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HEALTH INSURANCE DEMAND
AMONG FORMAL SECTOR
EMPLOYEES IN ADDIS ABABA,
ETHIOPIA

A Dissertation Submitted to the
School of Medicine

Presented in Fulfillment of the
Requirements for the Degree of
Doctor of Philosophy
(Global Health)

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Trinity College Dublin
Dublin, Ireland
2014

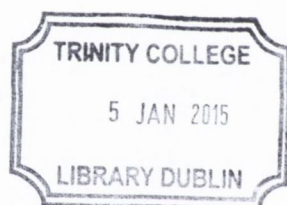
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Summary

Understanding and predicting consumer preferences for alternative health insurance design packages is important for a country striving to introduce health insurance. Historically health services and health insurance programmes were decided by medical professionals. Though, a considerable amount of research has been conducted in preference elicitation in health care, there are only a handful of studies in the area of health insurance. Analysis of the preference for health insurance is vital as it provides information to help the efficient allocation of resources. Particularly, introducing a new health insurance system requires a good understanding of both the demand and supply side factors which are crucial for an effective health insurance intervention.

Currently, the Ethiopian health system is undergoing reforms. One of the reforms being undertaken is the introduction of health insurance at a national level. The success of this policy in part depends on the design of health insurance packages that meet consumers' preferences. It is therefore important to understand the factors that determine the demand for health insurance among potential enrollees of the scheme.

This PhD research focuses on the assessment of demand for social health insurance among formal sector employees in Addis Ababa, Ethiopia. Both qualitative and quantitative methods are used to investigate the demand for health insurance. A quantitative survey is employed to assess the design features of existing health insurance packages. The knowledge and determinant factors of health insurance are then explored using a qualitative approach. The results of the quantitative survey and qualitative study are used for a further and deeper analysis of preference for health insurance using a discrete choice experiment (DCE).

All respondents of the quantitative survey revealed that they do not make direct contributions to the health insurance benefits they get. However, cost-sharing mechanisms are applied. Out of the total respondents, 64.1% revealed that they cover part of the health care expenses out of pocket.

The findings from the qualitative study showed that there is a general lack of knowledge about concepts of health insurance such as risk pooling, cost sharing, and health insurance policies. The participants of the FGDs strongly opted for comprehensive benefit packages if they have to be enrolled to health insurance

schemes. They also argued that investing in quality services should precede the initiation of social health insurance.

A discrete choice experiment (DCE) was designed with eight attributes of premium, benefit packages, providers of services, and coverage health insurance for drugs, inpatient, outpatient, and tests. The results from the DCE are in line with the results from the qualitative study. Benefit packages, providers of services, and full coverage of drugs are found to be the three attributes with high marginal values. Respondents derive the highest increase in utility from health insurance with 'no exclusions' in the benefit packages. Respondents attached the next highest marginal weight to health insurance packages having both public and private health care providers. Full coverage of drugs is found to be the third most important attribute in the choice of a health insurance package.

The willingness to pay result shows that, respondents were willing to contribute on average about 4% of their monthly salary as premium for health insurance. Although respondents from the upper wealth category were willing to pay more (income effect) for some of the health insurance attributes, those from lower wealth class were also found to be willing to pay more (risk aversion) for other attributes. Women, respondents with positive attitude, and never married groups were also willing to pay proportionally more on average than their counterparts for most of the health insurance attributes. This shows that biological need, risk aversion, attitude, and income effect are important in demand for health insurance. In addition, risk aversion may be more important over income effect in some cases.

The results of the DCE also show that respondents were willing to trade among different levels of attributes. For instance, they were willing to give up 'no exclusions' in benefit packages for lower monthly contribution with 'exclusion of both dialysis and dental care'. The results also show that respondents are not very sensitive to attributes such as 90% coverage of outpatient services, and laboratory tests. Thus, effective co-payments can be applied on these services.

In general, although there are concerns about the effectiveness of the health system in terms of quality and availability of services, respondents had positive attitudes and demand to health insurance.

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Ethical Approval

The ethical approval for this research was received from the College of Health Sciences, Institutional Review Board, Addis Ababa University and Trinity College Dublin, Research Ethics Committee.

The participants of the study were informed about the study and informed was obtained prior to data collection. The participants of the study were explained that they do not get any benefit by participating in this research. They were also informed that they are not obliged in any way to participate in this research. They were ensured that they can leave the studies at any time in the data collection process. Since the study investigates the demand for health insurance, there were no procedures or questions that would harm the participants. Personal identifications were not collected. Participation was entirely voluntary and responses were kept confidential.

Glossary and Operational Definitions

Benefit packages: health care services which are covered by health insurance

Cap: The maximum health care expenditure which would be covered by health insurance

Community based health insurance/Community health insurance/Micro insurance: is voluntary health insurance and targets people in informal sector

Copayment/Co-insurance: portion of total health care expenditure that is covered by the beneficiaries of health insurance

Core family: immediate family members of a household (husband, wife, and children)

Deductible: portion of total health care expenditure (flat amount) which needs to be paid by beneficiaries before health insurance become effective

Derived demand: demand for particular service based on the demand for the service for which it is an input

Employment based Health insurance/ Employer sponsored insurance: is a private health insurance provided to employees by their employer.

Extended family: include immediate family members and parents (husband, wife, children, and parents of the husband and wife)

Marginal utility: the change in utility from one additional unit

Marginal value: the change in valuation from one additional unit of the variable under consideration

Moral hazard: a situation in which insured individuals consume more health care than they would if they have to pay the full price themselves

Premium: contribution to health insurance by beneficiaries of the scheme

Prescription drug: a drug that can be obtained only with a prescription from physicians

Risk aversion: a behavior in which assured outcome is preferred to risky alternative

Sample organizations for this research: are organizations that are selected from the total target organizations to be included in the study.

Sample population for this research: are the selected employees from the sample organizations that were involved in the study.

Social health insurance: is a type of compulsory health insurance in which the beneficiaries are formal sector employees

Target organizations for this research: The target organizations of this study are formal sector organizations in Addis Ababa.

Target population for this research: The target populations of this study are formal sector employees in Ethiopia

Utility: a measure of satisfaction as a result of consuming a particular good/service

List of Acronyms

CBA	- Cost Benefit Analysis
CBHI	- Community Based Health Insurance
CEA	- Cost Effectiveness Analysis
CHAT	- Choosing Healthplans All Together
CI	- Confidence Interval
CMA	- Cost Minimization Analysis
CSA	- Central Statistical Agency
CUA	- Cost Utility Analysis
CVM	- Contingent Valuation Method
DCE	- Discrete Choice Experiment
DHS	- Demographic and Health Survey
DSS	- Demographic Surveillance Site
EBHI	- Employment Based Health Insurance
FFD	- Full Factorial Design
FGD	- Focus Group Discussion
FMOH	- Federal Ministry of Health
FrFD	- Fractional Factorial Design
GDP	- Gross Domestic Product
GP	- General Practitioner
HI	- Health Insurance
HIV/AIDS	- Human Immune Virus/Acquired Immune Deficiency Syndrome
HMO	- Health Maintenance Organizations
HSDP	- Health Sector Development Program
ILO	- International Labour Organization
IP	- Inpatient
MIC	- Middle Income Countries
MOH	- Ministry of Health
NHS	- National Health Services
NGO	- Non Governmental Organization
OP	- Outpatient
PPACA	- Patient Protection and Affordable Care Act
QALY	- Quality Adjusted Life Year

RP	- Revealed Preference
SHI	- Social Health Insurance
SP	- Stated Preference
SPSS	- Software Package for Social Sciences
SSRN	- Social Sciences Research Network
TB	- Tuberculosis
UK	- United Kingdom
US	- United States
USA	- United States of America
USD	- United States Dollar
VIP	- Very Important Person
WDR	- World Development Report
WHO	- World Health Organization
WTAC	- Willingness to Accept Compensation
WTP	- Willingness to Pay

Outline of the Dissertation

This dissertation has two parts: the first part presents the introduction and theoretical background of the thesis. Part one is further categorized into two chapters. Chapter 1 provides the introduction and background to the thesis. It also includes the description of the study area and the population. The motivation and overview of the contribution of the PhD work are also explained. It also presents the aim and objectives. The specific research questions are stated along the objectives. Chapter 2 focuses on the literature review. Both theoretical and methodological reviews are presented. The literature review comprises the essence of health insurance, types of health insurance, development of health insurance in low income countries, and factors important in the demand for health insurance. Moreover, a systematic review of health insurance benefit packages is presented. The methodological review focuses on discrete choice experiment and its application for health insurance.

Part two presents the empirical work which includes the details of the methodologies and the results for the survey, qualitative study, and discrete choice experiment. Chapter 3 presents the methods and results of the survey. The survey focuses on the description of design characteristics and utilization of the employment based health insurance. The methods and results of the qualitative study are discussed in Chapter 4. The findings of the qualitative study include: knowledge about health insurance, health insurance proclamations, employment benefits and factors important in the demand for health insurance. The results of Chapter 3 and 4 are used to identify and refine the attributes of health insurance that are used for the discrete choice experiment. Chapter 5 gives descriptions DCE design. It describes how the attributes, attribute levels, and the experimental design for this research. Chapter 6 deals with the results of the discrete choice experiment. It describes the valuation of different attributes of health insurance identified from survey and qualitative studies, willingness to pay and trade-offs among the attributes. The final chapter, chapter 7 provides an overview of the finding from all the work and gives conclusions. Suggestions are provided for policy and recommendations are made for further research.

Part I

THEORY AND LITERATURE REVIEW

The aim of this PhD research is to investigate the demand for health insurance among formal sector employees in Ethiopia. Part I of this research presents the background, theory, and review of related literature in health insurance in two chapters. Chapter one deals with introduction and background of the issue. Objectives and research questions are also presented in this chapter. It also deals with the motivation of the research and conceptual model. Chapter two describes the theoretical, methodological, and empirical review of literature.

Chapter 1 INTRODUCTION AND BACKGROUND

1.1 Introduction

A successful design of health insurance in part depends on understanding and predicting the preference for health insurance among potential enrolees (Case 1989; Forgionne 1991). The pattern of individual choices for any health intervention largely depends on whether the attributes of the interventions meet their preferences (Thurstone 1927; Coast 1999). Consumers usually collect information on the features of particular schemes to make informed choices (Ryan, Gerard et al. 2008). In the choice process, they make trade-offs among attributes either consciously or subconsciously (Louviere, Hensher et al. 2000). Thus, identifying the valuation and trade-offs among attributes is crucial in explaining demand for health insurance.

Historically health services or health insurance programmes had been decided by medical professionals. An understanding and consideration of consumers' perceptions, preferences, and expectation is a recent phenomenon in health care (Chakraborty, Ettenson et al. 1994; Ryan 1999; Gates, McDaniel et al. 2000). As customers became informed and their expectation increase, health care managers were required to know the consumers' reactions and choices for specific programs (Gates, McDaniel et al. 2000) since consumers can discriminate among alternatives by their purchasing power.

The underlying factors that guide individuals' choices include constraints, opinion, experience, need, attitude, etc. (Planas-Miret, Tur-Prats et al. 2005; Schreyögg, Stargardt et al. 2005). This research employed both qualitative and quantitative methods to identify and measure the important attributes that determine the demand for health insurance. Knowledge and perception of health insurance concepts is explored among the potential enrolees of social health insurance in a developing country context. This provided background information on the knowledge, attitude and experience in relation to health insurance among the respondents. The design characteristics of existing employment based health insurance are also assessed in order to get an overview of health insurance package. Preferences for health insurance package is further analyzed using a discrete choice experiment to get deeper understanding of consumers' valuations and trade-offs among health insurance attributes.

In the process of introducing any type of health intervention, there is a need to involve potential consumers of the services rather than considering them as passive recipients. However, in the case of health insurance, the preferences of the consumers seem overlooked as there are only limited studies particularly in developing countries (Gates, McDaniel et al. 2000; De Allegri, Sanon et al. 2006; Dror, Koren et al. 2007; Onwujekwe, Onoka et al. 2010).

The poor population segments in low income countries can only buy severely rationed health insurance packages. Consequently, they are exposed to high potential distress due to the limited access to health care and they wish to be involved in the allocation decisions of health care interventions (Coast 2001; Dror, Koren et al. 2007).

The design of social health insurance can be compromised by the tradeoffs made to enhance the acceptability of the policy proposal to key actors (Carrin 2001; Steffen 2010). Thus, designing successful health intervention, one that is considered to be valuable and demanded by the population requires that policy makers have adequate knowledge of community preferences.

Health systems are expected to be responsive to people's preferences and expectations. In the case of health insurance, the benefit package should deliver the kind and level of health care services that is satisfactory to the people. Thus, socioeconomic and demographic contexts of the insured population must be considered while planning the entitlements. The financial risk of the individual is also as important as considerations of cost-effectiveness in the delivery of health care services. The benefit packages must be financially viable; and from the beneficiaries point of view, the services should be both relevant to the needs of as well as attractive to enrollees (Barnighausen and Sauerborn 2002; Normand and Weber 2009).

In principle health insurance schemes can better address health care financing challenges compared to out of pocket payments. However, the actual experience in different countries shows that, despite its long history, social health insurance (SHI) is far from achieving these objectives and the coverage is limited to certain segments of the population. The major reason behind this is lack of due preparation in clearly

defining the design of the scheme which includes benefit package, management and administrative capacity (Steffen 2010).

As is the case in many developing countries, household health care expenses in Ethiopia are mainly made out of pocket (MOH 2001; MOH 2010). However, this type of payment mechanism has been criticized for different reasons (World Bank 1993; Van Damme, Van Leemput et al. 2004); and countries have been encouraged to introduce prepayment mechanisms. Many low income countries had been moving away from out of pocket payments and they had been initiating different types of health insurance mechanisms though with varying successes (World Bank 1987; Wiesmann and Jutting 2000; Carrin 2001; Orem and Zikusooka 2010).

Ethiopia had been slow in initiating health insurance; the health insurance strategy was developed only in 2008 (MOH 2008). As specified in the strategy, all formal sector employees will be covered by compulsory social health insurance. The scheme will be first introduced among civil servants and an incremental approach will be used to expand the coverage for all formal sector employees. Moreover, informal sector employees will be covered by community based health insurance which will be scaled up following a pilot study. To that effect, many activities and studies are conducted to supply information on different dimensions of health insurance (MOH 2007a; MOH 2007b; MOH 2008).

Even though studies have been conducted on the different aspects of health insurance, there is no research that assessed the demand side issues of health insurance in Ethiopia. Thus this research tries to fill the knowledge gap regarding the factors important in the demand for health insurance. Moreover, as the use of discrete choice experiment is rare in preference elicitation of health insurance, this research also contributes to the few studies by applying the DCE in a new area.

The findings from this work can be used by policy makers in their endeavours of introducing health insurance to the formal sector employees. The recommendations made can also initiate further studies in the area. Furthermore, the process of conducting this research contributes in creating awareness among the potential enrollees of social health insurance. This is important contribution as involving the people from initial stage helps in creating sense of ownership and increasing acceptability of policy changes.

1.2 Scope

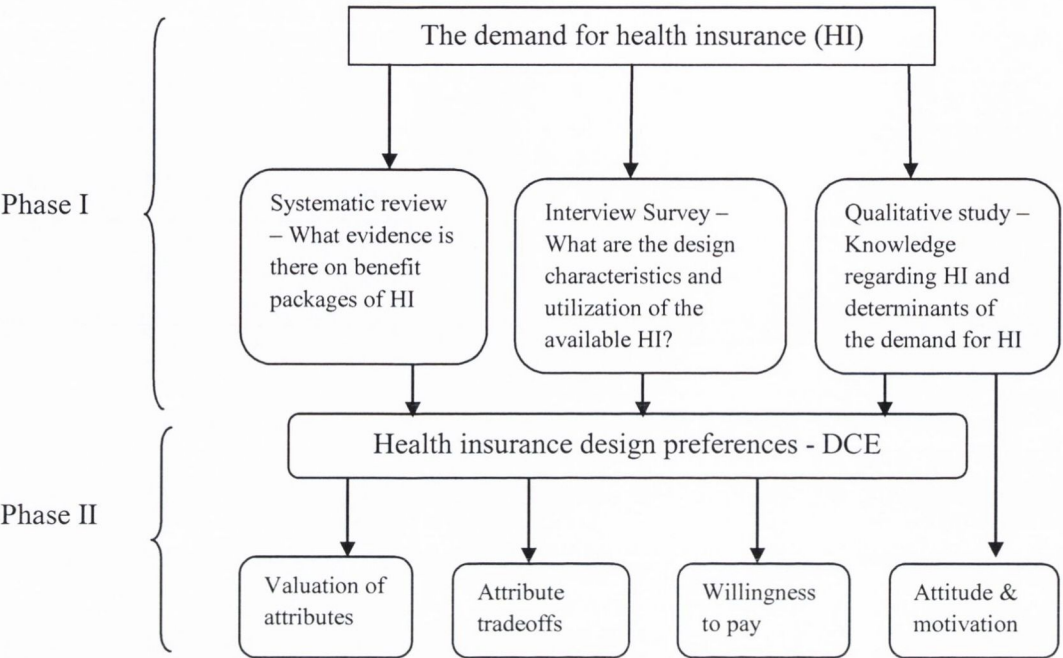
The motivation for this thesis arises from the government policy aimed at introducing health insurance at national level. The focus of this research is social health insurance which targets formal sector employees. The main research question is ‘What health insurance design package do people prefer?’ The research is conducted in Addis Ababa, the capital city of Ethiopia, where a large proportion of formally employed people resides.

