender	4	
	Family member	5	
	Friend	6	
	Other	7	Specify:_____
13.02	How much did you borrow in total over the last 12 months?		_____	
13.03	What was the interest rate on these loans? *(Give approximation. If there were multiple loans give highest interest rate)*		_____	
13.04	In the past 12 months did you receive any help to pay for health care from friends, relatives or the village?			
	Yes	1	
	No	2	>>>skip to 13.08
13.05	Who helped you pay for health care?			
	Relative in Laos	1	
	Relative abroad	2	
	Friend/neighbour	3	
	Fund from village	4	
	Other (specify_____)	5	
13.06	How much did you receive in assistance from friends, relatives or village?		_____	
13.07	Under what conditions was this assistance given to you?			
	Donation or gift (do not need to pay back)	1	
	Must pay back money but without interest	2	
	Must pay back with interest	3	
	(specify interest rate _____)		
13.08	In the past 12 months, did you sell any household assets or goods to cover the cost of the illness or injury?			
	Yes	1	
	No	2	>>>skip to 13.10

Appendix C1. CBHI household questionnaire

13.09	What did you sell?					
	Household goods such as jewelry, appliances, machines, bicycles				1	
	Harvest...				2	
	Animals				3	
	Housing, land..				4	
	Other (specify)..				5	

13.10	In the past 12 months, have you ever had to do the following in order to pay for health care?			Yes	No
				Yes	No
	1. Purchase less food			1	2
	2. Switch to cheaper food/ eat less meat			1	2
	3. Spend less on children's needs (eg. education, food, clothing)			1	2
	4. Sell livestock or other assets to purchase food			1	2
	5. Reduce medical expenditures for other family members			1	2
	6. Delay future plans			1	2

Appendix C1. CBHI household questionnaire

Risk Questions: For head of household

Please try to get the head of household to answer these questions. If on the second visit the head of household is still not available you may ask the spouse of the head of household to respond.

14.1		
	For the next question I am going to ask you about risk attitudes. Please tick a box on the scale, where the value 0 means: "risk averse" (do not like to take risks) and the 10 means "fully prepared to take risks" (like to take risks). You can use the valu	

In general, are you fully prepared to take risks or do they try to avoid taking risks?

risk-averse										risk-loving
0	1	2	3	4	5	6	7	8	9	10

14.2	Instructions: Place the paper with the pictures of the gamble in front of the respondent. Read the question and then get them to choose one of the bets. Record the letter of the game that corresponds with the respondent's choice.	
	Imagine you have to guess which of my hands the coin is in. If the coin is in my left hand you win the amount shown in the left hand box. If it is in my right hand you win the amount shown in the right hand box, as shown on the paper. The amount you win d	
	A. 25/25 LAK	
	B. 20/50 LAK	
	C. 15/65 LAK	
	D. 10/80 LAK	
	E. 5/95 LAK	
	F. 0/100 LAK	

14.3 INTERVIEWER: Please state the position of the respondant who answered the following modules (list all that apply):

	Name Member ID	Head of household ...1
a Module 1: Roster	_____	Spouse....................2
b Module 4: Expenditure	_____	Parent/parent in law...3
c Module 6: Health seeking behaviour	_____	Son/daughter...........4
d Modules 9 and 10: Inpatient and Outpatient	_____	Son/daughter in law...5
e Module 11 and 12. MH and Immunization	_____	Brother/sister.........6
f Module 14. Risk	_____	Brother/sister in law 7
		Grandchild/niece/nephew..8
		Adopted/foster/stepchild...9
		Other relatives...10
		Non relative...11

Appendix C1. CBHI household questionnaire

	Left Hand	Right Hand
Bet #1		
	5,000 Kip	5,000 Kip
Bet #2		
	4,000 Kip	10,000 Kip
Bet #3		
	3,000 Kip	13,000 Kip
Bet #4		
	2,000 Kip	16,000 Kip
Bet #5		
	1,000 Kip	19,000 Kip
Bet #6		
	0 Kip	20,000 Kip

Appendix C1. CBHI household questionnaire

Codes

Sources of health care		List of Reasons for Seeking Care	
		Chronic Illnesses	
Village health center	1	Hypertension	1
District hospital	2	Diabetes or high blood sugar	2
Provincial hospital	3	Tuberculosis	3
Central hospital	4	Asthma/lung condition	4
Priate clinic in Laos	5	Heart problems	5
Private hospital in Laos	6	Liver	6
Public facility in Thailand	7	Stroke	7
Private facility in Thailand	8	Cancer or malignant tumour	8
Other clinic/hospital outside Laos or Thailand	9	Arthritis	9
Traditional healers	10	Depression	10
Home	11	HIV/AIDS	11
Drug seller in Laos	12	**Other Illnesses or conditions**	
Pharmacy in Laos	13	Diarrhea	12
Pharmacy in Thailand	14	Rehabilitation	13
Pharmacy outside Laos and Thailand	15	Regular check-up	14
Village outreach program	16	Cold or throat infection	15
Other (specify)...............	17	Acute respiratory infection (ARI)	16
		Fever	17
		Malaria	18
		Dengue	19
		Headache	20
		Injury or accident	
		Major injury or accident	21
		Minor injury cut/wound	22
		Preventive and MCH Care	
		Family planning	23
		Prenatal Care	24
		Birth/delivery	25
		Postnatal care	26
		Well child care	27
		Other (Specify.____)	28

Employment Code

Government/Party official	1
Government/Party staff	2
Business owner/manager	3
Employee of NGO or official foreign entity	4
Hotel/Restaurant/Internet café worker	5
Professional (doctor, nurse, engineer, lawyer)	6
Teacher/Professor	7
Construction/mining worker	8
Manufacturing worker	9
Domestic worker (House cleaner, cook, babysitter, etc.)	10
Technicians/skilled worker	11
Farmer/Fisherman	12
Taxi driver	13
Military/Police	14
Monk/religious	15
Others	16

Appendix C1. CBHI household questionnaire

Appendix C2. CBHI village questionnaire

Village Questionnaire

Province _____ Code ☐☐

District _____ Code ☐☐

Village___ _____ Code ☐☐☐

Full name of Village Head _____

Telephone _____

Which hospital is used by CBHI members in this village?

Full Name: _____

Interviews with Village Heads

I would first like to ask some questions about you and your position in the village.

1 Full name

_____

Background Information about informant

2 How old are you?

_____ years

3 What is the highest level of education you have completed?	
	Never attended school 0
	Some primary 1
	Primary completed 2
	Some lower secondary 3
	Lower secondary completed 4
	Some upper secondary 5
	Upper secondary completed 6
	Some/completed vocational school 7
	Some/completed university 8

Sociodemographics of Village

4 What percentage of people in this village are working for the government? (approximate numbe _____

5 Does this include teachers, police, military, etc? *Yes.......1 No......2*

6 What percentage of villages leave temporarily during certain times of the year to look for work elsewhere? _____ %

7 What percentage of households are in the village now? _____ %

8 What is the definition of a poor household in this village?

1. _____

2. _____

3. _____

9 Currently, how many poor households are there in the village according to this definition?

Health Issues

10 Generally speaking, if someone in this village has a minor illness where do they go to seek advice first? (record code from card) Example: A minor illness could be a mild throat infection or headache.

11 Generally speaking, if someone in this village had a major illness and/or emergency where do they go to seek advice first? (record code from card)

12 Where do most women in this village prefer to give birth? (see list of facilities)

Appendix C2. CBHI Village Questionnaire

13	Has a CBHI promotion campaign been done in your village?	Yes.....1 No.........2	
14	How many campaigns have there been?	_____	
15	When was the last campaign? (give approximate answer if don't know)	_____	
16	How many times has the village been visited by the provincial CBHI team?	_____	
17	Has there been any door-to-door promotion of CBHI in this village?	Yes.......1 No.........2	
18	Where do households in this village make their monthly payments?	Village collector goes to house	1
		Household pays at village collectors' house	2
		Pays at hospital	3
		Pays village chief	4
		Other (specify......................)	5
		Don't know	99
19	Who is the village collector in this village?	Village chief (respondent)	1
		Deputy village chief	2
		Appointed village collector	3
		Other (specify......................)	4
20	Are you a member of CBHI?	Yes.........1 No.........2	
21	Are you supportive of CBHI?	Yes.........1 No.........2	
22	How often is CBHI discussed in the village during official forums (for example, official village meetings, the wat, other)		
		More than once per month	1
		About once per month	2
		Once in a while (less than once per month)	3
		Rarely	4
		Never	5
23	Please tell me who helps to promote CBHI in your village. (Read list and check all that apply)	Village chief	1
		Members of mass organizations	2
		Village collector	3
		Monks	4
		Other (specify......................)	5
		Nobody	99
24	Has there ever been an incident in this village where the village collector has not given the money to the hospital?	Yes.......1 No........2	

Social Capital Proxies

25	Please list any mass organizations that exist in this village, for example women's unions, etc.		
		Lao Front 1	
		Lao Women's union 2	
		Youth league 3	
		Trade union 4	
		Village community 5	
		Pupils parent committee 6	
		Other? (Specify) 7	
26	How often are meetings held in this village?		
		More than once per month	1
		About once per month	2
		Once in a while (less than once per month)	3
		Rarely	4
		Never	5

Appendix C2. CBHI Village Questionnaire

Village Questionnaire

		27 — Is there a ___ in this village?	28 — How far from here is the nearest ___? (km)	29 — How long does it take to get there by road in the dry season? (or for health worker to get to the home)	30 — What is the highest level of health worker at this facility? Doctor....1 Medical assistant....2 Nurse......3 Village health worker......4 Other (specify ___)...5	31 — How does quality at this facility compare to quality at the district level hospital? (For Viengkham villages ask: "How does the facility compare to quality at the provincial hospital?" (Is it worse, the same or better than the district hospital?) Facility is worse quality than district hospital.......1 Facility is same quality as district hospital.........2 Facility is better quality than district hospital......3
A	Pharmacy	Yes......1 No.......2	___ km	___ Hr ___ min		
B	Drug sellers/ drug shops	Yes......1 No.......2	___ km	___ Hr ___ min		
C	Traditional healer	Yes......1 No.......2	___ km	___ Hr ___ min		
D	TBA	Yes......1 No.......2	___ km	___ Hr ___ min		
E	Midwife	Yes......1 No.......2	___ km	___ Hr ___ min		
F	Government health center	Yes......1 No.......2	___ km	___ Hr ___ min		
G	District hospital	Yes......1 No.......2	___ km	___ Hr ___ min	1	
H	Provincial hospital	Yes......1 No.......2	___ km	___ Hr ___ min	1	
I	Central hospital	Yes......1 No.......2	___ km	___ Hr ___ min	1	
J	Private clinic	Yes......1 No.......2	___ km	___ Hr ___ min		
	Facilities in Thailand		___ km	___ Hr ___ min		
K	Drug kit	Yes......1 No.......2				

Appendix C2. CBHI Village Questionnaire

Appendix C3. Firm questionnaire (for Social Security study)

Determinants of Enrolment in Health Insurance in Lao PDR
Enterprise Survey, February 2009, FINAL

RESEARCH

INDOCHINA

Interview Number				SSO=1/uninsured=2	
		Pro.	Dist.	SubD	Block	

Indochina Research (Laos) Ltd
236/6 Ban Thongthoum, PO Box 1887
Vientiane Lao PDR.
Tel: (856) 21 262 073
Fax: (856) 21 243 571

Interview No.	/ / / /
Interviewer Name	
Interviewer code	
Date of Interview	Interview Length
/ / 2005	Fr:___:___ To___:___
/ / 2005	Fr:___:___ To___:___
/ / 2005	Fr:___:___ To___:___
	Total in minutes:

Interviewers: Ask for the business card of the respondent if available. All information needed is written on it and will enable you to get accurate contact details. Please staple the business card to the questionnaire.

Name of Business (as registered):

Registration (tax) number:

Street Address

Village:

District: **District code:** [ ][ ]

Respondent's Name:

Title:

Office Ph: **Office Fax:**

Email: **Mobile Ph:**

Result of interview: _____   1= complete; 2= incomplete b/c respondent not available for entire interview
3= incomlete b/c information not available; 4= not started because cannot find firm
5= not started because respondent not available

Fieldwork supervisor (Name) _____

Fieldwork supervisor signature _____   Date _____

Name of data entry _____

Date entered _____/_____/2009
          Month   Day

Name of supervisor (central level) _____

Date entered _____/_____/2009
          Month   Day

Appendix C3. Firm Questionnaire for Social Security Study

Section 1. INTRODUCTION & GENERAL INFORMATION

Please read information sheet and obtain informed consent. Leave the information sheet with the employer and keep a copy of the signed consent form.