As depicted in Figure 1.1, the research is conducted in two phases in such a way that the information produced in the first phase feeds into the second one. In the first phase, a literature review, interview survey, and qualitative work are conducted. The literature review provides background and a theoretical framework on health insurance and choice analysis. The literature review also includes a systematic review on ‘benefit packages of health insurance’ to synthesize the evidence on types of health care services that are preferred by the entitled people. This is compared with the types of services that are usually covered by the different health insurance schemes.

The empirical work begins with an interview survey which focus on describing the design characteristics of the existing employment based health insurance. The survey is conducted among currently insured employees in order to document and learn the common features of health insurance scheme and use by the beneficiaries. The qualitative study, on the other hand, is used to explore important factors in health insurance demand among both insured and not insured population.

The evidence from the literature review coupled with the results from the survey and the qualitative study are used to conduct further investigation on the preference of health insurance. In phase two, a discrete choice experiment (DCE) is used to elicit preference between alternative health insurance packages. The DCE results are also used to analyze tradeoffs among the different attributes of the insurance schemes. Furthermore, willingness to pay estimates is produced from the DCE. The second phase of the study also incorporates information on the aspects of motivation and attitude towards health insurance. This is investigated by extracting attitudinal statements from the qualitative study.

Figure 1.1: The Schematic Illustration of the Investigation and Thesis Summary



1.3 General Objective

The general objective of this research is investigating the demand for social health insurance among formal sector employees in Addis Ababa, Ethiopia.

1.4 Specific Objectives

- To conduct systematic review on health insurance benefit packages;
- To assess the design characteristic and use of employment based health insurance;
- To explore the knowledge and determinants of demand to health insurance; and
- To elicit preference and the tradeoffs among different attributes of health insurance design.

1.5 Primary Research Question

What health insurance design package do formally employed people prefer?

1.6 Specific Research Questions

The specific research questions that will be addressed by this research are:

1.6.1 Systematic Review of Literature

- Which health care services are included/ excluded in the benefit packages of different health insurance types?
- Which health care services are preferred to be included in health insurance by the beneficiaries?

1.6.2 Employment Based Health Insurance Survey

- What are the design characteristics of employment based health insurance?
- How much is the utilization level of employment based health insurance?

1.6.3 Qualitative Study

- How much knowledge do the formal sector employees have regarding health insurance?
- Which design characteristics do the formal sector employees prefer for health insurance?

1.6.4 Discrete Choice Experiment

- Which health insurance attributes are important for potential enrollees of health insurance?
- How much are the potential enrollees willing to pay for health insurance?
- How do respondents trade between attributes? That is, how much of one attribute are they willing to give up in order have more of other attributes?
- What attitudes do the formal sector employees have regarding health insurance?

1.7 Overview of the Contribution and Its Potential Significance

Analysis of the demand for health insurance is important as it contributes to resource allocation. Currently, this is of particular interest to Ethiopia as health insurance policy is underway (MOH 1998; MOH 2007a). So far, only a minority of the formally employed population benefited from employer sponsored health insurance. However, the contribution of employer sponsored health insurance in terms addressing health financing challenges and features of the scheme are not investigated. Moreover, there are no studies which assessed the demand for health insurance among formally employed population.

Introducing health insurance, as a new way of financing health care, needs deep understanding of a wide range of issues including determinants of the demand for the health insurance, costs of health care provision, institutional arrangements, provider payment mechanisms, etc. Exploring the demand and preferences for different attributes of health insurance provides vital information for resource allocation. Besides, it potentially increases satisfaction and utilization among consumers if their preferences are considered in the design of health insurance schemes.

Apart from exploring and analyzing the preferences for health insurance, assessment of the design features of employer sponsored health insurance provides background information regarding the basics of the health insurance package. This practical information highlights the ways to design health insurance in the Ethiopian context. However, documenting the features of the existing health insurance is important for its own sake.

There are only a few studies investigating preferences for health insurance elsewhere, and they have mainly used descriptive (using simple exercises) or qualitative approaches (Danis, Biddle et al. 2002a; Danis, Lovett et al. 2006; De Allegri, Sanon et al. 2006; Dror, Koren et al. 2007). In contrast, this PhD research used both qualitative and quantitative methods. In particular, a discrete choice experiment is applied to analyze the preferences for different attributes of health insurance. Discrete choice experiments are a stated preference method used to infer consumers' preferences for different health insurance design packages. Stated

preference valuation techniques use hypothetical scenarios to assess the values attached to the attributes of the good under consideration. It is said to be a very useful technique in the health sector since many aspects of health care are not explicitly traded in markets (Gerard, Ryan et al. 2008). However, the application of discrete choice experiment (DCE) is not common in health insurance. Only a handful of studies have used DCEs to assess the preference for health insurance (Chakraborty, Ettenson et al. 1994; Gates, McDaniel et al. 2000; Kerssens and Groenewegen 2005; Becker and Zweifel 2008; Trujillo, Ruiz et al. 2012).

Thus, this research contributes to the knowledge regarding the demand for health insurance in a context where health insurance is new. The application of different techniques provides deeper understanding of attributes of health insurance for consumers. Among the attributes considered for the analysis is the amount of monthly contribution, used to estimate willingness to pay for health insurance. This produces good understanding of the premiums that could possibly be proposed as monthly contribution by the beneficiaries.

Overall, this PhD research will provide insights on the choice and value of the different attributes and levels of the health insurance by assessing alternative design package valuations of the target population. It contributes its part to a discipline which is not yet well explored in the context of low income countries. Particularly, for the Ethiopian health care system, which is in the process of initiating health insurance; the findings of this study can fill the demand side knowledge gap and can directly complement the policies and strategies of health insurance in respect.

1.8 Context

1.8.1 Ethiopian Health System

The Ethiopian health system is pluralistic in nature; public owned healthcare facilities, private providers, and NGOs providers.

Public services have gone through deep political, administrative, and economic decentralization since 2002. The objectives of the decentralization were to increase local participation aimed at strengthening ownership in planning and management of

government services; to improve efficiency in resource allocation; and to improve accountability of government and public services to the population (MOH 2002).

Since 2010, a three-tier system for service delivery was implemented. The lowest tier is a primary health care unit (PHCU) which consist of five satellite health posts, one health centre, and a primary hospital to serve 5000, 25000, and 100000 population respectively. Above the PHCU is a general hospital that serves populations of 1 million; then is found a specialized hospital that serves 5 million populations. Along with this, there have been rapid expansions of private facilities both for profit and not-for-profit. These private facilities are playing significant role in boosting health service coverage and utilization (MOH 2010b).

The financing of the health care is the most fundamental mechanism in affecting how the health care system performs (World Bank 1987; WHO 2000). Health care system in Ethiopia is financed from multiple sources. Government, rest of the world (bilateral and multilateral donors, international NGOs), and households comprise the major sources of financing for the health care. The four consecutive rounds of National Health Accounts (NHA) (MOH 2001; MOH 2003; MOH 2006; MOH 2010) show that in general there has been an increase in health care expenditure both in nominal and real terms. Health spending comprised 4.5% of GDP in 2007/08. Per capita health expenditure grew from US\$ 7.1 in 2004/05 to US\$ 16.1 in 2007/08. Most of the increase in health expenditure came from households and donors. Between 2004/05 and 2007/08, household and rest of the world expenditure increased by 176% and 143% respectively. Rest of the world, household and government respectively contributed 40%, 37%, 21% of health expenditure in 2007/08. Private employers and other private funds account for the remaining 2%.

User fees for health care financing in Ethiopia were introduced in the early 1950s (MOH 2001a). In order to get services from health care facilities, clients are expected to make out of pocket payments. Even most of those covered by private health insurance, has to make the payments out of pocket and request for reimbursements from their health insurance provider.

However, article 46 of the civil servants proclamation No. 515/2007 (House of Peoples' Representatives 2007) requires a prepayment mechanism for health care

and it grants a right (to the civil servants) to health care services without incurring additional out of pocket payments.

“1. A civil servant who has completed his probationary period as specified under sub-article 2 of this article:

a. shall have the right to get all medical services in government medical institutions without incurring additional costs;

b. shall have the right to get medical services, with half pay, in government medical institutions for his spouse and minor children

2. The agency jointly with other relevant government institutions shall undertake studies regarding the amount of monthly contribution to be made by civil servants towards the medical benefits they are entitled to under sub-article 1 of this article....”

Despite this proclamation, civil servants had not had access to prepayment mechanism. They rather make out of pocket payments to get health care services as well. On the other hand, organizations (such as public enterprises, NGOs, and private organizations) which are regulated by Labour Proclamation Number 377/2003 (House of Peoples' Representatives 2003) do not have such binding proclamation regarding medical benefits. However, most of these organizations provide health insurance benefits to their employees. Therefore, the employees of these organizations will get the health insurance benefits based on the specific regulations of the respective organizations. In most cases, employees will request for reimbursements after making out of pocket payments for services sought. Still, there are few organization who purchase healthcare services on behalf of their employees. Therefore, the beneficiaries are not expected to make out of pocket payments.

Though these health insurance mechanisms are beneficial at individual level, in general, they make insignificant contribution for the overall financing of the health system. As indicated above, they accounted only for 2-3% (MOH 2001; MOH 2010) of the total health expenditure.

1.8.2 Description of Study Area and Population

This PhD research was conducted in Addis Ababa; the capital city of Ethiopia. Addis Ababa is selected for this research because being the main politico-administrative and business metropolitan centre, the large majority of the formal sector employees of Ethiopia reside in the city. Formal sector jobs are the major source of employment in the city though informal sector activities are leading activities at a national level (CSA 2011; CSA 2012).

The total population in the city was estimated to be 2.7 million in 2007 out of which 76% were of working age (15-64) (CSA, 2008). The fertility rate of the city has been declining over years and it was estimated to be 1.5 in 2011, while the national fertility rate was 4.8 (CSAa 2011). The age structure of the population in Ethiopia is typical of a young population. Children under the age 15 account for about half of the population and only 4% of the population were above age 65 in 2011 (CSAa 2011). Having such a youthful population increases the burden on the working population since they have to provide food, health, education and so on for the non-working population. In 2008, the dependency ratio for the country was estimated to be 131.7 and it was 103.6 for Addis Ababa. This means in Addis Ababa there were 103.6 dependents to be supported for each 100 economically active persons (CSA 2011; CSA 2012).

According to the Ethiopian DHS 2011, the health status as measured by the infant mortality rate is consistently better in urban areas compared to rural areas. In 2011 the infant and under five mortality rates for the country were 59 and 88 per 1000 live births. Addis Ababa has the lowest under-five mortality of 59 per 1000 live births though there is no significant difference in infant mortality across different regions. The infant mortality for the same time period in Addis Ababa was 42 per 1000 live births (CSAa 2011).

The national HIV prevalence was 1.5 in 2011 while it was 5.2 in Addis Ababa (CSAa 2011). Moreover, a study in the city using mortality surveillance revealed that the city is bearing double burden of disease. Out of the total deaths in Addis Ababa in 2002-2011, 59% occurred due to infectious diseases, maternal and perinatal conditions while non-communicable diseases accounted for 31% of deaths (Misganaw, Hailemariam et al. 2012)

Health service provision in Ethiopia and particularly in Addis Ababa, has been improving over the last five years (MOH 2010b). There are more health care facilities and pharmaceutical retail outlets in the city compared to other regions. In general there are more private health care facilities in the city compared to government facilities in all levels of low, medium and high. In 2007/08, there were 41 hospitals among which only 6 were government funded. In terms of distribution of private clinics, there were 109 special, 169 higher, 146 medium, and 127 lower clinics (MOH 2009). However, the Ministry of Health is undergoing thorough reforms, one of which is the expansion and renovation of public health care facilities. Accordingly five of the hospitals were renovated and the expansion of 3 hospitals was completed in 2011. In addition, construction of new health centres (one health centre for every 25000 population) is underway on top of the previously available 31 health centres (MOH 2009).

Human resource for health is also better in Addis Ababa. Overall the physician to population ratio for the country was 1:36158 while it was 1:3056 for Addis Ababa. Similarly, the national ratio of all nurses to population was 1:3870 while it was 1:845 for Addis Ababa in 2009 (MOH 2010b).

Chapter 2 BACKGROUND AND LITERATURE REVIEWS

This PhD research investigates the demand and preferences for health insurance. Thus, a review of related literature is presented to provide the theoretical and empirical background of the issue. This chapter deals with the review of the theoretical, methodological and empirical literature. The first section presents the theoretical review which focuses on the theories of demand for health care and health insurance, the historical development of health insurance, and the conceptual framework. The second part presents the methodological review related to types and paradigms of evaluation. A detailed review on discrete choice experiment (DCE) along with the theoretical framework is provided. A specific review of DCEs on health insurance preference studies and benefit packages is also provided. Finally, the empirical review on preference of health insurance is presented.

2.1 Theoretical Review

2.1.1 *Theories of Demand for Health Care and Health Insurance*

2.1.1.1 Theory of demand for health care

Economists have developed two alternative models to explain the demand for health care.

The first approach uses the neo-classical paradigm of rational consumer and constrained utility maximization theories (Parkin, Powell et al. 2008; Varian 2010). In this approach, health is considered to be one of the many goods individuals consume. Consumers are assumed to have a well-defined preference and standard consumer theory is used to study the determinants of demand for health care.

In the event of illness, individuals decide whether to seek medical care. The decision making may not be straight forward since it involves many processes to realize a decision which brings maximum utility. They have to compare the potential risks and benefits of health care, forego other consumption goods that could be financed with the money used to purchase health care, and also compare the prices and

qualities of providers. Moreover, the decision making involves advice from families and friends (Jutting 2005).

The second approach is known as a human capital model and was developed by Grossman in 1972 (Grossman 1999). Based on the human capital theory (Becker 1964), Grossman used a household production function model (Becker 1965; Lancaster 1966) to explain the role of households as both producers and consumers of health. He argued that health care is sought to produce health in combination with other inputs. In this approach, health is considered both as a consumption and production good. As a consumption good, health is a source of utility and as a production good it is used to earn a living and produce other goods.

In contrast to the orthodox neo-classical theory, individuals do not demand health care services per se but better health. They combine health care services with other inputs and time to 'produce' health. Demand for medical care is thus a derived demand for health. People demand health care and related things like medicine and health insurance to realize their basic demand for good health (Grossman 1999; Jutting 2005).

2.1.1.2 Theory of demand for health insurance

The demand for health insurance exists because illness and the expenses related to health care are unpredictable. People cannot foresee if they will get ill and what kind of health problem they will face. The unexpected illness results in unexpected health care expenditure which at times can be impoverishing. Thus, people demand health insurance to secure themselves from unexpected future risks of illness and expenditure.

"The value of health insurance is rooted in the unpredictability of medical spending" (Cutler and Zeckhauser 1999)

2.1.1.2.1 Risk aversion and marginal utility of Wealth

Expected utility maximization is a key concept that explains the existence of health insurance. Individuals' decision making under uncertainty is made based on the maximization of expected utility. Individuals cannot correctly predict the future of

health care expenses. Thus, risk-averse people want to protect themselves from unforeseeable health care expenses (Jutting 2005; McPake and Normand 2008).

“The desire to replace an uncertain loss with a steady and certain premium payment is known as risk aversion” (Getzen 2010)

The utility function that describes a risk-averse individual is concave (Figure 2.1). This implies a risk-averse individual has a declining marginal utility of wealth. The horizontal axis of Figure 2.1 depicts wealth, where w_L is the case for lowest wealth and w_H the highest wealth. The expected wealth by an individual is represented by w_E . If the individual received w_E amount of wealth with certainty, s/he will get a total utility of U_E . However, s/he is not certain of getting w_E amount of wealth. Thus the expected utility of uncertain wealth reduces; the expected utility of w_E in this situation will be only U_U . However, the individual can receive the same amount of utility (U_U) with certainty from a lower amount of wealth w_U . A risk-averse individual accepts this; implying that, a risk-averse individual would prefer to get lower wealth with certainty, instead of facing a risky higher income.

Unless people are risk-averse with a diminishing marginal utility of wealth, health insurance will not be purchased. The degree of uncertainty and risk perception may vary between individuals and depend on the context; however, normally it is assumed that people are risk averse in relation of health (Jutting 2005).

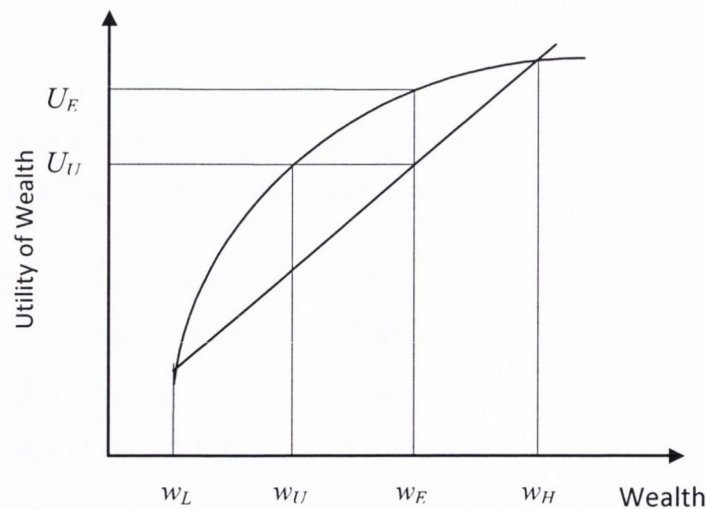


Figure 2.1: Risk Aversion and Utility of Wealth
Source: based on (McPake and Normand 2008)

Figure 2.1 is reproduced in order to illustrate how an individual purchases health insurance (Figure 2.2). For an individual, there are two possible outcomes with respect of illness. Either s/he stays healthy and receives income Y or s/he gets sick and receives income $Y - C$, where C is health care expenditure. Let, the probability of being sick be ρ . If an individual does not have insurance and falls ill, s/he has to pay the full amount of health care expenditure out of pocket (which equals the probability of illness multiplied by the health care expenditure – ρC). The expected utility of income in this condition will be U_E , which corresponds to expected income of $Y - \rho C$ (lower than U_Y). Thus the expected utility from Y reduces because of anxiety related to the uncertain event of illness occurring. Still the individual would have acquired higher utility (U_{Y2}) if s/he was certain of getting income $Y - \rho C$.