1 Company's main sector of operation:

(circle only one)

Garments	1	Electricity and water supply	10
Textiles / handicrafts	2	Construction	11
Food and Beverage production	3	Repairing	12
Wood processing	4	Trading	13
Mining	5	Transportation	14
Printing paper and chemicals	6	Communication	15
Product from iron/steel - factory	7	Property development and rental	16
Product frm iron/steel - handmade	8	Hotel/ restaurant	17
General furniture	9	Education/health	18
		Other (specify)	19

2 a More specifically, what type of business do you do? (main product, service, etc.)

_____

3 a) Current Position (of main respondent)

Head of company/Director/GM/CEO 1
Head Accountant 2
HR / Admin Manager 3
Dept Head (Mktg, Sales etc..) 4
Other (specify_____) 5

b) Nationality   *(of main respondent)*

(optional)

c) Gender (of main respondent)   Male= 1   Female =2

d) Age (of main respondent)   _____ years

4 a) Current Position (of secondary respondent)

Head of company/Director/GM/CEO 1
Head Accountant 2
HR / Admin Manager 3
Dept Head (Mktg, Sales etc..) 4
Other (specify_____) 5

b) Nationality   *(of secondary respondent)*

(optional)

c) Gender (of 2nd respondent)   Male= 1   Female =2

d) Age (of secondary respondent)   _____ years

5 *If respondent is not head of company ask the following:*

a) Nationality of head of company

(optional)

b) Gender of head of company   Male= 1 Female =2

c) Age of head of company   _____ years

d) Current country of residence of head of company

_____

6 What is the highest level of education of the head of the company?

No formal education	1
Lower primary school	2
Upper primary school	3
Lower secondary school	4
Upper secondary school	5
Vocational training	6
Some university training	7
University or college degree (BA, BSc etc.)	8
Post-grad or graduate degree (Ph D, Masters)	9

Appendix C3. Firm Questionnaire for Social Security Study

Section 2. FIRM PROFILE

7 In what year did your company begin business in Laos?

8 a Please tell me how your business is defined in the Enterprise law: *(Interviewers: employers should be familiar with these terms because they need to define their business when they register as an enterprise.)*

Private enterprise	....	1 >>>>>> skip to b
State enterprise	....	2 >>>>>>skip to c
Mixed enterprise	....	3 >>>>>>>skip to c
Cooperative enterprise	....	4 >>>>>>>skip to c

b Please tell me about the ownership of your business (*Interviewer: These definitions are also in the Enterprise Law):*

Individual enterprise	1	(An individual or family owned business in which owners are completely responsible for the company debt)
Ordinary partnership	2	(Similar to individual owned company but consists of more than one partner.)
Limited partnership	3	(A partnership with at least one limited partner and one general partner. The limited partner is not responsible for a company's debts, whereas a general partner is liable for all company debts)
Limited company	4	(A company owned partially or completely by shareholders in which shareholder responsibility for company debt is limited to the amount the shareholder has invested in the company)
Public company	5	A company that offers shares to the public on an open market (the company is listed on a stock exchange)
Other (specify _____)	6	

c What percentage of your business is owned by?

i	Domestic Private		%
ii	Foreign Private		%
iii	Government		%
iv	Other		%
	Total	**1 0 0**	%

(Interviewer: if a company is an individual owner in Laos the answer will be 100% domestic private)

9 a Was your business previously owned (fully or partially) by the government? **b** When was your business privatized?

Yes .... 1 >>>>ask b
No .... 2 >>> skip to Q 10

Year

10 a Does your business have separate factories, stores or service outlets in Laos? **b** How many separate factories, stores or service outlets does your business have in Laos?

	Yes	No		Total
Factories	1	 2	>>> *If yes record Number*	
Stores	1	 2	>>> *If yes record Number*	
Service outlets	1	 2	>>> *If yes record Number*	

Appendix C3. Firm Questionnaire for Social Security Study

			Yes	No		

11 a Does your business have separate factories, stores or service outlets in <u>other</u> countries?

b How many separate factories, stores or service outlets does your business have in other countries?

	Yes	No		Total
Factories	1	 2	>>> *If yes record Number*	
Stores	1	 2	>>> *If yes record Number*	
Service outlets	1	 2	>>> *If yes record Number*	

12 a What were your total company assets in 2008? (as stated to authorities)   (Record below)

Interviewer: Total assets include the total value of everything the company owns, including money in the bank, property or buildings, equipment, supplies, and all things of value that the business owns.

b What was your total company revenue in 2008?

Interviewer: Total revenue is the total sales of a company before costs are subtracted.

(amount in Lao Kip)	a)Assets	b) Revenue
less than 25 million kip	 1	 1
25 million to 50 million kip	 2	2
more than 50 million up to 100 million kip	 3	 3
more than 100 million up to 250 million kip	 4	4
more than 250 million up to 500 million kip	 5	 5
more than 500 million up to 1 billion kip	 6	 6
more than 1 billion up to 2 billion kip	 7	 7
more than 2 billion up to 4 billion kip	 8	 8
more than 4 billion up to 6 billion kip	 9	 9
more than 6 billion up to 10 billion kip	 10	 10
more than 10 billion up to 20 billion kip	 11	 11
more than 20 billion up to 30 billion kip	 12	 12
more than 30 billion up to 40 billion kip	 13	 13
more than 40 billion up to 50 billion	 14	 14
more than 50 billion	 15	 15

13 What type of communication equipment do you have? *(Interviewer: Circle all that apply)*

    1 Fixed line telephone
    2 Mobile telephone
    3 Fax
    4 Internet/email
    5 Other, specify _____
    6 None

14 a Is your company a member of a business membership organization in Laos?   Yes........1   No.........2

    b) If yes, please specify names of organizations: _____
_____
_____

Appendix C3. Firm Questionnaire for Social Security Study

Section 3. HEALTH & RISK PROFILE

15 a   I'd like to know if there are any health risks or risks of injuries that your employees face in the workplace (eg. injuries, illness, etc.) On a scale of 1 to 5 where "1" represents low risk and "5" represents high risk please tell me what level of risks

low risk   **high risk**

1................2................3..................4...............5

b   Please describe in a few words or sentences the types of risks your employees face in the workplace:

_____

_____

_____

_____

16   I would like to know the approximate ages of staff members in this company. Can you tell me approximately how many of your permanent staff fall into the following categories? You can give the estimate using numbers or percentage of staff.

Interviewer: Let the respondent choose the method that is easiest for them.

	Number of staff	Percentage of staff
14-25 years old		
26-35 years old		
36-45 years old		
46-55		
55+		
		100%

Appendix C3. Firm Questionnaire for Social Security Study

Section 4. EMPLOYMENT CONTRACTS

17 *I would now like to ask you some questions about your employment contracts in 2008.*

Type of employee	How many employees worked in this company in 2008? (in Laos only)/ How many females? (*Interviewer: Ask for the min and max if there are fluctuations in workers during different times of year*)			Estimate % of male/female if don't know		For each type of employment contract please tell me how many are professional, skilled or unskilled. You may give your number as a percent or a number. *Interviewer: please read the definitions below.* (Get the respondent to estimate if he/she does not know
	Male Total	Female total	Total	%M	%F	
a **Permanent Employees:** All paid employees that are registered employees with the company and do not usually have an end date in their contract	Min (low season)	Min (low season)				Professional # ___ or % ___ Skilled # ___ or % ___ Unskilled # ___ or % ___ **Total** **100%**
b **Temporary employees:** Employees who are hired for a defined time period and are expected to leave the company when the contract is finished (in some cases their contract may be renewed). The timeframe for these employment contracts varies by company. Note	Max (peak season)	Max (peak season)				Professional # ___ or % ___ Skilled # ___ or % ___ Unskilled # ___ or % ___ **Total** **100%**
c **Daily wage employees:** Daily wage employees usually do not have a contract and usually get paid at the end of the day or every few days. There is no contract that guarantees that an employee will be with the company for an extended period of time.	Min (low season) Max (peak season)	Min (low season) Max (peak season)				Professional # ___ or % ___ Skilled # ___ or % ___ Unskilled # ___ or % ___ **Total** **100%**

Appendix C3. Firm Questionnaire for Social Security Study

Professionals:	Generally, professionals hold a University-level or college degree and have specific training or certification in their field. Professionals also include managers.
Skilled laborers	Skilled production employees include people who have training in carrying out specific skills required to produce goods or service for a company.
Unskilled laborers	People with very little formal training and which management considers to be unskilled. These people may perform tasks that do not require specialized training. Example: raw-labor, maid, guard, driver, etc.

18 On average, how many hours per week does a permanent employee work? ☐ *hours/week*

19 a Do any permanent workers work on a part-time basis? Part-time workers usually work less than 5 days per week or less than 8 hours per day and have a specific contract to work a reduced number of hours. *(Please record the number of part-time employees).*

☐ >>if 0 skip to Q20

b Do these part-time employees receive the same benefits as permanent employees? Please describe any differences.

_____

_____

Inteviewer: If the company has temporary staff ask Q20-23. If the company has no temporary staff, skip to Q24.

20 On average, how many hours per week does a temporary employee work? ☐ *hours/week*

21 Please list the three most important reasons for hiring a temporary employee?

		Importance	
	1st	2nd	3rd
flexibility to hire and fire	1	1	1
cost considerations	2	2	2
tasks performed are not necessary for long-term	3	3	3
trial period necessary	4	4	4
others (Specify:_____)	5	5	5
No answer	99	99	99
need to add answers from pilots			

Appendix C3. Firm Questionnaire for Social Security Study

22	a	Do temporary employees usually do the same job as permanent employees?	Yes......1 >>>ask b	No....2	>>>ask c
	b	Why do you hire temporary employees to do the same job as permanent employees?
	c	Please describe the differences in responsibility between permanent and temporary employees.

23	What is the maximum amount of time that an employee can work as a temporary employee?
	3 months 1
	6 months 2
	9 months 3
	1 year 4
	there is no maximum amount of time 5
	other .... 6 specify _____

Now I would like to ask you about your employee turnover.

| 24 | Can you give an estimate of your employee turnover in 2008? (by turnover I mean when a permanent employee leaves the company for whatever reason and the company refills the position or attempts to refill the position.) You may give your response in terms of either the percent or the number of people who left the company in the last year. |
| | Number of permanent positions vacated and refilled _____ Percent turnover: _____ % |

| 25 | What are the main reasons for the employee turnover in your business? |

26	**I would now like to ask you about wages and benefits paid to your employees in 2008.**
	a	Please tell me how much your company paid in total salaries and wages to permanent (and temporary) employees in 2008. (Record below)
	b	Please tell me about the approximate average wages paid at your company. (Record below)
	c+d	Please give me the approximate range of wages that are paid at your company (record minimum and maximum below).

Appendix C3. Firm Questionnaire for Social Security Study

	A. Total salaries and wages (2008)	B. Average Wage	C. Min Wage	D. Max Wage
Permanent employees		per person/ per month	per person/ per month	per person/ per month
Temporary employees		per person/ per month	per person/ per month	per person/ per month
Daily wage employees		per person/ per day	per person/ per day	per person/ per day

27   With which ministry or department is your company registered? _____

28   At which level of the government do you pay taxes? (Circle all that apply)

       Central   …… 1

       Provincial …… 2

       District …… 3

29   Please tell me how you rate the management and capacity of the tax authorities on a scale of 1 to 5 where 1 is "low capacity/poor management" and 5 is "high capacity/strong management".

Low capacity/poor management   High capacity/strong management

1…………2…………3…………4…………5

30   Do you trust that the money paid to the tax authorities will be used in the right way?

       Yes, I feel that money will be used in the right way……..1

       No, I don't think money will be used in the right way……..2

       Uncertain about how money will be used………..3

Appendix C3. Firm Questionnaire for Social Security Study

Section 5: EMPLOYEE BENEFITS

31 I would now like to ask you about your employee benefits and how much you spent on these benefits in 2008.

	a — Does your business provide the following benefits to your permanent employees? (If no, skip to c)		b — For SSO only: How many permanent employees are enrolled in SSO?	c — How much did your business spend last year on each of these benefits for your permanent employees? If monthly multiply by 12 — Monthly Amt (Kip)	d — Annual Amt (Kip)	e — Does your business provide the following benefits to your temporary employees? (If no skip to f)		f — For how many months must a temporary employee work before he/she receives each benefit?	g — How much did your business spend last year on each of these benefits for your temporary employees? Monthly Amt (Kip)	h — Annual Amt (Kip)	i — Does your business provide the following benefits to your daily wage employees?		j — How much was spent last year on each of these benefits for your daily wage employees? (If monthly multiply by 12)	k — Does your business provide the following benefits to other employees (specify)		l — How much was spent on benefits for other employees (specify)
	Yes / No					Yes / No					Yes / No			Yes / No		
31.1 Social security	1	2			x12	1	2			x12	1	2		1	2	
31.2 Private health insurance (specify ___)	1	2			x12	1	2			x12	1	2		1	2	
31.3 Direct payment of health care costs by company	1	2			x12	1	2			x12	1	2		1	2	
31.4 Life insurance/ death benefits	1	2			x12	1	2			x12	1	2		1	2	
31.5 Pay salary for Maternity leave	1	2			x12	1	2			x12	1	2		1	2	
31.6 Coverage for injuries (disability ins)	1	2			x12	1	2			x12	1	2		1	2	
31.7 Pay salary for Sick leave	1	2			x12	1	2			x12	1	2		1	2	
31.8 Other (specify)	1	2			x12	1	2			x12	1	2		1	2	
31.9 Pay salary for Annual leave	1	2		Number of days _____		1	2		Number of days _____		1	2	# of days _____	1	2	# of days _____

Interviewer: If the company has social security check to make sure they do not also have additional benefits. Then ask about annual leave.

Definitions of benefits: (Interviewer: Please note that these benefits may be provided on an informal basis and may not fit these definitions exactly)

Social security: A package of 8 different government-provided benefits offered to private sector companies. Benefits are paid as a percentage of employees salaries.

Private health insurance: Private insurance purchased by the firm on behalf of the employees.

Direct payment of health care costs by company: Any transfer of funds from the employer to a health facility or to employees to cover medical expenses, medication, illness, etc.

Life insurance/ death benefits: Payment of money to dependents in the event of an employee death.

Maternity leave: Any paid time away from work before or after an employee gives birth to a child. This is sometimes offered as a separate benefit or is taken as part of annual leave or sick leave.

Coverage for injuries: Any payment or paid time off to cover the cost of a work-related injury (eg. treatment, rehabilitation, etc.)

Sick leave: Paid leave which can be taken when the employee is sick.

Annual leave: Paid leave which can be taken for vacation or personal reasons. Annual leave is usually accrued gradually over time.

Appendix C3. Firm Questionnaire for Social Security Study

Section 5 Continued: EMPLOYEE BENEFITS for PERMANENT EMPLOYEES

Note to interviewers: Check the table on the previous page to see which companies offer the benefits described in each section.

I would now like to ask you more about the benefits you reported for **permanent** employees in the table.

Part 5A. Interviewer: If employer pays for SSO ask questions 32 and 33. (Check question 31.1 to see if answer is YES)

32	Do you give employees the option of enrolling in SSO or using the money for different purposes?	
	Yes, employees have the option to enrol in SSO or use the money for different purposes.........	1
	No, all permanent employees must enrol in SSO	2 >>>>skip to Q34

33	Are there any restrictions on how the money can be used? Please describe:

Part 5B. Interviewer: If employer pays health expenses or purchases private insurance ask questions 34-38 (Check question 31.2 and 31.3. If either answer is Yes, ask these questions)

34	Does the company health coverage/private insurance cover benefits for other family members of employees?
	Yes.........1 No..........2

35	I would like to know more about the details of your company health benefits or private insurance. *(Interviewer: Record 99 for "none" and 98 for "don't know")*

		Is _____ covered? Yes=1, No=2 (if yes, ask all questions other)	Please list any exclusions in each category	What % of the cost is covered by the insurance or benefits?	What do employees pay for copayments (give answer as percent of cost or flat rate)	If there is a maximum coverage for each type of care please record here:
a	Drugs/medicines				_____ % _____Kip	Kip
b	Check-ups/preventive care				_____ % _____Kip	Kip
c	Emergency care				_____ % _____Kip	Kip
d	Chronic illnesses				_____ % _____Kip	Kip
					Record here if there is a limit on the total amount of expenditure	Kip

Appendix C3. Firm Questionnaire for Social Security Study

36 Does your company insurance/benefits cover care at the following places? (Read list and circle all that apply)

Yes = 1, No=2

At a specific hospital in Laos?	
At any central hospital in Laos?	
At private clinics in Laos?	
At pharmacies in Laos?	
At facilities in Thailand?	
Other (specify _____)	

37 Do all permanent employees receive the same health benefits? (For example, do admin staff receive the same benefits as managers?)

If not, please describe the differences.

Yes, all permanent staff receive the same benefits................................1

No, there are differences between different types of permanent employees............2>>describe differences

A. Please tell me why the company chose to provide direct payments for health care or private insurance rather than using the government social

38 security scheme?

38 B. What is the name of the insurance company that you use to purchase your company's health insurance?

Part 5C: Interviewer: If employer pays maternity benefits for employees ask question 39-40 (Check question 31.5 to see if answer is Yes)

39 a   Are maternity benefits offered separately from sick leave or vacation or must a woman use sick leave or vacation to cover her maternity leave?

Maternity benefits are a separate benefit 1

Maternity leave is taken as part of sick leave or annual leave 2

b   How many days does the company pay the employee for maternity benefits (NOT including days taken as part of sick leave or annual leave)?

Appendix C3. Firm Questionnaire for Social Security Study

40 Do all permanent employees receive the same maternity benefits? (For example, do admin staff receive the same benefits as senior managers?) If not, please describe the differences.

Yes, all permanent employees receive the same benefits............1

No, there are differences between different types of permanent employees............2>describe differences

_____

_____

Part 5D: Interviewer: If employer pays for injuries or disability insurance ask question 41 and 42 (Check question 31.6 to see if answer is YES)

41 Please tell me what is covered by your company if someone is injured or develops a long-term disability?

_____

_____

_____

42 Do all permanent employees receive the same injury or disability benefits? If not, please describe the differences.

Yes, all permanent employees receive the same benefits............1

No, there are differences between different types of permanent employees............2>describe differences

_____

_____

Part 5E: Interviewer: If employer pays for sick leave ask question 43 (Check question 31.7 to see if answer is yes)

43 a How many days of paid sick leave does your company sick leave policy cover? _____ days

b Can employees use a "sick day" for any illness or does the illness have to be severe? Please describe when the benefit can be used/not used:

_____

_____

c What is the maximum number of days a staff member is compensated for time spent away from work for sick leave only? _____ days

d Is a doctor's note required to cover days missed? Yes..........1 No..............2

Appendix C3. Firm Questionnaire for Social Security Study

Section 6. AWARENESS OF/EXPERIENCE WITH SSO

Interviewer: Please interview the person who is most knowledgeable about SSO benefits, i.e. HR manager, head of company, manager, etc.

6A) Questions for companies enrolled with SSO

If the company is enrolled in SSO ask the following questions:

| 44 | When did you become enrolled in social security? | Month _____ Year _____ |

45 I'd now like to ask about different places where you may have heard about SSO. Before you enrolled did you ever....?

		Yes	No
a	read about SSO in the newspaper?	1	2
b	had a visit from SSO at your company?	1	2
c	attended a meeting where SSO was promoted?	1	2
d	received a notice from SSO encouraging enrolment?	1	2
e	received a warning from SSO telling you to enrol?	1	2
f	heard about it through a business organization	1	2
g	hear about SSO in other ways?	1	2
	(specify_____)		

46 What were the three main reasons that your company decided to enroll in social security? (DO NOT READ ANSWERS. Rank in order of importance)

strong pressure from international regulations and audits	1	1st ____
strong pressure from industry leader	2	2nd ____
strong pressure from SSO	3	3rd ____
strong pressure from employees	4	
to increase employee satisfaction	5	
to improve health and well-being of employees	6	
in order to provide retirement benefits for employees	7	
allow employees to access free health care with membership card	8	
other (specify_____)	9	

47 Now I'm going to read out a list of possible factors that may have influenced your company's decision to enrol in SSO. Please tell me on a scale of 1 to 5 how important these factors were in helping your company decide to enrol. Number 1 represents "not a

	not a factor	very important factor
strong pressure from international regulations and audits	1.......2......3......4.....5	
strong pressure from industry leader	1.......2......3......4.....5	
strong pressure from SSO	1.......2......3......4.....5	
strong pressure from employees	1.......2......3......4.....5	

| | to increase employee satisfaction .... 1.......2.....3.....4.....5 |
| to improve health and well-being of employees .... 1.......2.....3.....4.....5 |
| in order to provide retirement benefits for employees☐ .... 1.......2.....3.....4.....5 |
| allow employees to access free health care with membership card .... 1.......2.....3.....4.....5 |
| other (read from question above) .... 1.......2.....3.....4.....5 |

48   Who made the decision to enrol in social security?

_____

_____

_____

49   I would like to know how SSO has affected various aspects of your business. Please tell me if SSO has had a positive effect, no effect or a negative effect on these aspects of your business. (Please choose only one answer for each question)

a   How has SSO affected employee well-being and satisfaction?

SSO has had a positive effect 1

SSO has had no effect 2

SSO has had a negative effect 3

Difficult to say/ don't know 4

b   Please give me one or two reasons or examples to support your answer.

_____

_____

_____

c   How has SSO affected your ability to retain and recruit staff?

SSO has had a positive effect 1

SSO has had no effect 2

SSO has had a negative effect 3

Difficult to say/ don't know 4

d   Please give me one or two reasons or examples to support your answer.

_____

_____

_____

e   I understand that some companies enrol in SSO and others do not. How many of your competitors also enrol in SSO? Try to give an approximate range.

None 1

Very few firms 2

Some firms 3

Many other firms 4

Most other firms 5

All other firms 6

Appendix C3. Firm Questionnaire for Social Security Study

f Does the fact that you are enrolled in social security affect your ability to compete with other companies (in either a positive or negative way)? Please describe why/why not. You can give examples to illustrate your point.

_____
_____
_____

g I know the costs of SSO can be quite high. Please explain how these costs have affected your company. For example, perhaps these costs have caused big problems for your business, or perhaps you feel that the costs are worthwhile. You can give examples to

_____
_____
_____

h Overall, how would you say SSO has affected your business?

SSO has had a positive effect 1
SSO has had no effect 2
SSO has had a negative effect 3
Difficult to say/don't know 4

50 Please describe the nature of contact with the SSO (reason for contacts, frequency, etc.)

_____
_____
_____

51 Please tell me how you rate the management and capacity of the SSO scheme on a scale of 1 to 5 where 1 is "low capacity/poor management" and 5 is "high capacity/strong management".

Low capacity/poor management   High capacity/strong management
1...............2...................3...................4.................5

52 Do you trust that the contributions to SSO will be used in the right way?

Yes, I feel that money will be used in the right way.........1
No, I don't think money will be used in the right way..........2
Uncertain about how money will be used...........3

53 a In three years from now do you think your firm will still be enrolled in SSO?

Yes   1
No   2
Not sure 3

b Why? Why not? _____
_____
_____

54 a In general, how satisfied are your employees with the benefits they receive from SSO? (Use a scale of one to five to give your answer where 1 is very unsatisfied and 5 is very satisfied).

Very unsatisfied   Very satisfied
1...............2...................3...................4.................5

b What are the main complaints that the employees have?

_____
_____
_____

Go to section 6C

Appendix C3. Firm Questionnaire for Social Security Study

55 a I'd like to know more about how your company decided on which benefits to offer and not offer. First of all, who makes the decisions about which benefits to offer?

_____

_____

  b What factors did you consider when deciding on which benefit to offer/not offer? _____

_____

_____

_____

Now I would like to ask about your exposure to the social security scheme......

56 I'd now like to ask about different places where you may have heard about SSO. Have you

			Yes	No
a	read about SSO in the newspaper?		1	2
b	had a visit from SSO at your company?		1	2
c	attended a meeting where SSO was promoted?		1	2
d	received a notice from SSO encouraging enrolment?		1	2
e	received a warning from SSO telling you to enrol?		1	2
f	heard about SSO through a business organization		1	2
g	hear about SSO in other ways???		1	2
	(specify_____)			
h	If they have never heard of SSO circle "99"		99	

57 What are the three main reasons that your company is NOT enrolled in social security? (rank in order of importance)

		1st
Employees prefer to purchase private insurance	1	_____
Company benefits that we provide are better	2	
Employees do not want SSO	3	2nd
High turnover among employees	4	_____
Many temporary employees	5	
Quality of government hospitals not good	6	3rd
Health care benefits are not used/ staff do not get sick	7	
Do not trust that money is used well	8	_____
Cost of SSO is too high	9	
Do not know much about SSO	10	
Other (specify_____)	11	

Appendix C3. Firm Questionnaire for Social Security Study

Now I'm going to read out a list of possible factors that may have influenced your company's decision NOT to enrol in SSO. Please tell me on a scale of 1 to 5 how important these factors

58 are in making your decision about not to enrol. Number 1 represents

	not a factor	very important factor
Employees prefer to offer private insurance	.... 1......2......3......4......5	
Company benefits that we provide are better	.... 1......2......3......4......5	
Employees do not want SSO	.... 1......2......3......4......5	
High turnover among employees	.... 1......2......3......4......5	
Many temporary employees	.... 1......2......3......4......5	
Quality of government hospitals not good	.... 1......2......3......4......5	
Health care benefits are not used/ staff do not get sick	.... 1......2......3......4......5	
Do not trust that money is used well	.... 1......2......3......4......5	
Cost of SSO is too high	.... 1......2......3......4......5	
Do not know much about SSO	.... 1......2......3......4......5	
Other (specify_____)	.... 1......2......3......4......5	

59 a Do you think your company will join social security in the next three years?