The individual can derive U_E amount of utility with certainty at relatively lower income of $Y - \rho C - x$ than $Y - \rho C$. Under this condition, a risk-averse individual would pay the expected health care expenditure (ρC) and an extra x amount (which could be charged to cover for administrative costs of provision of health insurance) of her/his income for insurance as premium and get a certain utility of U_E . Paying the premium for health insurance will guarantee him/her the expected utility with certainty for given probability of illness occurring (ρ).

The amount of premium that insurees pay needs to be sufficiently high to cover health care expenses and administrative costs. Otherwise, insurance companies will not sell insurance. Insurance companies, try to predict how large premiums need to be to cover all the predicted expenses related to provision of health insurance. An actuarially fair premium is equal to the probability of illness multiplied by health care expense (ρC). However, insurance companies need to cover administrative costs and also make some profit. Thus the premium that will be charged on individuals will be actuarially unfair (McPake and Normand 2008). However, as discussed above, risk-averse individuals still purchase health insurance as long as the price on top of the actuarially fair premium is not very high (less than or equal to x) on figure 2.2.

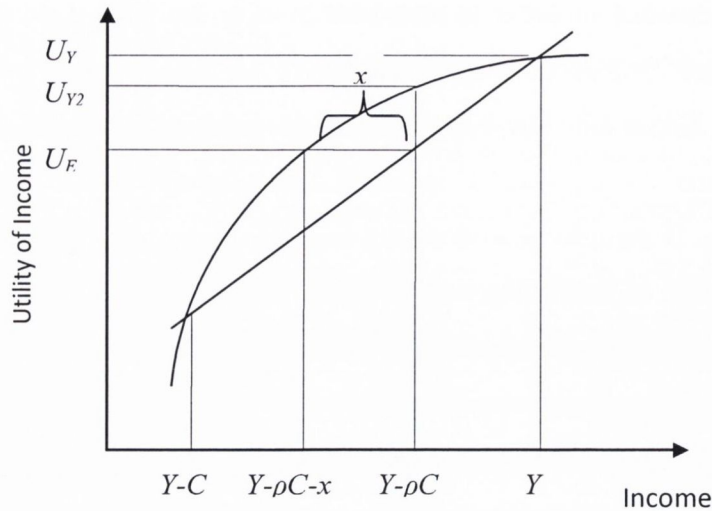


Figure 2.2: The Demand for Health Insurance

Thus, based on Figure 2.2 demand for health insurance depends on four major factors:

1. How risk averse the individual is
2. Income/wealth of the individual
3. Health care expenditure
4. The probability of illness occurring

In general, risk-averse individuals would like to shift money from healthy (more money) states to sick (less money) states thereby smooth the marginal utility of income. Since they have diminishing marginal utility of income, the marginal utility of income is lower when the person is healthy so that s/he can transfer money in anticipation of illness. Transferring of income for bad times occurs until total utility is maximized (Cutler and Zeckhauser 1999). From societal point of view, money is transferred from people with more money (healthy) to people with less money (sick) (Getzen 2010).

Risk-aversion varies from individual to individual depending on the preference function. It also varies according to the level of diminishing marginal utility of wealth. The viability of health insurance markets is determined by the extent of risk aversion with respect of wealth (McPake and Normand 2008).

2.1.2 The Development of Health Insurance

2.1.2.1 The evolution of health insurance in industrialized countries

The evolution of health insurance is closely linked to the social history of late eighteenth and early nineteenth century Europe. In mediaeval Europe, groups of workers and small farmers in the same industry or location formed societies (“guilds”) to help members at times of sickness. Solidarity was the underlying principle in which the guilds were developed. The threat of health care expenses due to illness was regarded as a risk that needs to be shared. Thus, these societies formed sickness funds as mutual benefit and each member of the societies contributed to the funds on regular basis for a use during sickness (Ron, Abel-Smith et al. 1990; Barnighausen and Sauerborn 2002; Criel and Van-Dormael 2007).

Subsequently, the employers also recognized the need for financial security of workers during illness and adopted the initiatives. In particular, employers in high-risk or remote industries, such as mining and timber, made employment conditional upon membership and regular contributions to such schemes. Furthering the interests of the workers, these industrialists also hired ‘company doctors’ and made medical care available on regular basis. Moreover, as workers unions became strong, medical coverage was advocated to be the preferred union benefit. By 1850, there were various types of prepayment schemes. However, only small proportion of the population was covered until living status improved and the population became assertive (Getzen 2010). Political leaders also realized the popularity of these arrangements and accepted the initiatives. They have developed firm and positive approach regarding the sickness funds and supported employers who adopted the workers’ initiatives (Ron, Abel-Smith et al. 1990).

Germany is the pioneer country in taking political steps to enact sickness funds into law. In 1883, the health insurance bill was passed. The legislation stipulated that workers earning less than a specific amount of salary should compulsorily be member of a sickness fund; and that workers and employers should finance the sickness fund through compulsory contributions. The beginning of health insurance was marked with this enactment and this policy gradually spread throughout Europe in the first half of the twentieth century (Ron, Abel-Smith et al. 1990; Barnighausen and Sauerborn 2002).

The political acceptability of compulsory health insurance steadily rose in many countries. Other European countries followed Germany and initiated various forms of compulsory social health insurance schemes. Austria endorsed health insurance in 1887, Norway in 1902, United Kingdom in 1911, Sweden in 1914 and France in 1930. By the early 1930s, most industrialized countries of Europe had compulsory health insurance under the name of sickness and maternity insurance (Ron, Abel-Smith et al. 1990; Getzen 2010). The prepayment schemes first covered employees of major manufacturing plants with regular salary though the coverage for their dependents was partial. The coverage was broadened over time to include self-employed and people who worked in informal sector such as agriculture, retail, daily labour, and shops (Getzen 2010).

After the founding of the International Labour Organization (ILO), a new concept of comprehensive and universal protection of health (as opposed to protection from sickness) emerged as stipulated in the ILO Recommendation of 1944:

“A medical care service should meet the need of the individual for care by members of the medical and allied professions and for such other facilities as are provided at medical institutions

(a) with a view to restoring the individual's health, preventing the further development of disease and alleviating suffering, when he is afflicted by ill health (curative care); and

(b) with a view to protecting and improving his health (preventive care)” (ILO 1944)

An alternative to compulsory health insurance was the launching of ‘National Health Services’ (NHS). Under the NHS, health care benefits are entirely provided by the State as a public service to all citizens. The United Kingdom enacted the National Health Service (NHS) in 1948 (Department of Health 2000). Hungary (1920) and USSR (1935) also adopted the National Health Service approach. Eastern European socialist countries followed the same path (Ron, Abel-Smith et al. 1990).

In general, each country developed a variety of social health insurance system which suited the traditional values, national conditions, social ideology, and preferences. Different options, in terms of institutional framework, cost sharing mechanisms, health service delivery arrangement, and financing were applied. However, the common theme of all the systems was the comprehensiveness of coverage irrespective of income and solidarity between the different groups of the population

(Ron, Abel-Smith et al. 1990). By 1980s almost all developed countries had viable health insurance for all citizens either as national health services, social health insurance, or a combination of the two (Getzen 2010).

Among the industrialized countries, United States followed a different path by adopting private insurance provided by both non-profit and commercial companies. However, the Social Security Act Amendment established Medicare and Medicaid at federal level to cater for the elderly and the indigent (Cohen and Ball 1965). The working population is mainly covered with employer sponsored health insurance plans and a large proportion of the population still lacks health insurance today (Ron, Abel-Smith et al. 1990; Getzen 2010). However, a fundamental transformation of health insurance was marked in the United States by the Patient Protection and Affordable Care Act (PPACA) legislation of 2010 (The United States Government 2010). This act aims to expand public and private insurance coverage by improving access to quality and affordable healthcare to all Americans and by eliminating discriminatory practices against people with poor health conditions, uninsured and the poor.

2.1.2.2 The development of health insurance in middle income countries (MIC)

The development of social health insurance in middle income countries is not well documented. Since the social and economic context of these countries differ from that of European countries, middle income countries (Latin American, Asia, North Africa, and Middle East) implemented different approaches in an effort to initiate health insurance. Three main strategies were adopted (Ron, Abel-Smith et al. 1990).

- I. First, health insurance institutions built health care facilities for the insured people (Gimeken 2003). The financial resources for the construction of the facilities are drawn from the contributions made by employers and employees with occasional support from the state. In some cases, additional resources were acquired through loans. Medical and administrative personnel for these facilities were employed and remunerated by the health insurance agency.
- II. Second, an incremental approach was used to enroll the population into compulsory insurance. Various criteria applied to initially limit compulsory

health insurance to specific group of population. Coverage to the non-insured expanded over time.

- III. Third, consumers and contributors were given authority to make decision regarding the management of the health insurance. Thus, the decision on enrolment, contribution and benefits were made either by representatives or elected governing body.

2.1.2.3 Health insurance in Sub-Saharan Africa

Many African countries introduced social health insurance systems after independence. However, the schemes were not effective as they were a copy of their former colonizers (Ron, Abel-Smith et al. 1990). Moreover, resource constraints following the economic crisis of 1980s challenged the provision of health care services in these countries. The structural adjustment programs adopted in response to the economic crisis led to further reduction in government spending in public services. This means there were even less resources for health care and people were expected to pay user fees out of pocket at the time they needed care (Peabody 1996). This aggravated poor health conditions and health care financing problems which demonstrated the need for prepayment mechanisms. Consequently, various types of compulsory and voluntary health insurance schemes emerged since 1980s (Wiesmann and Jutting 2000; Carapinha, Ross-Degnana et al. 2011). The evolution of these schemes was in part influenced by the Alma-Ata declaration which called for a new approach in health care services to attain the goal of “Health for All” by 2000 (WHO 1978). In 2003, there were about 600 community based health insurance initiatives in West Africa alone (Ndiaye, Soors et al. 2007).

2.1.3 Conceptual Model of the Research

The conceptual framework for this research is adopted from (Louviere, Hensher et al. 2000). According to the model by these authors, consumer’s decision process starts with awareness of the need for a particular good. This is respectively followed by information search, evaluation of alternatives, utility formation, choice/delay/non-choice, and post-choice/re-evaluation. This research investigates the demand for health insurance in a low income country context. A little modification was made to this framework. In the context of low income countries, prior to the awareness of the need for health insurance, there should be an awareness

about what health insurance itself is, its advantages, and how it works since there is low understanding of what health insurance is in low income countries (Asenso-Okyerre, Osei-Akoto et al. 1997; De Allegri, Sanon et al. 2006; Basaza, Criel et al. 2008).

Therefore, for this research, it is maintained that health insurance choice begins with the awareness of what health insurance is in terms of purpose and availability. Once people are aware of health insurance, the initial stage is to be aware of the need for health insurance. People need to be aware if they need health insurance or not. Need awareness may come at different times and situations. People may be aware of the need for health insurance when they get sick and unable to pay out of pocket or by sensitization of different organization working on health insurance.

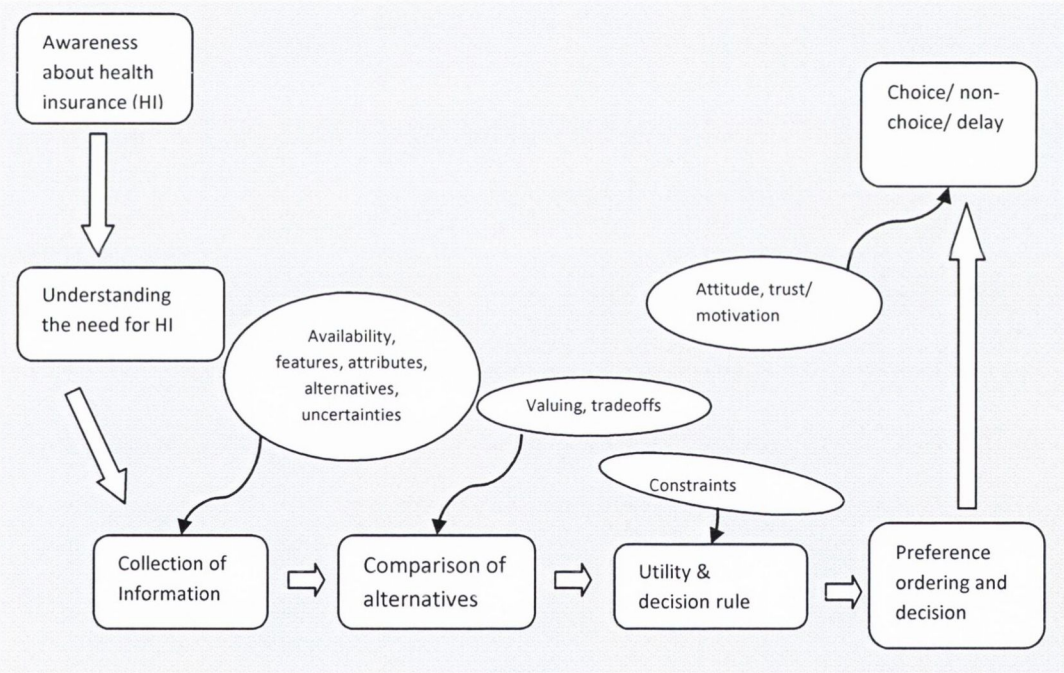


Figure 2.3: Consumer's choice process
Source: adapted from (Louviere, Hensher et al. 2000)

Once people are aware of the need for health insurance, they collect information regarding different aspects of health insurance. They check the types of health insurance available. They collect information on the different attributes of health insurance. The attributes of health insurance include the premium level, enrolment type, coverage, benefit packages, providers of services etc. They also see if there are alternatives in terms of different types of health insurance (if there are different

types of health insurance to choose from). If there is no alternative health insurance, the comparison can also be made between health insurance and out of pocket payment. People also investigate uncertainties related to the schemes.

The next step is to compare different alternatives. Depending on the information they collected about the health insurance design packages, they will compare the alternative schemes.

After comparing the alternatives health insurance packages, they will come up with preference orderings. Preference orderings are produced based on the utility functions of the individuals. They compare the utilities they derive from the different alternatives given the constraints and make decisions. They evaluate the attributes of the different health insurance packages (insurance verses out of pocket payments) and make tradeoffs among the different attributes to reach a decision.

After going through all these steps and having the preference and decision on the most preferred option, individuals may choose the most preferred option and purchase health insurance. However purchase of health insurance may be delayed or may not happen at all if it is not compulsory. This can happen due to different constraints including income, attitude, and other supply side factors. For instance, even if health insurance is preferred to out of pocket payments, people may not join community based health insurance if they do not have sufficient money to make the contributions, or if they are not happy with service providers or the benefit packages.

The first two stages of the choice process as described in the conceptual model – awareness about health insurance and understanding of the need for health insurance – are explored by the qualitative study. The information about existing health insurance alternatives, availability, features, and alternatives are mainly assessed by the interview survey. Comparison of alternatives by the respondents is investigated by the qualitative study and the DCE survey. The DCE survey covers the last three components of the framework – specification of utility and decision rule, preference ordering and decision, and choice.

2.2 Methodological Review

2.2.1 Evaluation of Health Care Programs

The interest in evaluation of healthcare programmes emanates from scarcity of health care resources. Health care resources – healthcare workers, facilities, equipments, knowledge, and time are limited. In contrast, there had been dramatic increases in health care demand. Thus, choices must be made on the types of healthcare services that should be provided. Consequently, assessment of values and choices is required (Drummond, Sculpher et al. 2005; Gerard, Ryan et al. 2008).

Three approaches were developed for evaluation of health care programmes (Drummond, Sculpher et al. 2005). The first, ‘welfarist’ approach, is based on the concepts of welfare economics. It emphasizes individuals as best judges of their welfare. Thus, the basis for health care intervention should consider the values individuals’ attach to the outcome of interventions. Welfare analysis has been the traditional theoretical basis of economic evaluation. Since, societal welfare is the sum of individual welfare, governments were required to measure individual utilities in order to introduce health care programmes which maximize societal welfare (McGuire 2001).

The second is the ‘extrawelfarist’ perspective. This is an alternative framework developed in response to the limitations of the welfare approach. As discussed in (Culyer 1989; McPake and Normand 2008), Culyer argued that the objective of evaluation of health care programmes should be the maximization of health not utility (Culyer 1989). In this approach evaluation is solely based on the available healthcare resources. Hence, comparison among health care programmes is made on the basis of resource requirement and the resulting health outcomes rather than considering individuals’ ability to pay.

The third approach is termed ‘decision-maker’ approach. This emphasizes broader societal perspective of values. Analysts advocating this approach question the narrow focus on monetary expression of costs and consequences. They argue that the decision makers should make better judgement of valuation over wide range of benefits; to make decisions regarding programmes (Drummond, Sculpher et al. 2005).

The valuation of benefits is crucial to assess alternative health care interventions. However, it presents a great challenge since researchers must estimate the value of a wide and complex multidimensional array of health care policies, strategies, interventions and treatments (Gerard, Ryan et al. 2008).

The three major economic evaluation methods are cost-effectiveness analysis (CEA), cost-utility analysis (CUA), and cost-benefit analysis (CBA) (Drummond, Sculpher et al. 2005). CEA had been used for long before the development of CUA in late 1980s. CEA measures life years saved or deaths averted as a result of an intervention for a given cost. In contrast, “quality-adjusted life years” (QALYs) is the measure of benefits in CUA. CBA employs monetary terms to measure benefits of a programme. As a result, it was not readily adopted for health care interventions. However, later on, CBA was increasingly advocated and used in health care program evaluations (Drummond, Sculpher et al. 2005; Gerard, Ryan et al. 2008).

Two fundamental techniques of monetary benefit valuation have been developed by economists. These are the revealed preference and the stated preference technique.

2.2.1.1 Revealed preference

The revealed preference (RP) technique involves the exploration of observable behaviour. People’s preferences are explained through their actions or choices in markets specifically related to the value of interest.

“... if a consumer buys one bundle instead of another affordable bundle, then the first bundle is considered to be revealed preferred to the second. The presumption is that by actually choosing one bundle over another, the consumer conveys important information about his tastes” (Jehle and Reny 2011).

Consumers’ reveal their marginal valuations of goods through the choices they make. However, individual and market constraints are part of revealed preference data. An individual may prefer a given good over another because of constraints such as income. Market constraint includes unavailability of technologies or environmental constraints such as inaccessibility. Therefore, RP data would be limited to the existing alternatives within markets. Thus, it provides little benefit for

prediction of individual behaviours in response to anticipated new interventions (Hensher, Rose et al. 2005).

2.2.1.2 Stated preference

The alternative to revealed preference is the stated preference (SP) technique; which requires asking individuals to state their preferences in hypothetical markets. Nonmarket valuation evaluates the values attached to different goods that cannot be directly traded in a market. It is necessary and distinct from neoclassical price theory of market goods. These goods usually are public in nature and thus individuals are provided with the same amount and they may not independently choose these goods. Moreover, each of these goods may change due to society's choices or needs. As a result, they may not meet individual needs or demand which in turn leads to misallocation of resources (Flores 2003; Louviere and Lancsar 2009).

Both SP and RP experiments use a series of choice scenarios that are presented to participants to make them choose the most preferred alternative (Alfnes and Steine 2005). Though consumers may not do what they say they will do – stated preference – compared to observing what they actually do in revealed preference; stated preference is preferably used for many reasons. First, the characteristics of health care makes it impossible to infer consumer preferences or values from RP data since many aspects of health care are not traded explicitly in markets. In addition, health care may be consumed free at the point of services or heavily subsidized. Second, there is information asymmetry between health care providers and the consumers. This information asymmetric coupled with uncertainty about health status and outcomes of health care imply that decisions are not solely based on consumer preferences. Third, SP is based on hypothetical choices and thus allows the identification of all effects of interest in advance to applying the policy. Fourth, SP data provide information on how current preferences are likely to respond to proposed change in resource allocation. Furthermore, large quantities of relevant data can be collected at reasonable cost (Louviere, Hensher et al. 2000; Holmes and Adamowicz 2003; Gerard, Ryan et al. 2008). There is also a growing recognition that SP data can substitute and complement RP data (Louviere and Lancsar 2009).

Preference model estimates can be used for different policy analysis in health sector such as to assess the relative impacts of the different elements of health care programs and to calculate the rate at which people would be willing to trade off some attributes to obtain more of another. Assessing the degree of trade-off among different attributes of a good is particularly important in resource constrained environments like health in order to allocate resources efficiently. Furthermore, stated preference methods can be used to predict the likely uptake of a new health care intervention products and to investigate welfare gain or willingness to pay for specific attributes and/or entire health care products/programs (Louviere and Lancsar 2009).

There are two well-known approaches of SP technique. These are contingent valuation method and discrete choice experiments.

2.2.1.2.1 Contingent Valuation Method (CVM)

A contingent valuation method is used to measure willingness to pay (WTP), a monetary measure of benefit, for anticipated changes on goods or services. Alternatively, people may be asked their willingness to accept compensation (WTAC) to give up certain goods or services. Surveys are used to collect contingent valuation data. The first section of the survey contains a detailed description of the goods that need to be valued. The proposed hypothetical scenarios would be presented and discussed by enumerators. Subsequently, respondents are asked their WTP for the proposed scenarios. The socio-demographic characteristics of the respondents would be included for detailed analysis of the WTP. The analysis of the responses gives the average WTP for the sample population (Mitchell and Carson 2005).

The main limitation of CVM is the emphasis it places on accurate estimation of benefits (sometimes costs) which depends on accuracy of descriptions. However, errors may be discovered after the completion of survey which cannot be addressed. Moreover, valuation of each attributes of the goods/services is not considered (Louviere, Hensher et al. 2000; Mitchell and Carson 2005).

2.2.1.2.2 Discrete Choice Experiments (DCE)

A discrete choice experiment is a stated preference approaches used to elicit responses and estimate preferences over different scenarios. It is applied to various issues in research fields such as marketing science, transportation economics, environmental economics, agricultural economics and health economics (Ryan and Hughes 1997; Aizaki and Nishimura 2008; Gerard, Shanahan et al. 2008; Lancsar and Louviere 2008). DCEs were introduced to health economics in early 1990s as an alternative framework to evaluation of quality adjusted life years (QALY) (Louviere and Lancsar 2009). Since then the use of DCE had been increasing as shown by the rising number of published studies using DCEs (Ryan and Gerard 2003; De Bekker-Grob, Ryan et al. 2012).

The DCE is a variant of attribute based methods employed for eliciting preferences. Attribute based methods of stated preference study aim to estimate economic values attached to different attribute of a good. Thus, DCEs focus on the accurate and complete description of product attributes of alternatives. Willingness to pay can indirectly be estimated if price is one of the attributes in the choice set (Louviere, Hensher et al. 2000).

The preference of individuals for various versions of a good that vary in levels of its attributes provides policy makers and resource managers with detailed information about public preferences for different states of the good (Holmes and Adamowicz 2003). Thus, it draws on Lancasterian consumer theory which proposes attributes or characteristics of goods as the source of utility for consumers (Lancaster 1966); that is, commodities are not the direct object of utility. But, individuals make choice for a good based on the attributes of commodities.

In a DCE, the analyst constructs a set of hypothetical choice scenarios composed of two or more alternatives based upon a limited number of important attributes – one of which may be the price of the alternative. The choice sets would be presented to consumers to obtain their preferences over those alternatives. Respondents are usually asked to perform a sequence of such choices comprising different levels of the attributes in order to infer the relative weight attached to each level of attributes. It is assumed that individuals select the alternative with the highest utility by considering all information provided. This allows the analyst to see the values

attached to the variety of attributes that characterize the good. The responses are also used to model the probability of an alternative being chosen as a function of the attributes and the socio-economic characteristics of the respondents. Moreover, it provides large amounts of information that can be used to determine the preferred design of the good (Louviere, Hensher et al. 2000; Alpizar, Carlsson et al. 2001; Bryan and Paul 2004; Gerard, Ryan et al. 2008).

Discrete choice experiments involve a multi-dimensional response surface that provides a richer description of preferences over valuation of single “with versus without” scenarios. Important attributes of the valuation problems are clearly circumscribed. In the process of value elicitation; the attributes are traded off so as a reduction in one attribute is compensated by an increase in another attribute. This results in a large amount of information that enhances the application of attribute-based methods to managerial decision making (Holmes and Adamowicz 2003).

Discrete choice experiments are increasingly used to investigate consumer preferences for new and unavailable products. It also helps to examine socioeconomic and demographic differences in product preferences (Alfnes and Steine 2005). There are several reasons for the increased interest in discrete choice experiments compared to other choice based techniques. First, discrete choice experiments are consistent with economic theory of preference. Second, more information and complex data can be obtained from relatively simple questionnaire. The information collected includes the utility of possible combinations of attributes, trade-offs between attributes, relative importance of the underlying values, and willingness to pay for alternative goods. Third, it is easily understood by respondents. Fourth, it helps to evaluate a product that is not yet in the market. Fifth, it is possible to test for internal consistency of choice and finally there is a reduction in potential biases (Alpizar, Carlsson et al. 2001).

2.2.1.2.3 Experimental Design

An experiment involves a deliberate manipulation of the attributes and levels of attributes and observation of effects on a response variable to test hypotheses of interest. The hypothesis of interest in discrete choice experiment is related to utility and choice model. DCE elicitation greatly relies on effective experimental design (Louviere, Hensher et al. 2000; Hensher, Rose et al. 2005). This section presents the

basic principle and process used in generating the experimental design and choice sets. Further reading on the theoretical aspects of experimental design and details of design issues can be found on (Louviere, Hensher et al. 2000; Hensher, Rose et al. 2005).

For effective identification of the taste parameters of the respondents, the scenarios offered to the respondents must provide sufficient variation over the attributes. In most cases, it is impossible to present all combinations of attributes and levels to the respondents. Thus, experimental design procedures must be used to identify subsets of the possible combinations of attributes and levels that best represent the attribute preferences (Holmes and Adamowicz 2003).

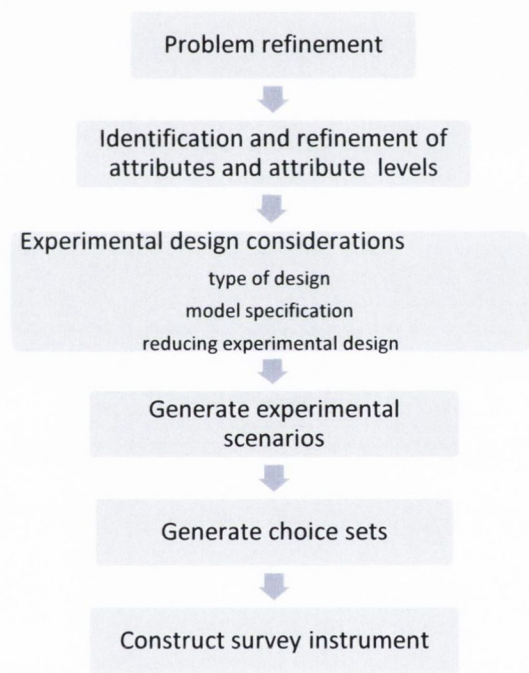


Figure 2.4 Experimental Design Processes
Source: (Hensher, Rose et al. 2005)

Figure 2.4 shows the process of experimental design. As depicted in the figure, the steps that should precede experimental design are problem definition and identification and refinement of attributes and attribute levels. After the relevant attributes and levels are determined, the next step is the design of the experiment to construct attribute-attribute level combinations, and choice sets that will be presented to respondents. The experimental design considerations include the type of design, the model specification, and experiment size.

5.3.2.2 Types of designs

There are different kinds of designs such as full factorial design, fractional factorial design, and random design.

Full factorial design (FFD)

The full factorial design contains all possible combinations of the attributes and levels. It gives maximum design efficiency with attribute levels independent of one another both within and between alternatives. This results in L^n factorial design (for unlabelled choice set) where L refers to the number of levels and n refers to the number of attributes (Louviere, Hensher et al. 2000; Holmes and Adamowicz 2003).

The advantage of full factorial design is that it produces orthogonal design so that it is possible to identify the ‘main’ and ‘interaction’ effects. A ‘main effect’ is given by the difference between the mean response to each attribute level and the overall average (or ‘grand mean’) response to a choice set. An ‘interaction effect’ on the other hand arises if the response to the levels of one attribute is affected by the level of another attribute. Interaction effects represent the concepts of complement and substitutable attribute (Holmes and Adamowicz 2003).

The design of a choice experiment is complicated by requiring respondents to compare two or more alternatives simultaneously. For most practical situations, the full factorial design produces large and unmanageable choice sets. The number of choice sets defines the number of iterations of the choice experiment. Thus it is tedious to have participants consider all the possible combination. It is also expensive to do a study with all combination of alternatives (Amaya-Amaya, Gerard et al. 2008).

Fractional Factorial Designs (FrFD)

Fractional factorial designs reduce the number of profiles or scenarios included in the experimental design. It takes a subset of the full factorial design. Hence, it produces manageable experiment and also reduces the cognitive burden faced by respondents. However, fractional designs omit information on interaction among attributes and will produce potential impact on parameter estimates (Carmone and Paul 1981; Holmes and Adamowicz 2003).

If complements and substitutes are found to be crucial elements of preferences under consideration, a design for ‘main effects plus interaction’ will be developed using specialized software; however, most studies have fitted main-effects-only (Carmone and Paul 1981; Louviere, Hensher et al. 2000). It is also indicated that ‘main effects only’ typically account for 70-90% of explained variance. Moreover, for studies which focus on prediction of preferences as opposed to decision process, interaction effects are said to be less important (Louviere, Hensher et al. 2000).

The design determines both the types of effects that can be identified in the data and the interpretation of those effects. Without a proper design, an improperly specified model results in biased parameter estimates and collinear variables. Finding efficient experimental design is quite challenging and time consuming. The main issues in the design are which effects to omit and how much loss in statistical efficiency to accept (Holmes and Adamowicz 2003).

Orthogonal versus optimal designs

Orthogonal fractional design produces designs in which attributes are statistically independent/ uncorrelated. Thus minimized/zero correlations are the foremost important criterion in generating orthogonal designs, statistical efficiency is of less concern (Hensher, Rose et al. 2005; Amaya-Amaya, Gerard et al. 2008).

Later, constructing efficient designs became more important because of the problems related to lengthy questionnaire such as respondent fatigue and cognitive burden which reduces the quality of information collected. Optimal designs that produce more information with reduced number of questions and sample size are suggested. It is argued that experimental design underlying stated preference should produce the maximum amount of information about the attributes that determine choice; and this cannot be guaranteed with orthogonal design (Sandor and Wedel 2001).

As a result, optimal or statistically efficient designs are introduced. Optimal designs improve the amount of information that would be obtained from the design; however there could be some correlation between attributes (Amaya-Amaya, Gerard et al. 2008). The most common optimality criterion used for DCEs is D-optimality. D-optimality minimizes the generalized variance among attributes (Louviere, Street et

al. 2008). Further reading on the construction strategies of different designs can be found elsewhere (Kuhfeld, Tobias et al. 1994; Lazari and Anderson 1994; Huber and Zwerina 1996; Sandor and Wedel 2001; Kanninen 2002)

Generic (unlabelled) versus labelled choice sets

Labelled choice sets contain description of the alternatives while generic sets do not name the alternatives (Hensher, Rose et al. 2005). Thus, the labels of the alternatives in labelled choice set communicate information about the alternative while the generic form tells nothing about the alternatives. Labels in the health economics can be type of health care provider, generic or brand name of medication, specific screening tests, or specific treatments. Labelled choice sets are more realistic; and produce more valid results. For instance, a binary choice set for providers of services with two attributes can be presented either as a generic or labelled choice set as follows:

Table 2.1: Example of labelled choice set

	Public	Private
Health professionals	Specialist	GP
Waiting time	2 hours	1 hour

Table 2.2: Example of generic (unlabelled) choice set

	Provider 1	Provider 2
Health professionals	Specialist	GP
Waiting time	2 hours	1 hour

2.2.2 Theoretical Framework

The theoretical framework of the discrete choice experiment builds upon elements of the standard economic theory of consumer behaviour (Mas-Colell, Whinston et al. 1995) with three extensions. The classical theory of consumer demand states that consumers are rational decision makers; thus, they make decisions to maximize utility. That is, faced with a set of possible consumption bundles of goods, consumers assign values (preferences) to each of the various bundles and choose the most preferred bundle from the set of affordable alternatives (Holmes and Adamowicz 2003).

Likewise, it is assumed that participants in DCEs are rational decision makers. Given the neoclassical theory of consumer behaviour, discrete choice behaviour can be formulated as an optimization problem in which the consumer selects the consumption bundle which maximizes benefit (utility) subject to the budget constraint (Louviere, Hensher et al. 2000; Amaya-Amaya, Gerard et al. 2008; Ryan, Gerard et al. 2008).

In addition, to the traditional consumer theory, discrete choice experiments draw on three variant concepts. First, discrete choice theory builds upon the idea that utility of the individual is determined by the attributes of the goods (Lancaster 1966) while the neo-classical theory assumes utility is the function of amount of goods consumed (Mas-Colell, Whinston et al. 1995; Jehle and Reny 2011). Thus, in DCE, if there is change in those attributes, consumers switch from one bundle of good to another that would provide the most beneficial combination of attributes. In contrast, traditional consumer theory assumes homogeneous goods. Secondly, as opposed to the continuous space of products in consumer theory, discrete choice theory deals with a choice among a set of finite and mutually exclusive alternatives. The individual chooses one and only one alternative from this set. This means that, in addition to the budget constraint, further restrictions are added to the optimization problem. Finally, whereas classical consumer theory assumes deterministic behaviour, discrete choice theory introduces the idea that individual choice behaviour is intrinsically probabilistic, hence they have random utility (Mas-Colell, Whinston et al. 1995; Amaya-Amaya, Gerard et al. 2008).