Yes	1
No	2
Not sure	3

b Why? Why not? _____

_____

_____

_____

_____

6C) Questions for ALL companies in sample

60 Has a leader from a membership organization in your industry ever encouraged you to enroll in social security?

Yes	....	1
No	....	2

61 Please describe up to 3 advantages **to employers** that enrol in social security? (does not have to be in order)

1 _____

2 _____

3 _____

Appendix C3. Firm Questionnaire for Social Security Study

62	Please describe up to three disadvantages **to employers** that enrol in social security? (does not have to be in order)

1 _____

2 _____

3 _____

63	Which of the following benefits in the social security scheme are/ would be most attractive to you as an employer? (Read the list and rank the top 3 in order of importance)

1st

Medical care benefits 1

Sickness benefit 2

Maternity benefit 3   2nd

Death benefit 4   _____

Employment injury or occupational disease benefit 5

Retirement pension 6   3rd

Survivor's benefit 7   _____

Invalidity/ disability insurance 8

None 9

64	Are you aware of any laws or decrees that talk about social security? If so, please tell me which laws or decrees mention social security and what is said about it.

Circle 1 if the respondent mentions SSO Decree or Decree 207 1

Circle 2 if the respondent mentions the Labour Law 2

Circle 3 if the respondent mentions mandatory enrolment 3

Circle 4 if the respondent mentions none of the above or does not know 4

65	The social security organization is trying to increase enrolment rates in the scheme. Can you suggest any ways of improving the scheme to attract more companies? Please describe up to 3 ways of improving social security.

_____
_____
_____
_____
_____
_____

Please feel free to tell me any additional information that we may not have already covered.

_____
_____
_____
_____
_____

The survey is now complete. Thank you very much for your cooperation.

Appendix C3. Firm Questionnaire for Social Security Study

Appendix C4. Focus group discussion guide for CBHI members

Objectives

1. To better understand the factors affecting the decision to enroll in CBHI.
2. To discuss CBHI members' experiences, perceptions and satisfaction with the CBHI scheme and with the health care system in general.
3. To discuss whether or not CBHI has affected health-seeking behavior, use of health services and health-related expenditures among members.

Instructions for Moderator

Step 1: Introductions and Informed Consent

- Introduce yourself and thank participants for attending
- Give an overview of the study and explain why the participants were chosen (you can read from the information sheet)
- Answer any questions the participants may have
- Ask for informed verbal consent. (It is not necessary to get written consent from the participants. Verbal consent with the moderator's signature will be sufficient.)

Step 2: Explanation of Process and Ground Rules

- Discuss the process and timing of the focus group discussion (2 to 2.5 hours)
- Explain the presence and purpose of recording equipment and introduce note-takers.
- Outline general ground rules and discussion guidelines (speak one at a time; remember that there are no right or wrong answers; feel free to disagree with others and express your opinion; do not repeat information to others outside the group; treat others with respect).

Step 3: Get participants to introduce themselves and begin discussion

- Get participants to introduce themselves

Step 4: Review tops of discussion guide and tell team what you are going to discuss ahead of time.

Discussion Guide

Introduction:

To start off the discussion it is important that all participants get a chance to say something early in the discussion and that they feel comfortable speaking in front of other group members. The following questions are intended as "ice-breakers":

- How do most families earn a living in this village?
- How long have you been enrolled in community-based health insurance?
- Are there very few households or many households enrolled in CBHI in this village? *(We do not need to get exact numbers. We just want a general sense of how many people are enrolled)*

Part I. Factors affecting enrolment

1. Knowledge of CBHI

- How did you learn about CBHI?
- When was the last CBHI campaign conducted in your village?
- How many of you attended the CBHI campaign?
- By the end of the meeting did you clearly understand how CBHI worked?

2. Implementation of CBHI

Now I'd like to ask you about some of the rules of the CBHI scheme and how it is implemented in this district:

- If one person in a household of five wants to enrol is this possible? Are there ever exceptions made?
- If you enrol in CBHI how long do you have to wait before you can use services?
- How many months can you go without paying the monthly premium before you have to leave the scheme?
- Are all services and drugs covered by the CBHI scheme? What services and drugs are excluded?
- Are there any diseases which are excluded from coverage?
- If a CBHI member is outside their province when they fall sick will their services be covered at another hospital? What is the procedure for getting covered?
- Do you think the information presented was accurate? (Were the promoters realistic and honest about what was included in the scheme and what type of care you would get?)
- In your opinion, were the rules of the scheme that we just talked about presented clearly in the CBHI meeting? (For example, household enrolment, waiting period, monthly premiums, exclusions, etc.)

3. Motivation for enrolment (Important Section)
I would now like to know more about the specific reasons that your households decided to enroll in CBHI.

- What are the main reasons your household decided to join CBHI? There are likely many reasons but try to think about the most important reasons.

    Allow the participants to discuss the most important issues and then ask about the following if they have not already been mentioned:
    - *Illness in the family? (e.g. Chronic diseases)*
    - *Need for frequent health care due to medical condition? (E.g. Chronic illness, pregnancy, operation)?*
    - *Need for frequent health care due to small children? Elderly family members?*
    - *CBHI is a better deal financially than paying out of pocket at the time of care?*
    - *Financial protection against unexpected illness*
    - *Experience with high hospital costs?*
    - *Pregnancy? Small children? Elderly?*
    - *Other reasons?*

Appendix C4. Focus group discussion guide for CBHI members

- Did anyone influence your decision to enroll in CBHI? Please tell me who influenced you.

Probe for the following if not mentioned: staff running the scheme? Friends or relatives? Village chief? Village collector? Mass organizations? (which organizations?)

The following are some examples of questions you can use to probe:

- Why were these people persuasive? Are they influential people? Are they old? Young? What do they do to influence the household to enrol?
- How persuasive was this person/these people in getting you to enroll? Would you have enrolled anyway? What did they do to persuade you to join?

4. *Trends in Enrolment*

   a) *Questions about non-members and drop-outs:*

- Why do you think some people have dropped out of the scheme? How are these people different from people who join CBHI?
- Why do some people never join? How are these people different from people who join CBHI? (are they poorer? Are they rich? Are they not sick? Are they uneducated? are they ethnic minorities?)
- What do the people without CBHI do when they are sick? (Where do they go? central hospital? Thailand? Private hospital? Pharmacy? Treat themselves?)

   b) *Changes in Levels of Enrolment:*

- Have there been any increases or decreases in enrolment levels? For example, have there been any times when the number of people who joined CBHI increased over a short amount of time or decreased suddenly? (examples: village collector stopped coming, drought, flood, changes in the way CBHI is implemented?)

   c) *Differences in Enrolment across Villages:*

- In some villages enrolment rates are high and in other villages they are low. Why do you think this is the case?
  - ○ *Probe: do you think promotion by mass organizations has an impact on enrolment? Distance to the hospital? Authority of village chief? Village collector? Extent of community participation?*
  - ○ *Do many people in this village enroll in other types of insurance? (private? Social Security? Civil Servant?)*

   d) *Risk Preferences*

- Many people believe that health insurance is a way of minimizing the risk of having to make high payments on health care. In this way, insurance can be used as risk protection. However, because insurance in Laos is new it is possible that some people may think of their enrolment

Appendix C4. Focus group discussion guide for CBHI members

in health insurance as a risky venture. When you joined CBHI did you think about how it may help you avoid financial risk in the future? Do you see CBHI as something that increases or decreases your risk? Please describe why you think CBHI increases or decreases your risk?

Part II. Experiences and Perceptions of CBHI and the Health Care System

I would now like to ask you questions about the way CBHI is managed in your community.

1. *Management/ contribution collection process*

- Can you tell me how the money is collected each month in this village?
  (If no village collector: Did you ever have a village collector? Do you ever have a problem *getting the money to the hospital on time? Would you prefer to have a village collector?)*
- Have there ever been any problems with village collection? *For example, does the village* collector come regularly? Has there ever been a time where the village collector has not taken the money to the hospital?
- Do you trust that the money you contribute to the scheme will be taken to the hospital? Please describe why/why not.
- Do you trust that if someone pays money to the CBHI scheme they will get the benefits they pay for when they need them?

2. *Quality of care of health care system*

- What is your impression of the quality of care at the district hospital? Is quality good? Poor? Mediocre? Please describe why. *(If there have been changes in quality please ask why)*
- *Probe on the following aspects of quality if necessary (but try to let them say what is most important):*
  - *What about drugs? (availability and quality)*
  - *What about the way hospital workers treat patients?*
  - *What about skills of staff members? (e.g. do they give the correct diagnosis and prescribe the correct drugs?)*
  - *Are facilities clean?*
  - *Are waiting times appropriate?*
  - *What do you think about the equipment?*

- Do you get the impression that <u>CBHI</u> patients are treated differently than <u>uninsured</u> patients? Please give examples to support your answer.

(Moderator: Note that in the household interviews people reported mixed feelings about whether CBHI members are treated the same as non-members, making it difficult to draw conclusions one way or another. There is some evidence that members are treated worse than non-members so please try to clarify whether these incidents are isolated or occur on a regular basis)

- When you use services how often do you ever have to make extra payments? Please describe: *(Note: sometimes these payments are legitimate payments and other times they are informal payments to staff. Try to differentiate)*

Appendix C4. Focus group discussion guide for CBHI members

- Are these payments used to cover care or drugs that are not included in the scheme?
- Are any of these payments informal payments? What I mean by this is payments that are not part of the fee schedule but are made to receive better or faster treatment? How are these payments organized? Who asks for the payments? Does this happen a lot? Are these extra payments the same for the insured and the uninsured?

Part III. Impact of CBHI on Health-Seeking Behavior, Utilization and Expenditures (Important)

1. *Source of Care:*

- Before you had health insurance, if you had had a mild to moderate illness what would you have done for treatment? *(Try to describe the order of places visited, i.e. 1ˢᵗ: home; 2ⁿᵈ: pharmacy; etc.)*

- Before you had health insurance, if you had had a more serious illness what would you have done as a first step for treatment?

    - Example: would you have tried to treat yourself?
    - Where would you go now? (for mild to moderate? For more serious?)

The following three questions are quite important to the study so please make sure you understand how health insurance has affected use of services:

2. *Use of Services*

    a) *Changes to use of services*

- Has health insurance affected the place you go for services?
- Has health insurance affected the amount of time you wait before going for treatment? (example, do you use services right away? Do you wait and try to treat yourself?)
- Compared to before you had insurance do you use health services more frequently? If so, why?

(Moderator: Keep in mind that transportation costs and time spent in hospital may prevent people from going to get treatment. Discuss if mentioned).

    b) *Use of services by non-members*

- When someone without insurance is sick, do they go to the same place you go to? (eg. do they go to the hospital first? Which hospital? Central? District? Thailand? Do they go to the pharmacy first? Do they treat themselves?)
- How do you think your use of services is different from the uninsured?
- Do you use services more frequently than someone without insurance?
- Do non-members wait a long time before going for treatment? Longer than members would wait? (example, do they use services right away? Do they try to treat themselves?)

3. *Financial effects of insurance*

Appendix C4. Focus group discussion guide for CBHI members

- Do you think health insurance has increased or decreased the total amount of money your household spends on healthcare? (including the amount you pay every month for premiums)
- Please tell me other ways in which you think health insurance has affected your family's financial situation, if at all. Can you give some examples?

Part IV. Wrap-Up of Discussion (Don't spend too much time – 15 minutes)

Moderator: Explain that there are a few questions left.

1. Satisfaction with CBHI Scheme
- Overall, do you feel satisfied as a member of the CBHI scheme? Please describe why/why not?
- Do you feel like the scheme has met the expectations you had when you joined?
- Do you expect to be enrolled in CBHI in one year from now? Why? Why not?

2. Changes to CBHI Scheme

We've talked a little bit about your satisfaction with the scheme. Now I'd like you to think about how the scheme could be improved in the future so that more people would enrol.

- Please tell me about any changes you would make to the scheme and why. Think about changes that would increase the satisfaction of members and also encourage other members to enroll.