Random utility models assume that the decision makers have indirect utilities for choice alternatives and they have perfect discrimination capability. However, the analyst has incomplete information on the factors affecting preferences of the individuals. Four main sources of variation are identified; unobserved alternative attributes, unobserved individual attributes, measurement errors, and proxy or instrumental variables (Amaya-Amaya, Gerard et al. 2008).

Therefore, the utility of an individual n is considered to be decomposable into two additively separable parts; the deterministic (explainable) component which is determined by the attributes of the alternative and the random (unexplainable) component which is caused by unobservable attributes that affect choice. Thus, the

latent utility of an alternative i in a choice set C_n for individual n is given by:

$$U_{in} = V(X_{in}, \beta) + \varepsilon_{in} \quad (1)$$

Where: $V(X_n, \beta)$ is the explainable component and ε_{in} is the random component. U_{in} is the utility of individual n for alternative i . X represents attributes, and β is coefficient

The key assumption is that individual n will choose alternative i if and only if that alternative maximizes her utility amongst all J alternatives included in the choice set C_n . That is:

$$y_{in} = f(U_{in}) = \begin{cases} 1 & \text{if } U_{in} = \max_j \{U_{ij}\} \\ 0 & \text{otherwise} \end{cases} \forall j \neq i \in C_n \quad (2)$$

Where y_{in} is a choice indicator of alternative i for individual n . It is equal to 1 if alternative i is chosen, and 0 otherwise.

From equation (1), individual n chooses alternative i if and only if:

$$(V_{in} + \varepsilon_{in}) > (V_{jn} + \varepsilon_{jn}), \forall j \neq i \in C_n \quad (3)$$

Rearranging observable and unobservable components together yields:

$$(V_{in} - V_{jn}) > (\varepsilon_{jn} - \varepsilon_{in}) \quad (4)$$

The analyst cannot determine exactly if $(V_{in} - V_{jn}) > (\varepsilon_{jn} - \varepsilon_{in})$ since $(\varepsilon_{jn} - \varepsilon_{in})$ is unobservable. Hence the probability of occurrence of alternatives will be used to make statements about choice outcomes.

The probability that a randomly drawn individual n will choose alternative i (specified by attributes X_n and coefficient β) is equal to the probability that the difference between the deterministic utility levels of alternative i and alternative j is greater than the difference between the random utility of alternatives j and i , for all J alternatives in the choice set C_n (McFadden 1974). Mathematically:

$$\begin{aligned}
\Pr(y_{in} = 1 | X_{in}, \beta) &= \Pr(U_{in} > U_{jn}) \forall j \neq i \in C_n \\
&= \Pr(V_{in} + \varepsilon_{in} > V_{jn} + \varepsilon_{jn}) \forall j \neq i \in C_n \\
&= \Pr(V_{in} - V_{jn} > \varepsilon_{jn} - \varepsilon_{in}) \forall j \neq i \in C_n
\end{aligned} \tag{5}$$

The actual distribution of $\varepsilon_{jn} - \varepsilon_{in}$ is not known but it is assumed that it relates to the choice probability according to some distribution or density function $f(\varepsilon_{in})$ to be defined. Different density functions for ε_{in} lead to different probabilistic discrete choice models with different statistical and mathematical properties. The important concern in all discrete choice models is the specification of the systematic utility function $V(X_{in}, \beta)$, that relates the observed attributes of the alternatives to the utility U_{in} derived from alternative i .

2.3 Empirical Review

2.3.1 Determinants of Preference for Health Insurance

2.3.1.1 Features of health insurance scheme

Consumers usually choose high quality services. As users of services they are the ones who assumed to know the qualities. They also seek low cost services since they do not want to make expensive payments. As a result, consumers' health plan choice is recognized as a key indicator of high quality and low cost services (Cunningham, Denk et al. 2001). In order to make informed health insurance choices, consumers need to know the characteristics of the schemes such as benefit packages, premium, copayment, and deductibles (Kerssens and Groenewegen 2005).

The premium level of health insurance is said to be the most important factor in determining the preference of health insurance. An increase in premium results in a statistically significant negative effect on probability of choice (Costa and Garcia 2003; Feldman and Schultz 2004; De Allegri, Sanon et al. 2006; Basaza, Criel et al. 2008). Consumers may switch between alternative health insurance provides; one of the reasons being dissatisfaction with the premium rate (Kerssens and Groenewegen 2003). The effects of the premium level on the preference of health insurance also

varies depending on socio-demographic factors such as gender, education, economic class (Dong, Kouyate et al. 2003; Lofgren, Thanh et al. 2008).

However, people do not value premiums only but also benefit packages, quality of services and other features of health insurance. Benefit packages refer to the services that are provided to the insured people. They are the services that would be purchased from health care providers from the pooled contributions. Benefit packages are also the most important push and pull factors of people to alternative health insurance schemes (Kerssens and Groenewegen 2003).

It is impossible for a health insurance scheme to provide health insurance to cover all health care services. Resources are always scarce and choices need to be made. Thus, different criteria are applied to define benefit packages. However, the fundamental concern is making benefit packages both financially viable and comprehensive (Carrin and James 2004; Normand and Weber 2009).

People irrespective of their health status prefer high quality of services. Perceived quality of health care services is explained by different aspects of providers (Feldman and Schultz 2004). Dissatisfaction with quality of care and competence of health care personnel are among the factors which influence the preference for health insurance (De Allegri, Sanon et al. 2006).

Other factors which determine the preference for health insurance includes enrolment and copayments. The social values and attachment of the society determines the type of enrolment people prefer. Societies with high cohesion opt for coverage of their extended family (Criel and Waelkens 2003).

2.3.1.2 Characteristics of beneficiaries

The pattern of preference for health insurance is influenced by socio-demographic factors such as gender, wealth status/income, health risk, and age (Hopkins and Kidd 1996; Sapelli and Torche 2001; Schaber and Stum 2007; Lave, Men et al. 2010; Chen and Yan 2012).

In the context of low income countries, low understanding and knowledge of the notion of health insurance was assumed to be contributing to low level of enrolment to voluntary health insurance schemes. During sensitization and awareness creation,

the focus is usually on the amount of premium that potential enrollees are expected to pay. Less focus in explaining concepts such as solidarity, risk pooling, moral hazard, and adverse selection is mentioned to be a limitation (Criel and Waelkens 2003; De-Allegri, Sanon et al. 2006b). On the other hand, low income countries had the culture of solidarity in terms of different informal arrangements for other needs of the society such as loss of agriculture and death; though, these risk pooling mechanisms are not there for health for different cultural perceptions. Health problems were considered to be individual responsibility (Sommerfeld, Sanon et al. 2002).

Scepticism and distrust of new health insurance initiatives is the problem in acceptance of health insurance schemes rather than misunderstanding of health insurance concepts. Sentiments as a result of bad experience with other solidarity arrangements affect the attitude towards health insurance initiatives. In addition, lack of confidence on institutional capacity, the ability of management to follow through, perception, attitude (Harries and keane 1999; Criel and Waelkens 2003; Basaza, Criel et al. 2008) and cultural resistance related to earmarking resources for health care are revealed to influence the demand for health insurance (De-Allegri, Sanon et al. 2006b). Though individual attitude and valuation of health insurance is fundamental to participation in voluntary health insurance, it also has important implications to compulsory health insurance (Monheit and Vistnes 2008).

2.3.1 A Review of Literature on Health Insurance Preference Studies Using DCEs

There are few studies which used DCEs to investigate preferences to health insurance (Chakraborty, Ettenson et al. 1994; Gates, McDaniel et al. 2000; Kerssens and Groenewegen 2003; Becker and Zweifel 2008; Vroomen and Zweifel 2011; Trujillo, Ruiz et al. 2012).

The earliest study comes from the United States (Chakraborty, Ettenson et al. 1994). It used the DCE to “model consumers’ decision processes when evaluating and selecting health insurance” among Maryland state employees. Six FGDs were conducted prior to the DCE to identify the attributes that may affect health insurance decisions of the consumers. Thematic analysis of the qualitative data provided 24

attributes as the most important. These are: insurance provider; waiting time in physician's office; physician office hours; policy premium; emergency care coverage; choice of doctors; prescription coverage; convenience of paper work; office visit coverage; out of town emergency coverage; dental coverage; quality of affiliated hospitals; travel time to physician; travel time to hospital; waiting time for routine appointment; alcohol, substance abuse, and mental health treatment; psychologist/ psychiatrist coverage; wellness and education programs; vision/hearing care; communication with plan participants; preventive care coverage; hospitalization coverage; and medical consultation by phone.

A generic choice set of four alternatives was designed with a total of 11 choice sets. A postal survey was used to distribute the questionnaires to 1200 sample State employees. A multinomial logit model was used to estimate the preferences. The five most valued attributes were respectively: hospitalization coverage, choice of doctors, policy premium, dental coverage, and choice of hospitals. Other significant attributes identified include coverage for psychologists/psychiatrists (sixth most important), out of town emergency coverage (seventh), 24-hour phone consultation (11th) and hospital quality (13th most important). Non-significant attributes are found to be travel time to hospital, wellness and educational programs, communications with plan participants, and prescription coverage.

A sub-group analysis by gender, age, and having dependents shows difference in the valuation of attributes though there is comparable importance of attributes in aggregate analysis and subgroup analysis. Female placed greater importance to 24-hour phone consultation, vision/hearing care, emergency services, and alcohol /substance abuse coverage. On the other hand, male gave more weight to out of town coverage, office visits coverage, and office hours. Similarly, respondents under the age of 40 were more concerned about policy premium and preventive care while their counterparts gave considerable value to hospital choice and out of town coverage.

An extension of this study was conducted in 2000 in the metropolitan eastern United States (Gates, McDaniel et al. 2000). Based on the study mentioned above, FGDs and telephone quantitative interviews were conducted to identify and refine attributes and attribute levels. Accordingly, some of the attributes used in the

previous study such as waiting time in physician's office, office hours for physicians, travel time to physician, travel time to hospital, education and wellness visits, communication with plan participants were dropped. Attributes are dropped for either of three reasons: if they are found to be of low importance in the previous study, or are outside the control of health insurance provider, or they are provided by all health insurance providers. This process resulted in ten attributes of: insurance company, doctor quality, hospital choice, monthly premium, physician network, cost per doctor visit, prescription coverage, wellness visits, dental coverage, and vision coverage.

The experimental design consisted of 30 choice sets with 4 generic alternatives. The choice sets are blocked into 3 groups so that each questionnaire consists of 10 profiles to be evaluated by the respondents. The questionnaire was administered by mail to 708 respondents. The results of the study show that all the attributes are statistically significant. The five most important attributes were respectively: physician network size, prescription drug coverage, cost for a routine doctor visit, coverage of wellness visits, and monthly premium.

Citizens' willingness to forgo private consumption in order to get improved health services was explored using a DCE in Denmark (Gyrd-Hansen and Sothuus 1999). The DCE was designed using policy relevant attributes which were under political debate of the health system at the time of the survey. Important health insurance related attribute were further refined with 3 FGDs and resulted in seven attributes: availability of new treatments, preventive programs, choice of public hospital, subsidized treatment in private hospital, extra tax payment per year, and amount of payment on all health care services. Orthogonal main effects only fractional factorial design was used to generate the profiles and choice sets. The choice sets were blocked and each questionnaire consisted of three choice questions. A random effects probit estimation showed that primary and secondary prevention programmes were valued highly. This implies individuals would be willing to invest for the future.

A study in the Netherlands used a DCE to investigate consumer preferences of health insurance among one of the Dutch health insurance fund beneficiaries (Kerssens and Groenewegen 2003). Twelve attributes of health insurance were

identified based on a literature on health care marketing literature. These are: premium, deductibles, no-claim discount, extension of insurance and financial services, involvement of red tape, medical help-desk, choice of family physician and hospitals, dental benefits, physical therapy benefits, benefit for prescription drugs, and homeopathy.

Orthogonal fractional factorial design generated 27 profiles; 8 choice sets were presented per individual by blocking the design in to three groups. The questionnaires were mailed to 847 sampled respondents. The results from the binary logistic regression showed that dental benefit, deductibles, choice of hospitals, benefits for homeopathy, fixed nominal premium and prescription drug were the most important attributes respectively. In addition, the sub-group analyses show that, low income people attach higher negative weight to copayments and expensive medication. Similarly, families with children give more importance to prescription medication compared to their counterparts. No-claim discount, extension of insurance and financial services, and the presence of a medical help-desk were insignificant.

Another study in Switzerland (Becker and Zweifel 2008) used the DCE to determine how deductible and co-payments affects the demand for health insurance; thereby differentiate between high-risk and low-risk people. The assumption was that, individuals with low-risk opt for high-deductible plans. Hypothetical health insurance choice scenarios were generated using six attributes. The attributes considered were those which were in the political debate at the time of the survey. The attributes are deductible, co-payment, coverage of alternative medicine, coverage of drug benefits, access to innovative treatment, and monthly premium. Based on these attributes 27 choice scenarios were generated and blocked in to 3 groups. Respondents were requested to compare the hypothetical health insurance scenarios with the status quo. A telephone survey was used to elicit the preferences among 1000 sampled respondents.

A random effects probit model was used form estimation. The results showed that all the six attributes were relevant to the choice of health insurance. The constant resulted in highly significant negative coefficient implying a status quo bias. A decreasing likelihood of choosing an alternative was noticed for higher difference in

deductibles between the alternative and the status quo. Trade-off was also observed between an increase in deductible and a decrease in monthly premium. Co-payments imply more out of pocket payment compared to deductibles. Thus, risk-averse individuals (high-risk for this study) opt for deductibles rather than co-payments. The study also found that marginal disutility from high values of deductibles decreases at high values of deductibles.

A similar DCE study in Colombia assessed difference in consumer preferences to health insurance by demographic characteristics and health status (Trujillo, Ruiz et al. 2012). The study was conducted in Bogota among 109 uninsured and 133 low-income insured respondents. The DCE questionnaire included 12 binary choice sets which are expressed with six attributes. The attributes were determined through review of similar DCE studies, 20 key informant interviews, and 10 interviews of consumers of existing health insurance.

A main effects only orthogonal design resulted in 72 choice scenarios. Based on these profiles, 12 forced binary choice sets were used to collect information on preferences. The analysis was conducted by conditional logit model. The results of the estimation show that, coverage of chronic conditions and coverage of family were most important; both for the uninsured and insured segments of the respondents. The third marginal importance was given to quality of services. A difference in valuation of sick leave was also observed by gender. The marginal valuation of sick leave was higher among women than men both in uninsured and insured population.

Preferences for health insurance among individuals with and without chronic condition was investigated with a DCE survey in the Netherlands and Germany (Vroomen and Zweifel 2011). Two different DCEs were designed to each of the countries with five attributes. The status quo health insurances were compared with the hypothetical profiles described by physician choice, physician network, additional services, incentives, and insurance contribution in Germany. Similarly, the alternative hypothetical insurance for the Netherlands was defined by physician choice, hospital waiting time, additional services, incentive system, and insurance premium. The 24 choice scenarios were blocked in to 3 groups of 8 choice sets. The results of the probit estimation show that, there was a status quo bias among the

respondents and it caused differences in the preferences. The respondents in both countries were against physician network. This was suggested to imply that disease management programs for chronic conditions may not be in line with preferences of the beneficiaries. A difference was also observed by countries. For instance, WTP estimates showed that people with chronic conditions in the Netherlands were less resistant to physician list compared to those in Germany. Moreover, Germans with chronic conditions value additional services of health insurers while Dutch people do not.

Overall, the DCE studies on health insurance used generic forced choice sets. They used various attributes and attribute levels and this makes direct comparison of the studies difficult. However, all of the studies included contributions to health insurance (premium) among the attributes. Physician or provider choice, copayments, and coverage of drugs are also among popular attributes.

Earlier studies using the DCEs (Chakraborty, Ettenson et al. 1994; Gyrd-Hansen and Sothuis 1999; Gates, McDaniel et al. 2000) stated as using conjoint modelling. This is because there have been confusion over conjoint analysis and discrete choice experiment (Louviere, Flynn et al. 2010).

2.3.2 *Systematic Review of Health Insurance Benefit Packages*

2.3.2.1 Introduction

Benefit packages or entitlements are one of the fundamental issues in the design of health insurance. They are the means of accessing services by the beneficiaries, thus determine the acceptability of the health insurance scheme (Kutzin 2001; Barnighausen and Sauerborn 2002; Normand and Weber 2009). The benefit packages for health insurance can be defined explicitly or implicitly. In the implicit approach, beneficiaries are entitled to utilize services currently available at the healthcare providers. Thus there will be inequity if services are different in different areas. The explicit definition of benefit packages on the other hand present the services in the benefit package clearly and guarantees the same entitlements to all (Khosa, Soderlund et al. 1997; Soderlund 1999).

Defining benefit packages became of growing importance and different countries tried to address the issue directly. Among the high income countries which used explicit approach to determine priorities include Oregon, Netherlands, New Zealand, Sweden, and UK (Ministry of Welfare 1992; National Advisory Committee on Core Health and Disability Services 1994; Government Committee on Choices in Health Care 1995; House of Commons Health Committee 1995; Oregon Health Services Commission 2007)

In the 1993 World Development Report (WDR), the World Bank strongly promoted the definition of essential health care services that needs to be given priority in terms of public funding. The approach suggested prioritizing treatment of diseases where the total burden of disease is high and where cost-effective interventions against the disease exist (World Bank 1993). Following the publication of the 1993 WDR, many countries defined the packages of essential health services (Bobadilla and Cowley 1995). Adequate access to these essential health service packages can then be insured by government either through general taxation or through social insurance contributions (Teerawattananon and Tangcharoensathien 2004).

One of the fundamental values in the health system requires services to be responsive to the needs of the population (WHO 2000). Moreover, if the benefit package do not meet individual preferences, it brings a welfare loss (Becker and Zweifel 2008). As a result, people will switch between insurance schemes if there are alternatives with better benefit packages of interest (Chakraborty, Ettenson et al. 1994; Kerssens and Groenewegen 2003).

If people make contributions for insurance, the benefit packages must be attractive in terms of meeting clients' perceived needs and being affordable to them (Wiesmann and Jutting 2001). However, there is a trade-off between benefit packages and insurance premia (Becker and Zweifel 2008). Obviously, beneficiaries opt for more comprehensive benefit packages but this involves more resource mobilization. This in turn implies higher premium rates. Thus, ideally the beneficiaries of health insurance need to define their preferences for benefit packages. This helps to identify the most important factors that are important in their health insurance choice and the trade-offs among them. As a result, better resource

allocation and more attractive and acceptable health insurance package can be designed.

However, there are few studies which assessed the preference of beneficiaries for health insurance. RAND Health Insurance Experiment which was conducted in different parts of the United States remains the longest and oldest experiment on health insurance plans. It was a large scale randomized field trial of alternative financing arrangements. Among the objectives of the study was assessment of benefit packages being provided by different health insurance schemes (Ware, Davies-Avery et al. 1978; Manning, Newhouse et al. 1988).

Changes in benefit package may take place over time due to changes in the objectives of the scheme or vice versa. For instance the focus of statutory health insurance in Germany – protection against loss of income – was shifted to the coverage of medical care with the expansion of benefit packages (Barnighausen and Sauerborn 2002).

Benefit packages are usually not clear both for providers and beneficiaries. There is also lack of synthesized evidence on health insurance benefit packages being offered by different health insurance schemes as well as the preference of beneficiaries for benefit packages (De Allegri, Sanon et al. 2006; Chinitz, Meislin et al. 2009).

The aim of the review is to synthesize the evidence on benefit packages of different insurance schemes and preference of beneficiaries. The schemes considered for the review are social health insurance and different kinds of community health insurance schemes.

2.3.2.2 Search strategy

The systematic review is based on studies conducted in English language. The research questions of the review are:

- What health care services are provided by health insurance benefit packages of different health insurance schemes/countries?
- Which benefit packages are preferred by beneficiaries of health insurance?

The inclusion and exclusion criteria were also specified. The inclusion criteria are:

- Intervention: Any kind of health insurance; compulsory or voluntary not-for profit, or for profit
- Outcome: health insurance benefit packages
- Type of study (study design): field trial, community trials, case study, survey, evaluation, review, policy analysis
- Publication: peer reviewed academic journals, grey literature or non-reviewed reports
- Study population: High, middle or low income countries
- Time period: January 1980 – November, 2010
- Language: English

Excluded studies are those focusing on a particular benefit package.

Two approaches were used to search for literatures: search in electronic databases on the internet and iterative reviews of reference lists of papers. The electronic databases searched are: PubMed, Springer Link, ScienceDirect, InterScience (Wiley), The Cochrane Library, Social Sciences Research Network (SSRN), Cambridge University Press, Ingenta Connect, Scirus, EconLit. In addition web pages of World Bank and WHO were searched.

The search terms used are: “health insurance”, “health insurance benefit packages”, “benefit packages”, “benefit basket”, “insurance entitlements”, “preference of health insurances”, “health plan”, “employment benefits”, “employment benefit packages”, “design of health insurance”.

2.3.2.3 Results

The search resulted in 57 possible studies. After reading the abstracts and the full articles, the number of studies which fulfil the inclusion criteria is reduced to 28. Appendix 1 provides summary of the papers with research objective, type of data and respondent groups if applicable.

Most of the studies come from high income countries. Eleven studies are conducted in Europe, 9 in USA, and 4 in Africa. The remaining are from India (2), Philippines (1), and Israel (1). Sixteen of the papers focus on description of the benefit packages

provided by health insurance schemes of different countries. The remaining twelve studies assessed the preferences of the beneficiaries regarding benefit packages. The studies used a mix of methods. A typical method used by five of preference studies is Choosing Healthplan All Together (CHAT). CHAT exercise is a type of experiment in which respondents make their preferences in groups and individually among the presented attributes with budget constraint. In addition, qualitative studies and discrete choice experiments are also applied. Studies which describe the benefit packages of different insurance schemes are mainly policy analysis studies.

2.3.2.3.1 Benefit packages provided by health insurance schemes

Germany has the most comprehensive benefit package. The definition of the benefit packages for outpatient services is explicit while it is implicit for inpatient care (Busse, Stargardt et al. 2005). The benefit package of the statutory health insurance was expanded from the minimum packages over time using different approaches. The minimum benefit package was restricted to in-and-outpatient care, free pharmaceuticals, medical aid devices, death-pay and maternity support. In addition, cash benefits (63% of all benefits) used to be provided. Then, three approaches were used to expand the benefit packages. The first and largest extension in benefit package was brought about by introduction of new types of statutory health insurance such as accident, pension and unemployment. Each new health insurance extended the benefit package to the services which are not covered before. Second, the existing statutory insurance extended the benefit packages to cover additional services. The third approach was expansion of the scope or amount of the existing services. An incremental approach is also used to reduce the scale and scope of benefits in response to economic regression. In the early 1970s, following the first oil crisis, co-payments or introduction of eligibility conditions was used to reduce coverage of some services such as pharmaceuticals, glasses, dentures, medical cures and hospital stays. Other services were totally excluded including certain dental services, medical aid devices, death pay, pharmaceuticals for petty diseases, common colds and diseases acquired during tourist travel as well as pharmaceuticals for unproven medical benefit or cheap pharmaceuticals (Barnighausen and Sauerborn 2002). There are also copayments for services of non physicians such as physiotherapists for people of age more than 18 (Busse, Stargardt et al. 2005).

The French health care system also has comprehensive benefit packages which are either explicitly or implicitly defined. There is positive list of outpatient services that are covered by health insurance. There are 'gate keeping' physicians for outpatient curative services and patients need prescription or referrals in order to get reimbursements. Inpatient care benefits include all medical, surgical, and obstetric care. Outpatient services provided by nurses, physiotherapists, orthoptists, chiropodists, and speech therapists are covered by insurance only if they are sought on medical prescription. Acupuncture and homeopathy must be provided by physicians or licensed physiotherapists. Exclusions of services from benefit packages include cosmetic surgery and services with uncertain efficacy such as spa. There are also limitation in reimbursements or frequency of care for services such as bone density and mammography (Bellanger, Cherilova et al. 2005).

Inpatient health care services in Denmark are defined at four levels of decision making: national level, country level, hospital level, and clinical level. However, entitlements are vaguely formulated. For instance, the hospital act entitles citizens for free treatment of inpatient services and ambulatory care at any hospital of their choice in the country. Patients are also entitled to seek treatment at private hospital or abroad if waiting time is more than two months. Moreover, free home care for somatic and mental patients are included under the legislation. However, the hospital act directly or indirectly specifies limitations. For instance, free choice of private hospitals is not applicable for transplantation, sterilization, reproductive health services, hearing aid, cosmetic surgery, sex change, psychiatric treatments, and alternative treatment. There are also financial restrictions on hospices, sclerosis hospitals, arthritis sanatoria, and brain rehabilitation hospitals. Thus waiting lists are applied to provide these services. If patients cannot wait, they must pay for private clinic treatments themselves. Outpatient services are on the other hand defined explicitly under health care reimbursement scheme. About 98% of the population are entitled to outpatient free services from GPs. Services such as physiotherapy and dental care are partially covered; moreover, health care services from specialists and paramedic services such as anaesthetists, dermatologists, gynaecologists, orthopaedics, anatomy or plastic surgery, rheumatologist, etc need referral from general practitioner (Bilde, Ankjaer-Jensen et al. 2005).

The Netherlands sickness fund act specifies entitlements to inpatient and outpatient care. Hospital care is implicitly defined and there is need for referral to get the services. Explicitly excluded services are eye lid, ear or body sculpturing, in vitro fertilization, sterilization, circumcision, and uvuloplasty for persons who snore. Psychotherapy is reimbursed if referred by general practitioner. However there is limitation on the maximum number of sessions with Psychotherapist. There are also eligibility conditions to transplantation and plastic surgery. In case of dental care, people under age of 18 are entitled to check-ups, fluoride application treatment, sealing, and periodontal care. However, dental care for adults is covered only under special circumstances. Paramedical services such as physiotherapy, speech therapy, ergo therapy are partly covered. There are some curative care at home which is covered by the insurance including kidney dialysis and treatment for chronic intermittent ventilation (Stolk and Rutten 2005).

The Irish health care benefit packages are established by national legislation. The benefit catalogues include inpatient, outpatient, drug, home nursing, home help services, dental ophthalmic, aural services, appliances, rehabilitation services, etc. However, there is no publicly available list of services covered by health insurance. Explicit list is available only for pharmaceuticals. Benefit catalogues can also vary across regions depending on the availability of services. Entitlements to services are categorized in to two groups of the population. Category one includes people with income below specific threshold level and those with age 70 and above. These segments of the population are issued medical card, the rest of the population is in category two. All services (GP care, prescriptions, public hospital inpatient, and public hospital outpatient) are covered fully for individuals with medical card. They are also entitled to dental, ophthalmic and aural services. The rest of the population is entitled to most health care services with co-payments. However, there are services which are provided free of charge to all individuals such as GP maternity and infant care and the Heart watch programme (Smith 2010).

The Swiss benefit package excludes non-medical psychotherapy, home help and dental services. Israel and Luxembourg exclude physiotherapy and chiropractic services; besides, Israel exclude dental care (Polikowski and Santos-Eggimann 2002). The exclusions in Italy are non-conventional treatments such as acupuncture, phytotherapy, and vaccination for travelling purposes. Vaccination and acupuncture

(unless as part of chronic pain management) are also among exclusions in Poland (Schreyögg, Stargardt et al. 2005).

Mental care and transplants of hair, nails, and placenta are the main health care benefit exclusions from Spanish inpatient curative care. Other explicitly excluded services include plastic surgery unless it is related to accident or congenital malformation and surgery for sex change unless it is for pathological repair of intersexual conditions. Services related to leisure, rest, and comfort such as spa treatments, rest cures, psychoanalysis and hypnosis are also excluded (Planas-Miret, Tur-Prats et al. 2005).

The USA state of Oregon (Oregon Health Services Commission 2007) produced list of benefit packages for Medicaid in order of priority, ranked from most important to least important. Nine broad rank orders of health care categories were first identified. The first three most important health care services were maternity and newborn care, primary prevention and secondary prevention, and chronic disease management. Maternity and newborn care includes obstetric care for pregnancy, delivery services, prenatal care, postpartum care, and newborn care for conditions intrinsic to the pregnancy. Primary prevention and secondary prevention represent services that are used prior to the occurrence of disease and screenings made to detect disease at their early stages such as immunizations, mammograms, pap smears, blood pressure screening, fluoride treatment in children, routine dental exams and well child visits.

Reproductive health services (management of contraceptive, tubal occlusion, tubal ligation, vasectomy) and comfort care (hospice care and pain management) are ranked to be the fourth and fifth important categories health care services. Next in the list are fatal and nonfatal conditions at which treatment is aimed to cure or modify the diseases.

The last two categories of the rank order are self-limiting conditions and inconsequential care. Self-limiting conditions these are those in which treatment speed up recovery for problems that will resolve on their own whether treated or not. Inconsequential care refers to services that have little or no impact on health status due to the nature of the problems or unavailability of effective treatment.

The health maintenance organizations (HMO) in the United States also provide wide range of coverage for inpatient care such as room and board, surgical care and doctors' visits with no copayments. However coverage for non-hospital care physicians' office visits and prescription drugs, extended care in nursing facility, and psychiatric office visits are limited by co-payments or number of days of coverage. There are also limits to inpatient mental health care and treatment for drug and alcohol abuse (Burke and Jain 1991). Blue Cross/Blue Shield plan does not insure long-term care; it mainly cover acute services including hospitalization, mental health care, home health care, dental care, physician care, and rehabilitation therapies. But in most cases these services are partially covered particularly rehabilitation services, dental coverage, and home health.

There are few studies which are conducted in Africa on benefit packages. The community based health insurance in Nouna Demographic Surveillance Site (DSS), Burkina Faso, provides first-line and second-line benefit packages. There is no detailed description of what first and second line services are. But these services are indicated to be provided without copayment at point of service and no ceiling to the number of contacts (De Allegri, Sanon et al. 2006).

Analysis of the Ghanaian National Health Insurance Scheme shows that the scheme covers about 95% of all health care services. The benefit package include all services other than appliances and prostheses; cosmetic surgery; HIV retroviral drugs; assisted reproduction; rehabilitation other than physiotherapy; echocardiography; angiography; orthoptics; kidney dialysis; heart and brain surgery other than those resulting from accidents; cancer treatment other than cervical and breast cancer; organ transplantation; non-listed drugs; treatment abroad; medical examinations for visas etc.; VIP wards; and mortuary services (Witter and Garshong 2009).

The exclusions from South African private health insurance are primary care (preventive and promotive care, and basic, clinic-level curative services), hospital care for mental illness and chronic infectious diseases and occupational illnesses and injuries. These services are said to be excluded because either there is prior commitment for the provision of the services or because the services are not amenable to insurance based financing (Soderlund 1999).

A study in Philippines' shows that the National Health Insurance include all services except outpatient psychotherapy, drug and alcohol abuse or dependency treatment, home and rehabilitation services, optometric services, and normal obstetric delivery and no drugs (Busse and Schwartz 1997).

2.3.2.3.2 Beneficiaries' preferences of health insurance benefit packages

There are studies which assessed the preference for benefit packages by beneficiaries (Chakraborty, Ettenson et al. 1994; Danis, Biddle et al. 2002a; Danis, Biddle et al. 2002b; De Allegri, Sanon et al. 2006; Dror, Koren et al. 2007).

The resident of the DSS site in Nouna, Burkina Faso had limited knowledge about benefit packages. This is true for both enrolled and non-enrolled population groups. However, most of the beneficiaries were satisfied with the benefit packages. Still, few respondents mainly wealthier and better educated expressed desire to see the benefit package extended to services such as dental care and specialty drugs (De Allegri, Sanon et al. 2006).

A similar study in Nigeria found preference for comprehensive benefit package: disease control, outpatient and inpatient services, emergencies among respondents. The second preference was for outpatient services while the least preferred service was inpatient care only. However, respondents reached consensus by prioritizing coverage of both outpatient and inpatient services and communicable diseases such as TB, chicken pox, malaria, typhoid fever, whooping cough, measles and non-communicable such as hypertension, diabetes, cancers, injuries from accidents (Onwujekwe, Onoka et al. 2010).

There are also studies on the preference for health benefits in different parts of the United States. Medicare beneficiaries and uninsured people in North Carolina offered their preferences using a CHAT exercise. More than 70% of uninsured individuals opted for quick appointment, low fees, small copayments, flexibility in the choice of physician and access to specialty care without prior approval as very important attributes in health insurance preference (Danis, Biddle et al. 2002b). In contrast, Medicare beneficiary individual participants chose coverage for hospitalization, pharmacy, primary care, home health, dental, tests, specialty care and vision care most frequently. More than half of the participants opted for

coverage above the basic level for all of these services except tests. Services that were less frequently selected by individuals in the last cycle of the game included complementary medicine and last chance coverage (Danis, Biddle et al. 2002a).

Group preferences of uninsured people include hospitalization, pharmacy, specialty care and dental services. Primary care and mental health coverage was also selected by most groups. Group selection of Medicare beneficiaries also incorporated all of the services opted for by the uninsured. Moreover, Medicare beneficiaries selected home health, tests and vision care. Both Medicare beneficiaries and uninsured people selected hospitalization at higher than basic level. More than half of uninsured participant groups also selected primary care at higher than basic level by more than half of the groups. Other services picked by some of the groups were mental health and long-term care. Last chance treatments were not chosen by any group and very few selected complementary medicine coverage (Danis, Biddle et al. 2002a; Danis, Biddle et al. 2002b).

Many uninsured groups picked benefit packages that are not currently offered by employers by including dental and long term care. Comparison of individual and group selection show that, groups included a larger number of services and also they included more restrictions than packages selected by individuals. However, the vast majority of individuals indicated their willingness to abide by group selection (Danis, Biddle et al. 2002b). Moreover, participants with less education selected fewer services in to their benefit packages than participants with more education (Danis, Biddle et al. 2002a).

Medicare beneficiaries in Minneapolis also show drug coverage and provider choice as very important (Harries and keane 1999). The five predominantly selected services by employees of public and private organization in North California are primary care, pharmacy, hospital care, speciality care and scan/x-rays (Danis, Goold et al. 2007).