Concluding Remarks

This concludes our discussion. I want to thank you very much for your time. Please feel free to comment on anything else that you wanted to say during the discussion but didn't get the chance.

Appendix C4. Focus group discussion guide for CBHI members

Appendix C5. Focus group discussion guide for non-members

Objectives

1. To better understand the factors that affected the decision to not enroll in CBHI
2. To discuss non-members' experiences with and perceptions of the CBHI scheme and with the health care system in general.
3. To identify how out-of-pocket payments influence health-seeking behavior and use of services among non-members.

Instructions for Moderator

Step 1: Introductions and Informed Consent

- Introduce yourself and thank participants for attending
- Give an overview of the study and explain why the participants were chosen (you can read from the information sheet)
- Answer any questions the participants may have
- Ask for informed verbal consent. (It is not necessary to get written consent from the participants. Verbal consent with the moderator's signature will be sufficient.)

Step 2: Explanation of Process and Ground Rules

- Discuss the process and timing of the focus group discussion (2 to 2.5 hours)
- Explain the presence and purpose of recording equipment and introduce note-takers.
- Outline general ground rules and discussion guidelines (speak one at a time; remember that there are no right or wrong answers; feel free to disagree with others and express your opinion; do not repeat information to others outside the group; treat others with respect).

Step 3: Get participants to introduce themselves and begin discussion

- Get participants to introduce themselves

Step 4: Review tops of discussion guide and tell team what you are going to discuss ahead of time.

Discussion Guide

Introduction

To start off the discussion it is important that all participants get a chance to say something early in the discussion and that they feel comfortable speaking in front of other group members. The following questions are intended as "ice-breakers":

- How long have you lived in this village?
- How do most families earn a living in this village?
- Do you know of many families that are enrolled in CBHI in this village?
- For drop-outs: how long were you members of CBHI?
    - How long ago did you quit the scheme?

Part I. Factors affecting non-enrolment

1. Knowledge of CBHI

- How did you learn about CBHI?
- Has a CBHI campaign ever been conducted in your village?
- How many of you attended the CBHI campaign?
- In your opinion, how well were the concepts in this meeting presented?
- By the end of the meeting did you clearly understand how CBHI worked?
- Can somebody please briefly explain how CBHI works? (Moderator: confirm that they understand the concept of insurance and they know that it is not a savings account or fund.)

2. Implementation of CBHI

Now I'd like to ask you about some of the rules of the CBHI scheme and how it is implemented in this district:

- If one person in the household of five wants to enroll is this possible? Are there ever exceptions made?
- If you enroll in CBHI how long do you have to wait before you can use services?
- How many months can you go without paying the monthly premium before you have to leave the scheme?
- Can members of a scheme use any hospital when they are sick?
- In your opinion, were the rules of the scheme that we just talked about presented clearly in the CBHI meeting? (For example, household enrolment, waiting period, monthly premiums, exclusions, etc.)
- Do you think the information presented was accurate? (Were the promoters realistic and honest about what was included in the scheme and what type of care you would get?)
- How do you feel about prepaying for care offered in the future? Is it something you would feel comfortable doing? Why? Why not?

3. Motivation for not enrolling or dropping out (Important Section)

Appendix C5. Focus group discussion guide for non-members

I would now like to know more about the specific reasons that your households decided not to enroll in CBHI, or that you decided to drop out.

- First I'd like to know from the <u>non-members</u>, what are the main reasons your household decided not to join CBHI? There are likely many reasons but try to think about the most important reasons.
  Allow the participants to discuss the most important issues and then ask about the following if they have not already been mentioned:

  - *Knowledge/understanding of the scheme*
  - *No illness in the family*
  - *Do not use modern health care (inquire about what kind of care they use)*
  - *Facility too far away from household*
  - *Not much encouragement from friends or relatives; village chief*
  - *Heard about bad experiences*
  - *Village collection system not working*

  (Moderator: Among the reasons mentioned, try to understand which reasons are the most important)

- Now for the <u>drop-outs</u>, what are the main reasons your household decided not to join CBHI? There are likely many reasons but try to think about the most important reasons

4. *Trends in Enrolment*

   a) *Questions about members*
- Why do you think some people have enrolled in the scheme?
- How are these people different from people who do not join CBHI? (Are they poorer? Are they rich? Are they sick? Are they more or less educated? Are they ethnic minorities?)

   b) *Changes in Levels of Enrolment*
- Have there been any increases or decreases in enrolment levels? For example, have there been any times when the number of people who joined CBHI increased over a short amount of time or decreased suddenly? (Examples: village collector stopped coming, drought, flood, changes in the way CBHI is implemented?)

   c) *Differences in Enrolment across Villages*
- In some villages enrolment rates are high and in other villages they are low. Why do you think this is the case? (promotion by mass organizations? Distance to hospital? Village chief? Village collector? Community participation?)
- Do many people in this village enroll in other types of insurance? (Private? Social Security? Civil Servant?)

Appendix C5. Focus group discussion guide for non-members

d) *Risk Preferences*
- Many people believe that health insurance is a way of minimizing the risk of having to make high payments on health care. In this way, insurance can be used as risk protection. However, because insurance in Laos is new it is possible that some people may think of their enrolment in health insurance as a risky venture. When you joined CBHI did you think about how it may help you avoid financial risk in the future? Do you see CBHI as something that increases or decreases your risk? Please describe why you think CBHI increases or decreases your risk?
- (If participants view CBHI as risk-minimizing ask the following) If financial risk is reduced by purchasing CBHI why has your household not enrolled?

Part II. Perceptions of CBHI and the Health Care System

I would now like to ask you questions about the way CBHI is managed in your community.

1. *Management/ contribution collection process*

- Do you think the CBHI fees are affordable?
- Can you tell me how the money is collected each month in this village?
- Have there ever been any problems with the village collection system? For example, does the village collector come regularly? Has there ever been an incident where the village collector has not taken the money to the hospital?
- Do you trust that the money people contribute to the scheme will be given to the hospital? Please describe why/why not.
- Do you trust that if someone pays money to the CBHI scheme they will get the benefits they pay for when they need them?

(Moderator: In the household interviews 75% of non-members reported that they trust that the money will be used the way it is intended. 23% reported that they were uncertain. The percentages were approximately the same when asked if people trust that they will get the benefits they pay for when they need them.) We want to confirm that these levels of trust are as high as they appear).

2. *Quality of care of health care system*

- What is your impression of the quality of care at the district hospital? Is quality good? Poor? Mediocre? Please describe why. *(If there have been changes in quality please ask why)*
- *Probe on the following aspects of quality if necessary (but try to let them say what is most important):*
  - *What about drugs? (availability and quality)*
  - *What about the way hospital workers treat patients?*
  - *What about skills of staff members? (E.g. do they give the correct diagnosis and prescribe the correct drugs?)*
  - *Are facilities clean?*
  - *Are waiting times appropriate?*
  - *What do you think about the equipment?*

Appendix C5. Focus group discussion guide for non-members

- Do you get the impression that <u>CBHI</u> patients are treated differently than <u>uninsured</u> patients? Please give examples to support your answer.

- Do you ever have to pay extra money to be seen faster or get better services? How are these payments organized? Who asks for the payments? Does this happen a lot? Are these extra payments the same for the insured and the uninsured?

Part III. Health-Seeking Behavior, Utilization and Expenditures (Important Section)

1. Source of Care

- If you had a mild to moderate illness what would you do for treatment? *(Try to describe the order of places visited, i.e. 1ˢᵗ: home; 2ⁿᵈ: pharmacy; etc.)*
- If you had had a more serious illness what would you have done as a first step for treatment?
    - Example: would you try to treat yourself?

2. Use of Services

   a) *Changes to use of services (ask to drop-outs only)*
   - Is your use of services different now compared to when you had insurance?
   - Ex. Do you go to the same place? Do you go at the same time or do you wait before seeking treatment? Do you try to treat yourself? Do you use services more or less frequently now? If so, why?

(Moderator: Keep in mind that transportation costs and time spent in hospital may prevent people from going to get treatment. Discuss if mentioned).

   b) *Use of services by members (ask to non-members and drop-outs)*
   - When someone with insurance is sick, do they go to the same place you go to? (E.g. do they go to the hospital first? Which hospital? Central? District? Thailand? Do they go to the pharmacy first? Do they treat themselves?)
   - Do they use services more or less frequently than someone without insurance?

3. Financial effects of insurance

- If you had a major illness that cost a lot of money, how would your household pay for the treatment?

(Let them describe what they would do: example: do they have savings? Would they sell household items? What would they sell? Would they borrow? From whom?)

- Do you think that if you had health insurance and you had a major illness you would be better protected? Why? Why not?
- How do you think insurance would affect the amount you spend on health care in total (including premiums)? Would your expenditure increase? Decrease? Stay the same?

Part IV. Wrap-Up of Discussion (Wrap-Up of Discussion: Don't spend more than 15 minutes)

Moderator: Explain that there are a few questions left.

1. Future Enrollment

- Do you expect to be enrolled in CBHI in one year from now? Why? Why not?
Moderator: The household survey showed a high percentage of people plan to be enrolled in the scheme in 1 year from now (65% said they plan to be enrolled while 29% are uncertain). This high willingness is not consistent with the low coverage rates.

2. Improvements to CBHI

- Now I'd like you to think about how the scheme could be improved in the future so that more people would enroll.
- Please tell me about any changes you think should be made to the scheme and why. Think about changes that would encourage other members, such as you to enroll.

Concluding Remarks

This concludes our discussion. I want to thank you very much for your time. Please feel free to comment on anything else that you wanted to say during the discussion but didn't get the chance.

Appendix C5. Focus group discussion guide for non-members

Appendix D1. CBHI summary policy note

The following note was prepared for policy-makers in Lao PDR and was translated into Lao and disseminated at the national and provincial levels.

Community-Based Health Insurance in Lao P.D.R.: Understanding Enrollment and Impacts

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Background

Health care in Lao P.D.R. is primarily financed through direct out-of-pocket payments by households. These payments include expenditures on services and drugs from public health facilities, pharmacies, private providers, traditional providers, and facilities outside the country. As in other countries, high reliance on out-of-pocket financing contributes to low utilization of health services and risk of impoverishment.

In an effort to increase health service utilization, decrease health-related out-of-pocket expenditures, improve health outcomes and generate resources for the health sector, the Government of Lao PDR is trying to expand coverage of health insurance and risk protection schemes. Community-based health insurance (CBHI) is one of the main risk-protection schemes in the country and targets the informal workforce. Other health protection schemes include the Civil Servants' Scheme (CSS), Social Health Insurance (SHI) for private and state-owned enterprises and health equity funds (HEFs) for poor households. However, outside the Civil Servants' scheme, coverage rates are low (See Figure 1).

Figure 1. *Insurance coverage in Lao PDR*
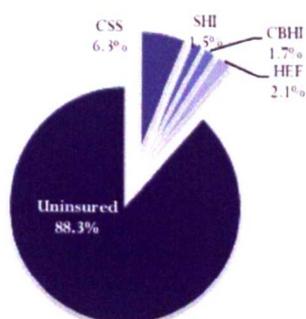
This note summarizes findings from a study of the CBHI scheme, designed to better understand the status of the CBHI program and identify challenges and opportunities to expand enrollment. The study also examined the impact of the scheme on health care utilization, source of care, and out-of-pocket expenditures.

Overview of CBHI

CBHI has become one of the key risk-protection schemes and is expected to play an important role in helping the country move toward universal coverage in the health sector. Under the scheme, which was introduced as a pilot project in 2001, the MOH contracts public hospitals to provide services for CBHI members. Benefits include outpatient and inpatient services including primary health care, specialist services, diagnostic tests, and prescribed drugs that are available at the hospitals. Members are required to initiate treatment at the primary contracted hospital – typically the district hospital.

The main target group for the CBHI scheme is defined as households who are self-employed or working in the informal economy and are not covered by other social protection schemes. This group comprises approximately 52 percent of the population.[1] Enrollment in the scheme takes place at the household level and the cost of premiums varies according to urban or rural residence, and number of household members. The contribution rates were originally set at between 2.5 to 3% of average household income.

To date, CBHI operates mainly in urban and semi-urban areas, but the MOH intends to expand to more remote areas in the future. However, after 9 years of piloting, CBHI in Lao PDR faces a number of challenges. One of the main challenges is the low coverage rates. Figure 2 shows that rolling out the scheme to new districts has not resulted in substantial increases in enrollment. By July 2009, the schemes were operating in 19 districts but reached only 7% of the population in the targeted districts (and 13% of the population in the targeted *villages* within those districts). This is the equivalent to 1.7% of the total

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[1] This figure is an approximation made by taking the total population and subtracting the formal sector and their dependents, the military, and the poor.

Appendix D1. CBHI summary policy note

population. Scaling up of the scheme to more remote areas is likely to pose further challenges due to low population density, poor geographical access to contracting facilities, and limited acquaintance with modern health care among ethnic minorities.

Figure 2. *Expansion of CBHI, 2002-2009*
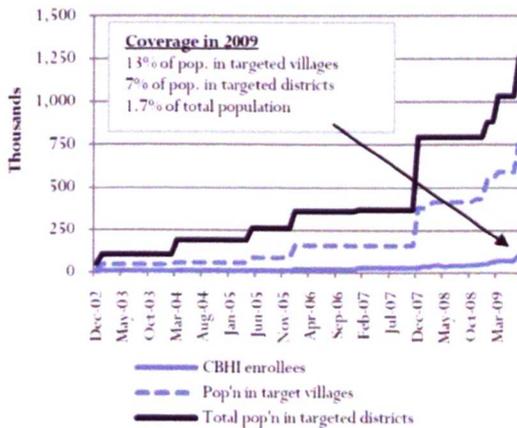
Another challenge facing the CBHI scheme is financial sustainability. For instance, in Vientiane Capital, the scheme made capitation payments to hospitals amounting to between LAK 40,000 to 45,000 (US$4.70 - $5.30) per insured person in 2009. However, in the absence of additional subsidies, the capitation payments are insufficient to cover the cost of services. As a result, several central hospitals in Vientiane Capital have refused to contract with the CBHI scheme.

In addition to the problems of low coverage and insufficient funding, high drop-out rates and late payments have been reported as challenges affecting the scheme. Anecdotal evidence also claims that the scheme suffers from *adverse selection*, the phenomenon by which high-risk individuals (e.g. the chronically ill) are more likely to enroll in health insurance because they know they will need to use health services in the future. And a recent study also describes various management challenges of the scheme, including insufficient staffing, insufficient technical capacities and scarce financial resources at all levels.

Study Approach

The study took place in 87 villages across 6 districts from Vientiane Capital, Vientiane Province, and Champasak Province. The primary method of the study was a household survey, which was administered from January through April 2009, using a cross-sectional case-comparison design of 1000 CBHI-enrolled households and 2000 comparison households, amounting to a total of 14,804 individuals. Data were collected through in-depth household questionnaires and a village survey administered to village chiefs. We also conducted six focus group discussions with members, non-members and drop-outs to better understand factors affecting enrollment.

Study Findings: enrollment

How do CBHI and non-CBHI households compare?

In comparing CBHI and non-CBHI members, a number of differences stand out.

- CBHI households are larger, more likely to be married, and more educated than non-CBHI households.

- CBHI households have significantly higher household consumption levels than comparison households but similar per capita consumption rates.

- CBHI households are in worse health, have more elderly household members, more women of reproductive age and more pregnant women, relative to comparison households.

- Attitudes toward different sources of care are similar among CBHI and non-CBHI households. However, CBHI households report a higher perception of quality of health care at the district hospital.

- CBHI members are more likely to have attended a CBHI campaign.

What are the most important factors affecting enrollment?

Although the comparison of the two groups discussed above is useful for understanding the sample, a simple comparison of means across two groups can confound the effects of different factors. To shed light on which factors influence enrollment when other factors are controlled for, multivariate analysis was undertaken. For ease of interpretation, results are presented as "predicted probabilities", which represent the probability that a household will enroll in CBHI when all other factors are held constant at their mean value. When we compare predicted probabilities for "representative individuals", we can see how the probability of enrollment changes as the variable of interest (e.g. education level) changes.

The results from this analysis is presented in Figures 3 and 4. A few determinants stand out as particularly important.

- *Age and education of household head.* Households in which the head is older are significantly more likely to enroll. The probability of enrollment is also higher if the head has vocational training or post-secondary education (relative to lower education levels).

Appendix D1. CBHI summary policy note

- *Household size.* Households with six or more family members are significantly more likely to enroll in CBHI.

- *Health status and risk perceptions/attitudes.* Having worse than average (self-assessed) health does not significantly increase enrollment. However, households in which a family member has either a chronic illness or had difficulty performing regular activities in the past three months were significantly more likely to enroll in CBHI than households with no signs of illness. These findings confirm that adverse selection is present in the scheme.

- *Economic situation of the household.* When other factors are held constant, households that are better-off financially (measured by per capita consumption) are significantly more likely to enroll in CBHI. The low probability of enrollment among low-income households is a concern from an equity perspective, and implies that most of the benefits from the scheme (and government subsidies to health facilities) accrue to the better off.

- *Factors affecting preferences for modern care.* Almost all households in the sample have a preference for modern health care over traditional care, and these factors do not explain differences in enrollment.

- *Exposure to CBHI.* People who have attended a campaign are more likely to enroll in CBHI than people who did not attend. However, it is possible that CBHI members were interested in joining CBHI and therefore attended the campaign in anticipation of joining the scheme.

Figure 3. *Predicted probability of enrollment by household characteristics*
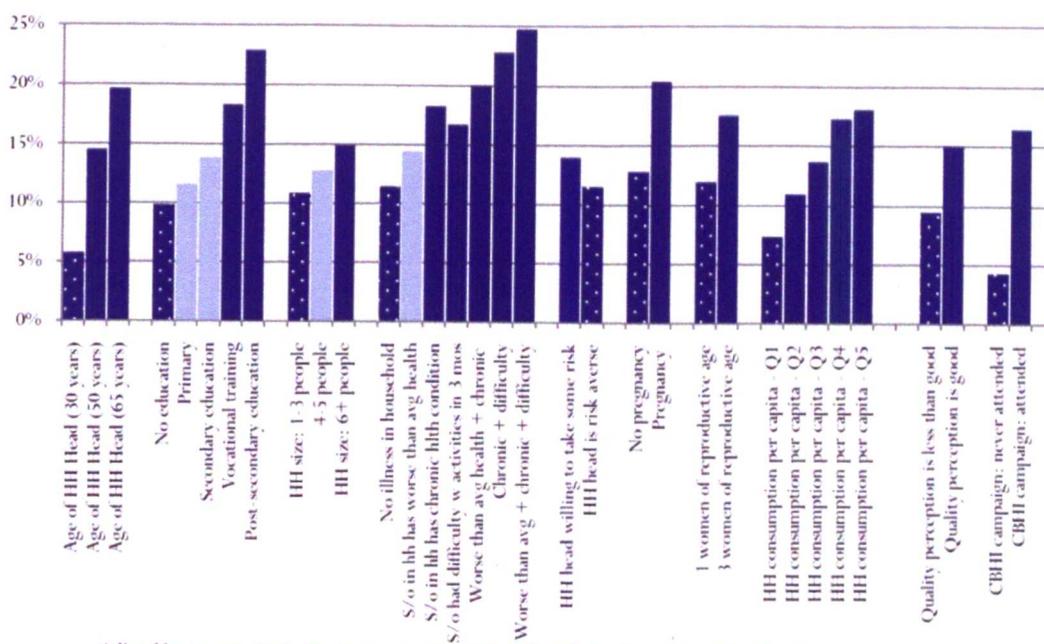
* *Variables represented by light colors are not significantly different from reference group (dotted bars).*

In addition to household level factors, there are also a number of important village level determinants of enrollment (Figure 5).

- *Location.* Households in urban villages have a significantly lower probability of enrolling in CBHI than households in semi-urban villages. This is most likely because there are fewer options for care in semi-urban areas.

- *Availability of care in village.* Households living in villages with a drug seller or health center are less likely to enroll in CBHI. Hence, if local options are available, households are less likely to enroll in CBHI,

which requires them to seek care in the district hospital.

- *Age and education of chief.* The probability of a household joining CBHI is higher among villages with younger, more educated chiefs.

- *Village size.* The probability of enrolling in CBHI is higher for smaller villages.

- *Exposure to CBHI.* Households in villages that have had at least three campaigns are significantly more likely to enroll in CBHI than households in villages with less than three campaigns.

Appendix D1. CBHI summary policy note

Even controlling for household and village level factors, there are large district effects, which are likely to reflect availability of services in the respective districts, as well as quality, price and other factors.

Figure 4. *Predicted probability of enrollment by village characteristics*
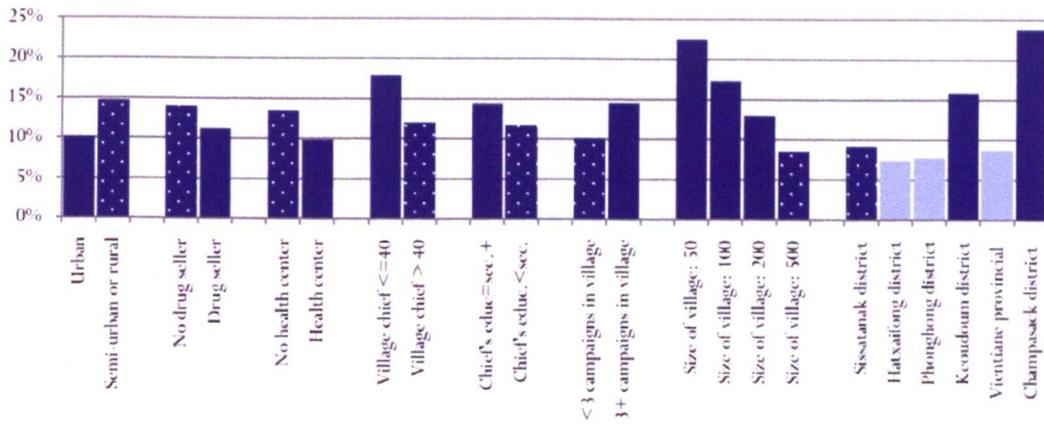
* *Variables represented by light colors are not significantly different from reference group (dotted bars).*

Study Findings: The Impact of Health Insurance

Are CBHI members more likely to use health care than the uninsured?

To assess the impact of insurance, we used a method known as propensity score matching (PSM). This approach uses a range of variables to match households that enroll in CBHI with households that are "similar" in key respects.[2] In this way, differences between CBHI members and non-members are controlled for, and comparisons are more reliable (they should represent the impact of the scheme).

Figure 6 reports the estimates of the impact of being enrolled in CBHI on utilization. The results show that the scheme has significantly increased utilization of both inpatient and outpatient services. In fact, CBHI members are almost twice as likely as non-members to have an inpatient visit in a one year period. In Lao PDR, where utilization rates are very low, improved access to care is an important step forward. The scheme does not seem to have an impact on the *number* of visits for those who use services.

How does CBHI membership influence the source of health care?

The study found that CBHI members are more likely than non-members to visit both district and provincial hospitals, for both inpatient and outpatient care. This is as expected given the requirement that patients initiate treatment at this level in order for costs to be covered. Results also indicate that insurance is encouraging use of public sector facilities, and decreasing the likelihood that members will use private clinics.

Do CBHI households spend less money on health care than the uninsured?

The study found that even though CBHI enrollees use more services, they face lower out-of-pocket expenditures for both inpatient and outpatient services than do the uninsured. In fact, out-of-pocket expenditures on inpatient visits for the insured were less than half of those of the uninsured, while inpatient expenditures for the insured were one eighth of the amount spent by the uninsured. When the cost of monthly premiums is included, CBHI members' total payments, for those using services, are still only one third of the amount incurred by the uninsured. However, when total expenditures (including the monthly premiums) are averaged across the entire sample (i.e. including those without a visit), there is no significant difference in out-of-pocket expenditures between the insured and uninsured.

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[2] Survey instruments were then designed to capture self-selection into the scheme. For example, the voluntary nature of the scheme makes it prone to adverse selection. "High-risk" characteristics such as chronic illnesses, disabilities, or even different attitudes and preferences for health care, have a direct effect on an individual's use of health services.

Appendix D1. CBHI summary policy note

Figure 6. *Differences in utilization of health services and out-of-pocket expenditures, CBHI relative to non-CBHI*

Category	Value
Inpatient visit in last 12 mos	92%
# IP visits in 12 mos	3%
IP visit at public facility in last 12 mos	104%
IP visit at district hosp in last 12 mos	316%
IP visit at prov hosp in last 12 mos	84%
IP visit at central hosp in last 12 mos	-18%
OP visit in last month	20%
# OP visits in last month	5%
OP visit to any public facility in last month	173%
OP visit to district hosp in last month	416%
OP visit to prov hosp in last month	92%
OP visit to central hosp in last month	-17%
OP visit to pharmacy in last month	-7%
OP visit to private clinic in Laos in last month	-42%
OP visit to healer in Laos in last month	-54%
OOPs on all IP visits in 12 mos	-62%
OOPs per IP visit in 12 mos	-62%
OOPs on all OP visits in last month	-88%
OOPs on all OP visits in public facility in last month	-78%
OOPs on all self-care in last month	-26%
OOPs per OP visit in public facility in last month	-80%
OOPs per self-care visit in last month	-55%
Total OOPs for all visits (incl. premiums) (12 mos)	-66%
Average OOPs for entire sample, regardless of use	-24%

Significant at .01 level ■   No significant difference ■

With the exception of the last two estimates, all OOP estimates exclude the cost of the monthly premium for CBHI members, and therefore represent the differences in cost at the point of service delivery.