Community based health insurance enrollees in India were also asked about their benefit package preferences. Using a CHAT exercise the major benefits were identified to be drugs, outpatient, and inpatient, and diagnostic tests. These services are said to be major benefits. Most respondents opted for these major benefits. These services represent highest aggregate expense and paying out of pocket for these

services can deplete household finances and spell disaster. About 88.4% of the participants chose a package that includes at least three of the 'major benefits' and all choices are at the basic level of coverage. The remaining participants choose only two of the major benefits, but at coverage levels that were sometimes higher than basic (Dror, Koren et al. 2007).

Similar studies in India found preference for drugs, indirect costs, hospitalization, preventive care, outpatient medicine, maternity, dental care, mental health care, and medical equipment. In contrast, the group choice prioritized maternity, mental health care, and medical equipment (Danis, Binnendijk et al. 2007).

The public and physician priorities in benefit packages of Israeli National Health Insurance show a shift in prioritization of services over time. Priority services used to be life-extending treatments in case of terminal illness and life extending treatments in non-terminal conditions such as transplants, expensive to treat diseases, and intervention for premature infants. However, there is a move towards increased relative preference for treatments adding quality to life (Chinitz, Meislin et al. 2009). In the Netherlands, dental benefits are found to be most important followed by prescription drugs and homeopathy (Kerssens and Groenewegen 2003).

2.3.2.4 Discussions

There are scanty studies on health insurance benefit packages. Particularly studies which deal with the preference of beneficiaries to health insurance benefits are limited. Besides, most of the studies which describe the benefit packages of health insurance schemes in various countries resulted from one health basket project (Schreyögg, Stargardt et al. 2005).

Defining benefit packages is a challenging task as it involves balancing health care need, demand, and health care resources. Health care services are also very broad and categorization is difficult. It has been a hard task to leave complete or parts of services out of health insurance package. However there always is a need to make choices and prioritize due to resource scarcity.

Countries have either explicitly or implicitly define benefit packages. The criteria used to define benefit packages include need, safety, efficiency, costs, effectiveness,

cost-effectiveness, and budget (Planas-Miret, Tur-Prats et al. 2005; Schreyögg, Stargardt et al. 2005).

The main exclusions from benefit packages of different countries are non-conventional treatments and alternative care. However, the boundary between basic and extra services is not clear (Soderlund 1999). Services such as cosmetic surgery, services related to leisure, services with uncertain efficiency are among major exclusions. There are also services which need eligibility conditions or provided with co-payments. Services under this category include those provided by paramedicals or specialists. Many countries place conditions on services such as physiotherapy, transplantation, sterilization, and medical aids. The provision of dental care particularly for those above 18 years is also limited in some countries.

Preference studies indicate that people prefer a wide range of benefits and protection against the aggregate costs of illness as well as protection against rare and costly medical events. Respondents seek coverage for expensive care, regardless of whether the expense is generated by a few rare and costly events or by frequent events bearing a moderate cost (Dror, Koren et al. 2007).

In order to accommodate the preferences of people, some European countries introduced supplementary health insurance benefits on top of statutory health insurance. The objective of which is to stimulate managed competition so that social health insurance organization become more consumer oriented. Thus, consumers who are not satisfied with their health insurance provider would switch insurance schemes with different benefit packages (Kerssens and Groenewegen 2003).

Governments use different priority setting principles and criteria while defining benefit packages. The benefit packages depend on the underlying objective of the insurance. For instance, priority setting in Oregon Medicaid was said to be cost effectiveness but revisions of the benefits shows that the most prominent objective for the package was the degree of threat to life posed by condition. On the other hand, countries which entirely use their benefit definition depending on essential package may not have coverage for rare and costly events (Khosa, Soderlund et al. 1997). Similarly, countries such as France, Germany, Italy, and Poland used cost-effectiveness as one of the criteria for the definition of the packages. In addition they used safety (France, Spain), Adequacy (Germany), and costs (Italy) to define the

packages. Denmark used need and budget for inclusion/exclusion of health care services (Schreyögg, Stargardt et al. 2005).

This review can provide lessons for Ethiopia and other countries which are striving to introduce health insurance. Countries may apply criteria depending on their particular context. The definition of benefit packages is an ongoing process. There will be changes depending on different factors which affect health status and health care provision. Countries may take the example of Germany which used incremental approaches in both expansion and reduction of benefit packages depending on different needs and economic circumstance (Barnighausen and Sauerborn 2002).

Part II EMPIRICAL RESEARCH

Part II presents the empirical works of this PhD research in Chapters 3-7. An interview survey and qualitative study were conducted to assess the design of health insurance and determinants of the demand for health insurance. The results of these two studies were used to design a discrete choice experiment which is used to further elicit preferences to health insurance. Chapter three presents the methods and results of the survey which focuses on the features of employment based health insurance. Chapter four describes the methods and results the qualitative study. The qualitative study deals with the knowledge and factors important in the demand for health insurance. Moreover, development of health insurance is also assessed. Chapter five deals with the design of a discrete choice experiment of this research and the results of the discrete choice experiment are presented in Chapter six. The discrete choice experiment was designed based on the findings of the survey and the qualitative study. It focuses on elicitation of preference to health insurance described with different attributes and attributes levels of health insurance design elements. Discussions, study strengths and limitations, and conclusions are presented along with the findings in the respective chapters. Chapter 7 gives the general discussion and conclusions.

Chapter 3 DESIGN CHARACTERISTICS AND UTILIZATION OF EMPLOYMENT BASED HEALTH INSURANCE – SURVEY

In this chapter the findings of the survey are presented. The objective of the survey was assessment of characteristics and utilization of employment based health insurance. This study was the first of the three empirical works. It is conducted initially in order to have information on the characteristics of employment based health insurance which could be used in the subsequent studies. Descriptive statistics are used to present the results of the study. A summary of the survey is followed by description of the methods. Then, the results, discussion, study strengths and weakness, and conclusions are presented.

3.1 Summary

A survey was conducted to assess the features of employment based health insurance. A multi-stage sampling was used to sample respondents of the survey. Fifty formal sector organizations with health insurance benefit were randomly selected from a list of organizations with health insurance. The respondents of the survey were then selected from the sampled organizations. A semi-structured questionnaire was used to interview 919 formal sector employees on the types of health insurance benefits they get. The results of the study show that employment based health insurance is inequitable with benefits being more comprehensive for employees with highest qualifications and positions. These people are normally better-off in terms of salary and living standards. Enrolment is mainly at individual level (610/66.4%) though there are differences across types of organizations. All of the respondents indicated that they do not make contributions to the health insurance benefits and they are more likely to get partial coverage (589/64.1%). Thus, they have to make co-payments or incur full health care payments if their health care expenses are beyond the cap. Respondents were not very clear about the benefit packages. However, they have indicated that there is a general tendency to exclude vision care, dental care, some chronic diseases, and pregnancy related services from benefit packages. Retrospective reimbursements either to providers or beneficiaries is mainly used to offer the health insurance benefits. Among the respondents who

faced health problems in the last one year prior to the survey, 95.3% of them sought health care services.

3.2 Methods

3.2.1 Introduction

A survey was conducted with formal sector employees who at the time of the study had employment based health insurance (EBHI)¹. The objective of the survey was to collect information on the features of health insurance the beneficiaries were entitled to.

A semi structured questionnaire was developed to collect the information. The questionnaire includes socio-demographic characteristics, work and health insurance status, health care utilization, views and awareness on the current legislation of social health insurance (Appendix II).

The socio-demographic section includes questions on basic background information of the respondents and households. The work and health status section include questions on position, salary, experience, and health insurance benefit characteristics such as enrolment, benefit packages, reimbursements, coverage, limitations, and providers of services. Respondents were also asked if they have used their health insurance benefits. Moreover, their awareness and views regarding the declaration of social health insurance were explored.

The questionnaire was translated to the local language, Amharic by the PhD researcher and the data collection was done in Amharic.

3.2.2 Sampling

Respondents of the survey, who were employees in the sampled organizations, were approached at their work place. Thus, a multi stage sampling technique was used to select survey respondents. First information on formal organizations with employment based health insurance was collected. In general, most formal sector

¹ Employment based health insurance refers to private health insurance benefits provided by an employer. In Ethiopia, employment based health insurance is usually provided to employees of public enterprises, some private organizations, non-governmental organizations, and international organizations. Civil service organizations do not usually have health insurance but people who work in health care system are entitled to get services free of charge from public health care facilities

employers other than civil service organizations provide health insurance benefits. Lists of the organizations with health insurance were obtained from key informants in insurance corporations. However, the key informants were reluctant to give exhaustive lists of the organizations with health insurance benefit. Moreover, there are organizations which self-insure that were difficult to trace.

The information collected from key informants resulted in 152 organizations with employment based health insurance (Appendix II). Only a limited number of them were found to be government organizations. Most of them are private organizations engaged in a variety of activities.

The organizations that provide health insurance benefits were broadly categorized either as local or international organizations. This study focuses more on local organizations so as to see the health insurance options with local sources of funding. Thus, 80% of the respondents were required to come from local organizations and 20% from international organizations.

The organizations identified were grouped into more homogeneous organizations by their type. The types used were public for profit, public not for profit, private for profit, local NGOs, and international organizations. Out of the total organizations, 50 (40 local and 10 other) organizations were randomly selected for the study (Table 3.1). Roughly equal proportions of public and private organizations were sampled from the local organizations: 19 public and 21 other local organizations (private and local NGOs). The local organizations consist of private for profit, public for profit, public not for profit, and local NGOs. International organization mainly account for international NGOs and Bilateral organizations. Since private for profit organizations account for large proportion of organizations, a larger sample was taken from private organizations; which is 18. Public for profit organizations are 12 while public not for profit and local NGOs account for 7 and 3 respectively. Among the international organization, 7 were international NGOs and 3 were bilateral organizations.

Table 3.1: Number of Sample Organizations Used for Survey on EBHI by Type in Addis Ababa, 2013

Type of organization	Number of organization
Public not for profit	7
Public for profit	12
Private for profit	18
Local NGOs	3
International organizations	10
Total	50

3.2.3 Sample Size

The sample size of the respondents was calculated using a single population proportion. Since there are no data which show the proportion of formal sector employees that are covered by health insurance, it is assumed that 50% of formal sector employees get health insurance from their employer.

Literature shows that using sampling technique other than simple random sampling leads to greater variability of estimates. Thus a design effect of 2 was used to account for the sample variability which results from the multi stage sampling. A design effect is a measure of a relationship between the variance when using complex sample and the variance when using a simple random sample. Thereby, it quantifies the difference in variability between true population value and sample value (Salganik 2006).

Therefore, assuming that 50% of formal sector employees get health insurance from their employer, 2% design effect, and 20% non-response rate; the sample size was calculated as follows:

$$n = \frac{z^2 p(1 - p)}{d^2}$$
$$n = \left(\frac{1.96^2 * .5(1 - .5)}{0.05^2} * 2 \right) + 0.2 \left(\frac{1.96^2 * .5(1 - .5)}{0.05^2} * 2 \right)$$
$$n = 922$$

Equally distributing the sample size to organizations, 18-19 were the number of employees that need to be interviewed from each organization.

3.2.4 Data Collection

The data collection was conducted by trained enumerators. Seven data collectors and one supervisor were recruited for the data collection. In order to maintain quality of data collection, enumerators with experience of data collection were recruited. Furthermore, they were trained by the PhD researcher for one day so that they would be clear about the purpose of the study and the questionnaire.

After completion of the training, pilot testing was conducted in three organizations which were not selected for the main study. Three respondents were interviewed in each of the organizations. Feedback was collected about the questionnaire and some minor changes were made on the description of some questions.

The supervisor was responsible for coordinating the data collection and checking the quality of data collected. The PhD researcher also cross checked data quality and also made surprise visits to the data collectors while doing the data collection.

A letter of support from Addis Ababa University was used to approach the organizations. The organizations were communicated to either by PhD researcher or by the supervisor. Upon their willingness for the data collection, managers of the organizations were requested to identify respondents for the interview.

The protocol required random selection but in practice the selection in some firms was made by managers, and the implications for bias are unknown. After the list of the respondents was decided they were identified and asked their willingness to participate for the study. The respondents were interviewed from a semi structured questionnaire by trained enumerators. The data were collected in September-October 2011 through face to face interview in Amharic.

3.2.5 Managing, Analyzing, and Reporting Survey Data

After the completed questionnaire was collected, the PhD researcher cleaned the data on the questionnaire and translations back to English are made for the open ended questions.

The data were entered in to SPSS version 15 by a data entry clerk. They were cleaned by the researcher and descriptive statistics produced.

The unit of data analysis was the respondent. The results reported focus on the features of the health insurance scheme which are enrolment, coverage, benefit packages, and utilization.

3.3 Results

3.3.1 Response Rates

As depicted in Table 3.1, out of the 50 sampled organizations, 48 of them allowed the study to be conducted in their organizations. Thirty-nine (81.1%) of the organizations are local while the remaining are international. Among the local organizations 17 (35.4%) are private organizations from which 327 (35.6%) respondents were interviewed. Public for profit organizations come next in the list where 248 (27%) of respondents were interviewed from the 12 (25%) organizations. The least number of organizations and respondents came from local NGOs. They account for 3 (6.3%) of the organizations and 48 (5.2%) of respondents. The total respondents were 919 with a response rate of 99.7%.

Table 3.2: Type of Organizations Included in EBHI Survey in Addis Ababa, 2013

Type of organizations	Number of organizations (%)	Number of respondents (%)
Public for profit	12 (25.0)	248 (27.0)
Public not for profit	7 (14.6)	138 (15.0)
Private	17 (35.4)	327 (35.6)
Local NGOs	3 (6.3)	48 (5.2)
International Organizations	9 (18.8)	158 (17.2)
Total	48	919

3.3.2 Characteristics of Respondents

The sex ratio of male to female is 1.5 to 1. About one third of the respondents were between ages of 31 to 40. Most of the respondents (379/41.2%) have been working within their organization from one to five years while 199 (21.7%) worked between five and ten years. Six hundred three (65.6%) of the respondents were regular

workers whereas 191 (20.8%) had management positions which range between low and top level. The salary of the respondents is widely dispersed since the employee came from variety of organizations. Each of the organizations has specific salary scales and wide difference in salaries across positions. This resulted in inflated mean salary of Birr 2793.9 (Table 3.3).

Table 3.3: Socio-demographic Characteristics EBHI Survey Respondents in Addis Ababa, 2013

Gender	Male 551 (60.0)	Female 368 (40.0)	Total (%) 919
Age group			
19 – 25 years	52	67	119 (12.9)
26 – 30 years	143	118	261 (28.4)
31 – 40 years	193	117	310 (33.7)
41 – 50 years	104	51	155 (16.9)
51 – 64 years	59	15	74 (8.1)
Years of work experience			
<= 1 year	68	68	136 (14.8)
1.01 – 5 years	232	147	379 (41.2)
5.01 – 10 years	134	65	199 (21.7)
10.01 – 20 years	65	52	117 (12.7)
20.01 – 30 years	47	32	79 (8.6)
30.01 – 38 years	5	4	9 (1.0)
Position			
Low level worker	79	46	125 (13.6)
Ordinary worker	340	263	603 (65.6)
Low level management	91	43	134 (14.6)
Mid level management	25	15	40 (4.4)
Top level management	16	1	17 (1.8)
Salary			
200 – 650	21	26	47 (5.1)
651 – 1400	93	104	197 (21.4)
1401 – 2350	180	123	303 (33.0)
2351 – 3550	116	45	161 (17.5)
3551 – 5000	73	39	112 (12.2)
5001 – 15000	68	31	99 (10.8)
Mean salary (in Birr)			2793.9

1USD=18.4 Birr

3.3.3 Design Characteristics of Employment Based Health Insurance

3.3.3.1 Enrolment

Out of the total respondent, 610 (66.4%) revealed that enrolment in their organizations is mainly at individual level while the remaining 309 (33.6%) got their spouses and children enrolled as well (Table 3.4). However, enrolment is not the same across the board. There are exceptions for top level managers in some organizations. Even if enrolment is supposed to be at individual level for most employees, it includes the core family for top level managers. Respondents also indicated that some organizations do not register their supportive staff but only the professionals. It appears that international organizations are more likely to enrol families. Proportionally more respondents working in these organizations (125/79.1%) have their families signed up while private organizations are less likely to include families (94/28.7%). Respondents enrolled at family levels in general get insurance for their children and spouses with the exception of few respondents who claimed their parents are also enrolled.

Table 3.4: Enrolment and Coverage of Employment Based Health Insurance in EBHI Survey in Addis Ababa, 2013

Employees by type of organizations	Enrolment		Coverage		Total
	Individual	Family	Full	Partial	
Public for profit	206	41	184	63	247
Public not for profit	90	49	51	88	139
Private	233	94	95	232	327
Local NGOs	48	0	0	48	48
International NGOs	33	125	0	158	158
Total	610	309	330	589	919

3.3.3.2 Coverage, cap and copayments

Health care services are either fully or partially covered with cost sharing by the employees. The coverage of the employment based health insurance varies across organizations and the beneficiaries. The arrangement of partial coverage is either as a cap or copayment. In case of cap, beneficiaries get full coverage for the health care

expenses till they reach the maximum amount beyond which they do not get insurance and are required to cover by themselves. Cap is usually applied at yearly bases and it can differ among beneficiaries within and across organizations. Organizations also apply different cap amounts for different family members in the case of family level enrolment. Copayments in contrast are cost sharing arrangements in which employees are required to pay a portion of the total health care expenditure every time they seek care. Copayments are usually the same for employees of the same organizations.

Health care sought overseas is not normally covered for the majority of the respondents. However, there are exceptions for top level managers in some organization. Top level managers can enjoy overseas health care services fully covered from their organization.