Looking Forward: Challenges and Opportunities

The study has shown that the decision to enroll in CBHI in Lao PDR is influenced by a range of factors at the household and village levels, including health status, socioeconomic status, family size, and exposure to CBHI. With respect to its impact, findings suggest that CBHI can increase utilization of health services and provide financial protection for members. The scheme also encourages use of the referral system by directing members to lower levels of care.

Despite the positive results generated from this study, the findings must be viewed in a broader context. After 9 years of piloting, CBHI is reaching only a fraction of the population (less than 10% in the targeted districts). The low coverage is consistent with experience with voluntary health insurance for the informal sector from many other countries. Moreover, the scheme may be leading to greater inequity. Except for a few villages where health equity funds and CBHI operate together, there are no subsidies in place to cover the cost of CBHI premiums for the poor. Nor is a systematic targeting scheme in place for identifying poor households. Therefore, while impacts of the scheme have been mainly positive for members, they are very small at a population level.

Previous studies in Lao PDR make useful recommendations for strengthening management functions. This study also points to some immediate program changes that could be taken by the MOH to increase enrollment rates and improve the scheme. These include:[3]

- *Reach out to households that are least likely to enroll in CBHI.*
- *Improve quality of information dissemination regarding CBHI during awareness campaigns.*
- *Update contribution rates and improve collection.*
- *Strengthen the CBHI management and information system.*

But while programmatic changes to CBHI may strengthen the scheme, the size of the impact of these changes is likely to be small. Indeed, the majority of voluntary CBHI schemes that have been documented in the literature have failed to reach a large share of the target population. So, what options are

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[3] See English language notes for additional details.

Appendix D1. CBHI summary policy note

there for building on the experiences to date to make broad-based progress towards universal coverage?

The limits of CBHI and the need for increased government spending

CBHI represents an effort to generate resources for the health system and provide financial protection for households in the informal sector through contributory financing. This represents a significant challenge. For households in the informal sector, it is virtually impossible to verify income and relate contributions to ability to pay. Households are therefore asked to make flat-rate contributions. This creates a real dilemma. For the scheme to be affordable and inclusive, fees need to be kept low. But this also means that the benefit package has to remain either narrow or shallow. Alternatively, contribution rates can be set at a higher level to offer more generous benefits, but higher rates may exclude a significant share of the target population.

Currently, government spending on health in Lao PDR is very low by international standards, making efforts to mobilize resources through CBHI and direct out-of-pocket payments understandable. However, coverage of the scheme is likely to remain low in the absence of increased government subsidies. Fortunately, there are good opportunities to increase government spending on health in the coming years: hydropower and other natural resource revenues have gained importance, and improved tax administration is contributing to increased revenue collection.

But where should increased government spending be directed? There are a number of options. Government could increase spending to improve facilities and equipment; it could invest in human resources for longer-term improvement of service quality; it could increase financing of non-wage recurrent costs at facility level, and in that way reduce reliance on out-of-pocket payments (at least for some priority services); and it could provide direct subsidies to CBHI and Health Equity Funds to increase enrollment and expand benefits of these schemes.

These options are not mutually exclusive; in some cases they may even be complementary. It is beyond the scope of this note to discuss the advantages and disadvantages of different options, but it is important to consider the experiences of other countries that have faced similar challenges. For example, Rwanda is one of the few countries that have achieved relatively high coverage through a voluntary CBHI scheme, which has recently become mandatory. This success is due to good administration, strong political leadership, financial backing by the government and donors, and linkages with microfinance institutions and formal health insurance schemes. China has also recently achieved high

levels of coverage of a new voluntary scheme for the formal sector (the Rural Cooperative Medical Scheme). Again, political leadership and substantial government subsidies were critical to the rapid expansion and high uptake. However, in both cases there has been some degree of pressure from officials to enroll.

Other countries have extended social health insurance to the informal sector. In Vietnam and the Philippines, the poor are enrolled using taxation, while the non-poor have the option to enroll in a voluntary social health insurance scheme at their own expense. Colombia has a similar program except that enrollment for the non-poor is mandatory. Mexico has also made considerable effort in expanding insurance by offering households not covered by the formal sector the option of enrolling in a separate public health insurance program known as *Seguro Popular* (SP). The *SP* program is fully subsidized for the poor, and the non-poor contribute according to their ability to pay.

Although CBHI was a feature of the Thai health system for several decades, the scheme was eventually rolled into a tax-financed scheme, which covers the poor and non-poor informal sector and all those not covered by the formal sector schemes. Thailand's new (mandatory) tax-financed scheme, known as the Universal Coverage scheme, has proven to be a much more effective, equitable and efficient means of covering the informal sector and administratively is much less complex.

In summary, experiences from a wide range of countries suggest that CBHI can have benefits in terms of increasing utilization of health care and reducing out-of-pocket expenditures for members, but that it is very difficult to expand coverage to a point where benefits reach a large share of the population. Recognizing the limitations of CBHI, it is important to also consider alternative or complementary financing mechanisms, such as taxation or extension of social health insurance. These are by no means easy options: universal tax-financed schemes require adequate and sustained government financing; targeted schemes require effective targeting mechanisms; expansion of social security depends on increased formalization of the labor market and effective enforcement mechanisms; and contributory schemes require effective and efficient collection systems. The new health financing strategy that is currently being prepared provides a good opportunity to define a clear and realistic path to achieve broad coverage of key health services and improve financial protection in Lao PDR, and to address some of the challenges that will undoubtedly arise during the implementation phase.

Appendix D2. SHI Summary Policy Note

The following note was prepared for policy-makers in Lao PDR and was translated into Lao and disseminated at the national and provincial levels.

Enrollment of Firms in Social Security in Lao PDR:
Perspectives from the Private Sector

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Background

Increasing participation in health insurance and risk-protection schemes is a key priority for the Government of Lao PDR. The four main risk-protection schemes operating nationally include: 1) mandatory health insurance for civil servants; 2) mandatory social health insurance (SHI) aimed at private and state-owned enterprises; 3) voluntary community-based health insurance (CBHI) for the informal workforce; and 4) health equity funds (HEFs) for households living in extreme poverty.

As the Government of Lao PDR seeks to improve financial protection and access to health care, greater attention is being given to the social security scheme and the role it could play in expanding coverage. However, enrollment in social security - which is mandatory for all enterprises with at least 10 employees (according to a ministerial decree) - has remained low since the scheme's inception. Low enrollment is at least partly due to the small scale of the formal sector, limited geographic reach of the scheme (4 provinces only), lack of enforcement and weak regulatory structure, and limited capacity of the Social Security Organization (SSO - the implementing agency for the scheme) to attract new members.

This note summarizes findings from a study designed to shed light on the factors affecting enrollment in social security, employers' experiences with and perceptions of the scheme, and benefits provided to employees in firms that do not participate in SSO.[+]

[+] The study was designed and carried out by a team of researchers from the World Bank and London School of Hygiene and Tropical Medicine (LSHTM). A local research team was hired to carry out data collection under the supervision of the World Bank/LSHTM team. The study was funded by the World Bank. Implementation of the survey was approved by the SSO and ethical approval was granted by the National Institute of Public Health in Laos and LSHTM in the United Kingdom.

Overview of Social Security in Lao PDR

The social security scheme consists of a comprehensive package of health care and other benefits offered to employees in private and state-owned companies. Introduced in 1999, the scheme is managed by the SSO, a semi-autonomous organization within the Ministry of Labor and Social Welfare. Funding for the scheme is generated from a combination of employee and employer contributions. The health care fund, which also receives government subsidies, is the largest of all benefits and finances outpatient and inpatient care, and prescription drugs available at hospitals. There are no co-payments or limits on the number of contacts or services provided. Public providers are paid by capitation, which is fixed at LAK 80,000 (US$ 9.40) per insured person per year.

Overview of SSO legislation defining the target group

According to the SSO Decree 207, the official target group for social security includes all enterprises with 10 or more employees. However, in practice, the decree is difficult to enforce. The SSO is currently drafting guidelines for inspections and sanctions for non-compliant companies, and is also working with other line ministers to promulgate a law specific to social security. The new law will mandate enrollment of all enterprises *with at least one employee*, thus expanding the target population for the SSO scheme.

Overview of the current target group

While the official target group includes all enterprises with at least ten (and eventually one) employees, the SSO currently targets only a small subset of enterprises in the country based on information it collects from central and provincial tax registration offices in the provinces where SSO is operating. The size of the SSO target group, relative to all firms operating in the country is shown in Figure 1, which is based on data from the Lao Economic Census – a

Appendix D2. SHI summary policy note

survey that summarizes information about all economic units[5] operating in the country.

The *first (outer) ring* in Figure 1 represents all 209,484 economic units that operated in the country at the time of the economic census (2006), many of which had no permanent address or were located in communities without road access (e.g. mobile shops, street vendors, lottery sellers, tuk tuk drivers, and other temporary shops). When we exclude informal economic units and international organizations, we are left with 126,913 economic units (represented by the *second ring*). However, even though economic units in this category have a permanent location, many of these firms operate informally. For example, only 40% of businesses in this category hold a trade registration certificate, while only 71% hold a tax registration certificate. The *third ring* represents the 90,457 units that are paying some form of tax. Clearly, the fact that businesses are paying taxes indicates that they have a somewhat formal structure. However, even in this group, only a small share of units has a tax registration number (other units pay lump sum or daily taxes) – these are represented by the *fourth ring*. The SSO database of target firms comprises 1,320 enterprises (the *fifth ring*). However, due to low compliance, only 388 enterprises were enrolled in social security in January 2009 (the *sixth ring*). These 388 companies represent only 29% of companies in the SSO's database of target firms, but because most enrolled firms are large, this group accounts for 61% of targeted employees. Collectively these 388 companies provide insurance for 46,731 employees, and 86,690 beneficiaries– approximately 1.5% of the Lao population.

Figure 1. *Economic units operating in Lao PDR*
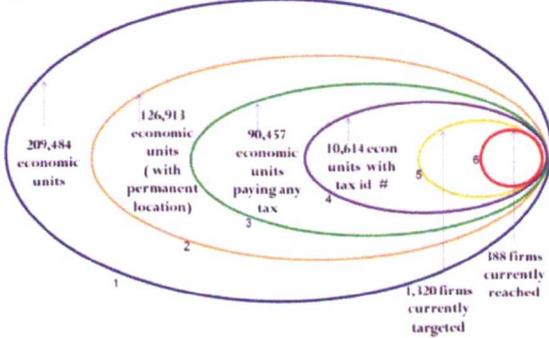
[5] An economic unit is defined as any business entity, either formal or informal, including shops that operate any economic activities. This group also includes non-profit and non-government organizations but excludes international organizations.

Overview of Study

Key policy questions

The study was designed to address a number of policy questions relating to enrollment (why are some firms enrolled and not others?), firm perceptions and experience with SSO, and the provision of health and other benefits in non-SSO firms.

Study Approach

To answer these questions, a structured questionnaire was administered to 130 employers (including 65 member firms and 65 non-member firms), interviewing heads of companies where possible. The sample was randomly selected from the four biggest industries in the SSO target group: manufacturing; construction; trade; and services, using strata that corresponded to industry and number of employees, with firms being selected from the SSO database. The survey restricted attention to Vientiane Capital.[6]

Findings

Enrollment in Social Security

In order to learn more about the factors that are related to enrollment, we performed multivariate logistic regression. This allows us to examine how one factor relates to enrollment while holding all other factors constant. These findings are presented as odds ratios in Appendix 1. Odds ratios represent the strength of the relationship between the variable of interest and enrollment in social security when all other variables are held constant. An odds ratio greater than one represents a greater likelihood of enrolling, relative to the reference group, while an odds ratio of less than one represents a lower likelihood of enrolling, relative to the reference group.

The findings show that companies whose leaders have a university education are more than three times more likely to enroll in social security, over companies whose leaders have less than a university education. Firms in the trade industry are also significantly more likely to enroll than firms in the services industry. Ownership was also found to be associated with enrollment. The odds of enrolling are approximately 23 times higher for state-owned enterprises

[6] As is often the case with firm surveys, the refusal rate was moderately high (between 67% and 80%). The former rate includes contacted firms in which nobody was available to be interviewed; the latter includes only explicit refusals. Interviewers attempted to schedule an interview three times before randomly selecting another enterprise. The sample was weighted to adjust for the refusal rates and the firms that were no longer in operation or could not be found.

Appendix D2. SHI summary policy note

than for private firms, which is not surprising given that social security is a government-mandated program. Although foreign-owned companies are not significantly more likely to enroll, mixed companies (in which ownership is shared between domestic and foreign owners) are 20 times more likely to enroll in social security than domestic companies. It is possible that mixed companies, due to the nature of their business, receive pressure to comply with industry regulations, or that these types of firms have a stronger compliance culture. Contrary to anecdotal evidence, larger firms were not more likely to be enrolled when other factors are controlled for.

What motivates employers to enroll/not enroll in social security?

To better understand employers' decisions to enroll, employers were asked to rate a number of possible reasons for enrollment/ non-enrollment on a scale of 1 to 5, with 1 being not at all important and 5 being very important. The results, summarized in Table 1, tell us more about employers' decision-making process. Among the insured, the most important reasons for enrollment were: to ensure employees are covered with health insurance; to increase employee satisfaction; and to improve the health and well-being of employees. The findings indicate that people are most concerned with the health insurance benefits within the social security scheme. However, retirement benefits are also relatively important.

Among the non-enrolled cohort of the sample, the most important reason for non-enrollment was that the company's benefit package is superior to social security (these statements are contradicted by findings on benefits actually provided by non-enrolled firms—see below). Other important reasons for not enrolling were: employers' lack of knowledge of social security, the poor quality of government hospitals, and the fact that employees do not use benefits or do not get sick.

Experiences with social security

What has been the impact of social security on business?

The majority of respondents (69%) stated that social security has had a positive effect on employee well-being and satisfaction (Figure 2). However, most feel that the scheme has had no effect on the ability to retain staff or recruit staff members. Employers explained that most job-seekers mainly consider salary when considering a new job, and are less concerned with benefits. Although 54% of SSO-enrolled employers said that the impact on overall business has been positive, almost half said there has been no effect.

Table 1. Most important reasons for enrollment/ non-enrollment

Reasons for enrollment	Rating (1-5)
To ensure employees have health care coverage	4.28
To increase employee satisfaction	4.11
To improve health and well-being of employees	4.08
To ensure employees have retirement benefits	4.00
Strong pressure from international bodies	3.05
Strong pressure from SSO	2.74
Strong pressure from employees	2.72
Strong pressure from membership organization	2.71
Reasons for non-enrollment	**Rating (1-5)**
Company benefits are better than SSO benefits	4.11
Do not know much about social security	3.42
Quality of government hospitals not good	3.22
Do not use health care benefits/ staff do not get sick	3.22
Employees do not want SSO	3.12
Cost of SSO is too high	2.97
Do not trust that money is used well	2.83
High turnover among employees	2.57
Many temporary employees	2.38
Employees prefer to purchase private insurance	2.35

Figure 2. Impact of Social Security on Business

■ Positive effect   □ No effect   ✦ Negative effect   ■ Not sure
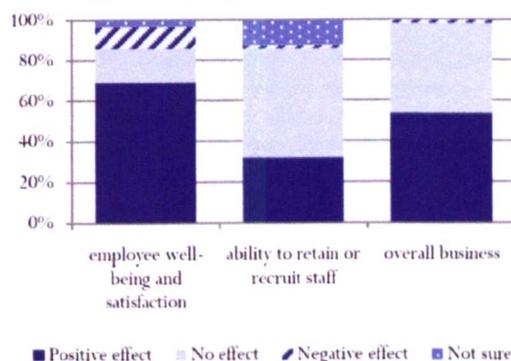
What are the strengths and weaknesses of the social security scheme?

Employers who are currently enrolled in social security were asked to comment on the strengths and weaknesses of the scheme. The three most common responses are described below.

Appendix D2. SHI summary policy note

Strengths

- *Social security reduces employers' expenditures on benefits* for which the company would otherwise pay.

- *Social security provides convenience and cost-savings to employees,* because employees can use cards for hospital care, rather than paying cash.

- *Being enrolled in social security improves employee well-being.* Employers report that SSO gives employees a sense of "security", "warm feelings", "trust", and "confidence".

Weaknesses

- *Employers do not perceive the scheme to be of good value,* either because staff do not use benefits (in particular health services) or because contributions exceed the benefits used.

- *Quality of care at hospitals is poor,* according to SSO members - and perceived to be worse for social security members (e.g. longer waiting times). One respondent mentioned that because of the long waiting times and poor quality "...members sometimes have to go to the private clinic for treatment."

- *Communication by SSO regarding benefit structure and the procedures associated with the scheme is poor.* Members reportedly have very little contact with SSO staff and therefore no opportunity to learn more about SHI.

Is the benefit package offered by non-member firms comparable to social security benefits?

Many non-member firms reported that the reason for not enrolling in social security is that they prefer to offer their own benefits. However, the study findings show that the non-enrolled firms offer far <u>fewer</u> benefits to their employees than do SSO member firms (See Figure 3). For example, very few non-enrolled employers offer health care benefits: only one quarter of non-SSO firms make direct payments for employees' health care, while none have private insurance. In contrast, some SSO member firms offer extra insurance for programs that are already included in the social security package (e.g. private health insurance, maternity benefits, coverage for injuries, and sick leave).

With respect to temporary employees, very few in either group receive any benefits. However, 15% of SSO firms do extend social security and pay annual leave to their temporary employees.

**Figure 3.** *Benefits offered to SSO and non-SSO employees*
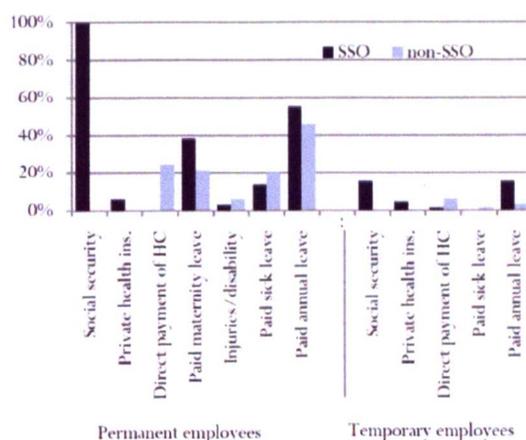
Are member firms employing strategies to evade social security contributions?

One of the challenges of implementing and enforcing mandatory insurance is evasion of contributions. For example, published articles on international experiences with social security describe ways in which many enterprises evade social security payments (e.g. by underreporting the number of permanent employees, reclassifying job descriptions, underreporting earnings, and failing to remit employee contributions).

In Lao PDR, evasion is likely to be minimal, given that penalties are not yet enacted for non-compliance. This is largely confirmed by the study. Controlling for other factors, SSO firms are no more likely to employ temporary workers than non-SSO member firms. There is however some indication that some firms give employees the option to enroll in social security, perhaps to avoid social security payments. The study compared data on the number of permanent workers in the company with the number of employees enrolled in social security for the same time period. The findings, presented in Figure 4, show that 44% of member firms enrolled less than 100% of the permanent workforce in the scheme. In fact, 94% of employers with social security benefits openly admitted to giving employees the option to enroll. Allowing opt outs can lead to "adverse selection", the phenomenon whereby younger and healthier individuals leave the scheme and higher risk individuals remain in the scheme. Adverse selection can drive up the average cost of health care, ultimately threatening sustainability and effectiveness of risk-pooling.

Appendix D2. SHI summary policy note

Figure 4. *Percent of permanent workforce enrolled with SSO*
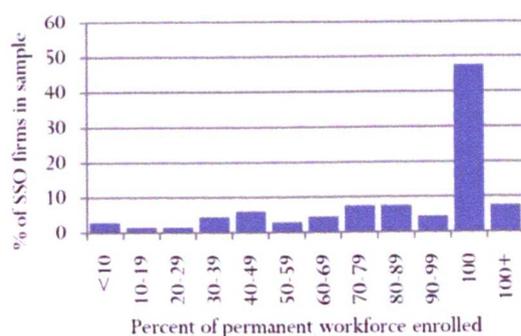
*Firms that offer SS benefits to both permanent and temporary employees are effectively enrolling more than 100% of their permanent workforce.

Looking forward: Challenges and Opportunities

This study brings to light a greater understanding of employers' attitudes toward social security. Although there are limitations to the study, the results are helpful for understanding perspectives of the private sector – a group that is not usually engaged in health sector reform discussions.

A number of points emerge from the study and background analysis that will be important to consider in ongoing efforts to strengthen the scheme and expand coverage.

- *Improve awareness-raising and promotion activities.* Awareness-raising activities and face-to-face meetings with employers could help expand enrollment. However, new approaches will be required to reach smaller firms with less formal structures. The study also highlights the need for improved and more regular communication between SSO and employers.

- *Promote improvement in quality of health services.* Poor quality of care in government hospitals is a major reason that employers do not enroll in social security. Although quality improvement is a complex issue requiring multifaceted interventions, there is nonetheless potential for the SSO to influence service delivery by using its purchasing power to encourage better quality care.

- *Make the social security package, as a whole, more attractive.* Although SHI is the largest and most important benefit within the social security package, enrollment in SHI is also linked to the broader package of social security benefits, in particular retirement pensions. Based on experience from other countries (e.g. Vietnam), it is important to ensure that these benefits are sufficiently attractive to help stimulate enrollment.

- *Strengthen capacity and introduce legislation to enforce enrollment.* The scheme is effectively voluntary at present, as the SSO does not have the power to penalize non-compliant firms. Both capacity and a legislative framework are needed to address this challenge. Beyond enforcement, capacity also needs to be strengthened in other areas, such as public relations, health care purchasing, and so forth.

- *Expand target group.* As the SSO looks to increase coverage of social security in the future, there are several possible routes it could consider. These include: 1) expansion within the current target group; 2) expansion to new geographic areas; 3) expansion to smaller enterprises; and 4) expansion of the target group beyond the narrow group of tax-paying firms. Unfortunately, each of these routes is associated with significant challenges. Even if compliance among the current target population increases to 80% of beneficiaries, coverage would remain very low at a population level because the size of the target population is already very small. Even expanding the target group to "hard-to-reach" groups (e.g. firms with less than 10 employees, firms without a tax identification number, firms not paying any tax), is likely to have a limited impact on coverage as the smaller firms do not add substantially more employees. Moreover, compliance for less formal firms will be difficult to enforce.

- *Improve tax registration.* One way to facilitate enforcement would be to bring more firms into the formal tax system—e.g. by linking tax and business registration processes.

- *Consolidate administration to enhance administrative efficiency.* In the long run it may be more efficient to collect and enforce SHI premiums and other contributions through a single agency (e.g. the tax office, Ministry of Finance), rather than through the SSO. This approach has been used in Argentina and is expected to facilitate compliance because employers and workers need to make payments only to a single agency rather than to multiple agencies[1] However, the advantages and disadvantages of combining collection in Lao PDR would have to be analyzed further.

But while these operational changes can strengthen SHI and expand enrollment among the target population, other challenges may be more difficult to overcome. First, there are high costs to stronger enforcement, as offices will need to be established throughout the country (currently only one national office and two provincial offices exist) and infrastructure and legislation required for enforcement will need to be developed. The costs would likely increase considerably once smaller and less formal firms are targeted. Furthermore, stricter enforcement can increase incentives

Appendix D2. SHI summary policy note

for firms to remain in, or join, the informal sector or for firms to evade social security payments – both of which would significantly reduce revenues to the SSO.

Although the social security system can play an important social insurance role for the small but growing formal sector, it is unlikely to be a vehicle for improving access to health services and reducing health-related financial risk on a broad basis, or for generating substantial revenues for the health sector. To achieve these goals, complementary approaches will be needed. It may be possible to build upon other health protection schemes, including community-based health insurance and health equity funds. Currently, the different health protection schemes are highly fragmented. However, the new health financing strategy envisages that the schemes will be merged over the next few years. This would be an important step towards improved coordination and reduced administrative costs. Integration under one organization could also increase purchasing power and facilitate better supervision of quality. Nonetheless, given the current low coverage rates it is unlikely that simply merging the schemes will help to increase enrollment rates.

To address the challenge of low coverage, substantial government (or donor) financing will be required. Currently, government spending on health in Lao PDR is very low by international standards, but it is expected that opportunities to generate government revenues will increase in coming years due to growing natural resource revenues and improved tax administration. And if the government commits to using these revenues to increase spending on health, these funds could be used to either subsidize health insurance coverage directly, or increase funding to health care providers (potentially based on measures of performance) and reduce the charges for patients. Both options can contribute to improved access and financial protection, and both have advantages and disadvantages. In developing a new health financing strategy, it will be critical to base plans for the future on a realistic assessment of what can be achieved through current health protection schemes, and to be clear on the government expenditure commitments that are needed to achieve health sector objectives.

Appendix D2. SHI summary policy note