Out of the total respondents, most of them 589 (64.1%) get partial coverage either as a cap or co-payment arrangements. There are also arrangements in which full coverage is provided to the employees while their dependents get partial coverage. It also appears that all organizations are more likely to provide partial coverage (Table 3.4).

Among respondent with partial coverage 120 (20.4%) stated that co-payment arrangements are in place while cap is applied for 469 (79.6%) of the respondents. The maximum and minimum co-payments are found to be 50% and 10% of the total health care expenditure. Employees from private organizations seem to have a wide range of caps and co-payments. The highest co-payment rate (50%) is applied in private organization. Besides, proportionally more people (120/58.2%) from private organizations get the least amount of cap. Respondents from international organizations are more likely to have cap rather than co-payments. The highest cap also comes from international organizations. All of the employees from international organizations had the maximum cap or the minimum co-payments (Table 3.5). Employees from public for profit and not-for-profit organizations get an average co-payment and lower cap.

There are neither direct nor indirect contributions made by the employees into the employment based health insurance. Contributions are entirely made by employers. However 160 (17.4%) indicated that they have a type of social committee which

brings additional support for people who get sick by collecting voluntary contributions.

Table 3.5: Amount of Caps and Co-payments in EBHI, Addis Ababa 2013

	Public for profit	Public not for profit	Private	Local NGO	International organization	Total
Cap (in Birr)						
1500-3000	-	47	120	39	-	206
3001-10000	24	22	49	9	82	184
10001-50000	-	-	21	-	36	59
50001-18000	-	-	-	-	20	20
Total	24	69	190	48	138	469
Copayments (%)						
50	-	-	20	-	-	20
25	19	19	-	-	-	38
15	20	-	-	-	-	20
10	-	-	22	-	20	42
Total	39	19	42	-	42	120

1USD=18.4 Birr

3.3.3.3 Reimbursements

Most of the organizations make retrospective reimbursements in order to pay health care expenditures. Thus, employees are expected to pay out of pocket when they need care and then they request for refund by presenting the receipts and medical certificates. Reimbursements are usually made to the individuals either by their employer or the insurance companies from which the insurance policy was purchased. However, a few organizations also directly reimburse providers. Three hundred sixty four (39.6%) of the respondents reported that they get reimbursed for themselves, while the 191 (20.8%) individuals revealed that reimbursements are made to providers. The remaining reported that either of the two reimbursement methods is used.

The time to get reimbursements ranges from half a day up to 3 months. Respondents who claimed the requirements of long time to recover payments indicated that they are discouraged to request for reimbursements especially if the expenditure is not

substantial. But this is not a problem for the majority 547 (75.1) of the respondents who specified that it takes a maximum of 10 days to be reimbursed. The procedures to be reimbursed are also cited as easy, difficult, or complex. Substantial proportion of the respondents 582 (79.9) revealed that the procedures are easy whereas 103 (14.1) told it is difficult (Table 3.6).

Table 3.6: EBHI Reimbursement methods, Procedures and Time, Addis Ababa 2013

Reimbursements	
	Number (%)
Reimbursements to individuals	364 (39.6)
Reimbursements to providers	191 (20.8)
Reimbursements to individuals or providers	364 (39.6)
	919
Procedures for reimbursements	
Easy	582 (79.9)
Difficult	103 (14.1)
Complicated	43 (5.9)
	728
Time to get reimbursements	
0.5-10 days	547 (75.1)
11-20 days	76 (10.4)
21 days-3 months	105 (11.4)
	728

3.3.3.4 Benefit packages

Most of the respondents (480/52.2%) indicated that there are no exclusions and any type of health care is in the benefit package. However, a good number of the respondents seem not very clear about the services they are entitled to. Despite that, only 32 (3.5%) of the respondents openly revealed that they do not know if there are exclusions. Some of them think that expensive or non-curable services are excluded in general. Others listed the services which are not in the benefit packages of their health insurance. The exclusions that are listed are chronic diseases mainly diabetes, asthma, hypertension, kidney illness; vision and dental care; and pregnancy and delivery services. Moreover, there is no coverage for check-ups and continuous drugs in most cases. Services related to beauty such as cosmetic surgery and overseas treatment were also found among the exclusions (Table 3.7). Among the respondents who listed the exclusions, there seem to be contradiction. The services listed by some as exclusion were listed as included services in others from the same

organizations. This indicates that the benefit packages are not well communicated to the beneficiaries.

A quarter of the respondents (230/25%) revealed that vision and dental care are excluded; followed by exclusions of chronic diseases (132/14.4). Some of respondents indicated that it is not eye care per se but eye glasses or other medical aids which are excluded. Similarly, in case of dental services some explained that implantation and filling which are not in the benefit packages. As reported by 45 (4.9%) of the respondents pregnancy and delivery services are not in the benefit packages. These respondents are mainly from private (29/57.8%) and public for profit (10/22.2%) organizations.

Table 3.7: Services not in the benefit packages of employment based health insurance, EBHI Survey, Addis Ababa, 2013

Type of organizations	Exclusions				
	None	Chronic diseases	Vision, dental care	Pregnancy, delivery	I do not know
Public for profit	174	10	43	0	20
Public not for profit	55	19	49	11	5
Private	162	36	97	29	3
Local NGOs	2	46	0	0	0
International NGOs	87	21	5	5	4
Total	480	132	230	45	32

3.3.3.5 Providers

Some organizations have preferred list of health care providers from which the employees need to seek care if they want to be reimbursed. As depicted in table 4.7, overall, organizations are more likely to have list of preferred health care providers as shown by 625 (68.0%) of the respondents. International organizations hardly have preferred health care providers as stated by only 20 (12.7%) of the respondents. On the contrary, all respondents from public for profit organizations acknowledged that they have specific providers from which they are required to seek care. The remaining organizations without preferred health care providers (294/32.0%) give coverage for services sought from any legal modern health care provider as long as the services are in the benefit packages.

A part from preferred provider, some organizations own private clinics which provide first level care for the employees. None of the respondents from international organizations inform the availability of private clinic of their organization. It appears that public for profit organizations are more likely to own private clinics as reported by 167 (67.3%) of the respondents. In such organizations, if the employees need further health care, they are required to get referral from the clinic in order to be reimbursed for the expenses.

In most cases, there is no direct contract between health care providers and organizations with employment based health insurance. The organizations which directly reimburse providers have binding agreement with the providers. In such cases, the employees from these organizations are considered as ‘credit patients’ and get services without out of pocket payments. Then the finances will be settled by organization up on the request of the providers.

Table 3.8: Availability of Preferred Providers and Private Clinic Across Organizations with EBHI in Addis Ababa, 2013

	Available	Not available
Preferred providers		
Public for profit	248	0
Public not for profit	96	42
Private	220	107
Local NGOs	41	7
International Organizations	20	138
	625	294
Private clinic		
Public for profit	167	81
Public not for profit	53	85
Private	101	226
Local NGOs	11	37
International organizations	0	158
	332	587

3.3.4 Utilization of Employment Based Health Insurance

In order to assess the utilizations of the employment based health insurance, respondents were asked if they faced any health problems in the last one year prior to the survey. Respondents were also asked the three most important times they used the employment based health insurance. Out of the total respondents, 381 (41.5%) of them revealed that they were sick in the last one year prior to the survey, 102 (26.7%) of which also have family member sick in the reference period. In addition,

171 of the respondents have a sick family member while they did not have any health problem.

Among the total respondents who faced health problems, 363 (95.3%) revealed that they sought medical care. Most of them sought health care services from private providers (199/54.8%). Slightly more than half (198/54.5%) of those who sought care made out of pocket payments for health care providers at the time of treatment (Table 3.9).

Table 3.9: Health Service Utilization and Out of Pocket Payments among Beneficiaries of EBHI in Addis Ababa, 2013

Amount of OOP payment (in Birr)	Public Providers	Private Providers	Total
50 – 500	84	5	89
501 – 1000	32	4	36
1001 – 2000	42	7	49
2001 – 5000	15	1	16
5000 – 18000	8	-	8
Sub total	181	17	198
No OOP payment	18	147	165
Total	199	164	363

1USD=18.4 Birr

Respondents were also asked three very important times they have used the employment based health insurance in the last five years. More than four in five people (775/84.3%) revealed that they have used the insurance for a maximum of three episodes.

3.4 Discussions

This study can complement and contribute to the existing literature on health insurance. In particular, it fills the knowledge gap regarding employment based health insurance in low income countries. Understanding the characteristics of the available employment based health insurance is of relevance in terms providing information about health care coverage and financial protection against of health care costs for the part of the population who are insured. It also suggests design options for more comprehensive social health insurance scheme.

Organizations which already have employment based health insurance can also learn from each other and promote better practices. On the other hand, those with no

health insurance can learn about the issues to consider the provision of the health insurance benefits.

It appears that the benefit packages of EBHI are not well communicated. They are only considered as one of the employee benefit packages and privilege of working in that specific organization. Only limited numbers of the respondent were able to clearly identify the benefit packages or exclusions from the EBHI. However since provision of health benefits entail resource allocation it is important to specify the benefit packages in order to plan resource allocation. Making aware of the benefit packages for the employees also help their planning and preference of healthcare seeking in terms of types and provider. Moreover, in terms of resource allocation at macro level, there clearly is a need to prioritize services and define benefit packages so that more resources could be available for worse off segment of the population.

Organizations seem in favour of less expensive health care services in general. Vision and dental care are excluded in most cases. Next, in the list are chronic diseases. It is not clear if these exclusions are made considering the disease burden of the country or not. For instance, Ethiopia has one of the highest burden of eye diseases (Berhane, Worku et al. 2007). Chronic diseases are also becoming an increasing disease burden in urban areas of Ethiopia, particularly Addis Ababa (Misganaw, Hailemariam et al. 2012). The exclusion of pregnancy related services may in part be due to the fact that these services are provided free of charge in public facilities while they are expensive in private facilities. In general, the determination of benefit packages needs to be carefully planned by considering different issues of the health system and population (Normand and Weber 2009).

The study found the lowest co-payment and highest cap among employees of international organizations. Still there are exclusions which would be necessary in terms of resource allocation. Co-payments may justify the rational use of health care services; the effect of which need to be investigated (Normand and Weber 2009). However, cap may rarely be used as it increases inequity between the relatively sick and healthy and between the better off and worse off. This reduces protection against health care costs for the neediest segment of the population.

The type of enrolment practices of the organizations also needs to be reviewed very well. Considering the dependency ratio of 103.6 per 100 working persons in the city

(CSA 2012), it is important to consider if at all it is possible to provide enrolment at least for immediate dependents. The predominant individual level enrolment does not reduce the health care burden of the working population since they have to provide healthcare for their dependents as well.

In general, EBHI is providing good protection of health care costs among the beneficiaries with health service utilization of 95.3 among those who were sick. Further investigation of the schemes from the providers' side would provide additional information that would help understanding of the arrangements of the schemes. It may also be important to foresee if it is possible to combine these independent schemes so that larger pool will be available.

3.5 Study Strengths and Limitations

The study collected data on employment based health insurance designs of different type of formal sector organizations. This information is lacking and issues raised may initiate further studies and changes on the design of employment based health insurance in the country. However, the study may be biased or may have inaccurate information since information was collected only from the employees' side. It was also impossible to get complete list of organizations which provide health insurance.

3.6 Conclusions

Employment based health insurance had been the main source of private health insurance in the country. However, the designs of these health insurance schemes such as benefit package, exclusions, or co-payments are not clear for the beneficiaries. The provision of the health insurance benefits also depends on the position of the employees since it targets the retention of qualified employees. This makes the health insurance benefits inequitable. Employers may look in to their health insurance schemes and make it more consumers oriented. This study may be complemented with providers' side study to get the whole picture of the schemes.

Chapter 4 KNOWLEDGE AND PREFERENCE OF HEALTH INSURANCE – QUALITATIVE STUDY

This chapter deals with the results of qualitative study. FGDs and key informant interviews (KII) were conducted to assess the knowledge about health insurance, determinant factors of the demand for health insurance, and issues related to the development and progress of social health insurance in Ethiopia. FGDs were conducted with formal sector employees to explore their knowledge towards health insurance and factors important in their preferences to health insurance. The KII on the other hand focus on issues related to health insurance development, progress, and proclamations. Thematic analysis is used to present the results of this study.

4.1 Summary

The study presents the knowledge of health insurance and determinants of the demand for health insurance among formal sector employees in Addis Ababa. Potential beneficiary preferences are explored through focus group discussions with formal sector employees. Interview of key informants is also conducted in order to get background information on progress of health insurance in the country. A thematic analysis is used to analyse the results. The findings suggest that there is little knowledge about the concept and elements of health insurance. Some concepts such as risk pooling and co-payments are not well understood. Potential beneficiaries revealed quality of care as the most important factor in their decision regarding health insurance. Comprehensiveness of benefit packages and the amount of premium level are also found to be the second and third concerns related to health insurance. However, the premium level is found to be of less concern and the participants tended to offer more premium level if there is comprehensive benefit packages and if the services are provided by private healthcare facilities. The participants revealed their frustration that even if they are entitled to health insurance, they may still be forced to pay out of pocket at private facilities in order to get quality services unless quality of services improve.

4.2 Methods

4.2.1 Introduction

Formal sector employees' knowledge and preference regarding social health insurance design was explored through 6 focus group discussions (FGDs) and 5 key informant interviews. Three FGDs were conducted with civil servants who did not experience any type of health insurance and the remaining three were conducted with employees' of public enterprises who benefit from employment based health insurance.

The key informant interviews were conducted in order to have background information on development of health insurance, progress and issues in the design of proposed social health insurance

4.2.2 Sampling

The key informants were selected from the insurance corporation and the Ministry of Health who worked on health care financing reform.

In order to select participants for FGDs, first the organizations were identified. Ten (five public enterprises and five civil service) organizations were selected. Since the target population for this study is formal sector employees, they were contacted at their workplace during working days. The FGDs were also conducted at their respective organizations during working days. The numbers of discussants in the FGDs were 6-8 and they consisted of heterogeneous groups by sex, educational status, and position in the work place. Heterogeneous instead of homogenous groups were formed for two reasons. First, the issue under consideration was health insurance and thus there would not be discomfort when discussing with people of different socio-demographic respondents. Second, various ideas can be explored through discussion of people with different background who would have different views.

The sampled 10 organizations for the FGDs were contacted using a letter of support. However, on one hand, the organizations did not allow for the FGDs to be conducted within their organizations at the working hours and on the other hand, employees of the selected organizations were not willing to do the FGDs outside working hours. Thus, there was a need to communicate other organizations

using purposive sampling. Finally, the FGDs were conducted in organizations that were willing for the FGDs to be conducted during working hours.

The participants of the study were selected by the managers of the organizations from each unit. The managers selected the participants in such a way that they come from different units of the organizations; such that, their tasks will be covered by their colleagues for the time they are away from their desk. There was a mix of employees from mid-level to low level workers. But it was not possible to get high level employees.

4.2.3 Data Collection and Analysis

The FGDs and key informant interview were conducted by the PhD researcher with one assistant. All the FGDs and four of the five key informant interviews were tape recorded.

Discussions were focusing on the following issues: concept of health insurance, solidarity and co-payments; benefit packages; health care providers' choice; and premium levels. The information was collected using guiding questions (Appendix IV and Appendix V) and thematic areas were explored freely as they arise.

Before the FGDs started the structure and objectives of the study were explained to the participants. They were asked their willingness to participate and the FGDs were done after the informed consent was given by the participants. Similarly, the purpose of the study was explained to the key informants and they were asked for their participation. The key informants were interviewed after consent was obtained.

The FGDs and the key informant interviews were conducted between January and February 2012. The FGDs last between 1:30 hours to 2:00 hours while the key informant interviews last between 0:30 hour to 1:00 hours.

The interviews and the FGDs were conducted in Amharic. They were transcribed and translated to English and the analysis was carried out in English. Manual thematic analysis(Huberman and Miles 2002) was used to analyse the findings.

The results of the FGDs and the key informant interviews are combined in the presentation of the findings below.

4.3 Results

4.3.1 Knowledge of Health Insurance

The knowledge regarding health insurance was explored in three areas: knowledge of what health insurance is, knowledge on the available any health insurance types and knowledge on health insurance proclamations.

The key informants revealed that there is medical insurance which is provided by a handful of commercial insurance companies. However, most of the participants of the FGDs were not aware of the availability of such scheme apart from few people who are insured by their employer. Only one employee from public enterprise is found to have medical insurance from an insurance company personally. Thus, the clients of medical insurance in the country are mainly different organizations who purchase medical insurance on behalf of their employees as indicated by a key informant. The civil servants are aware that there is a privilege of employment based health insurance for those employed in public enterprises.

The overall discussion about health insurance revealed that there is some understanding of what health insurance is. However, there is very limited knowledge about some concepts of health insurance such as risk pooling and cost sharing even among those who are currently insured. Most of the participants from civil service organizations were found to be against cost sharing. They believed that it is the responsibility of the government to provide health insurance. The justifications used were the type of employment based insurance whereby private employers cover the total health expenditure without contributions by the beneficiaries and with no co-payments in most cases. Similarly, participants from the public enterprises were not happy about the cost sharing and the cap.

“Government should provide us full health insurance because we do not have the ability to pay. I know private employers provide health insurance for their employees. Why not the government provides full insurance for its employees?”

Among the concepts of health insurance, risk pooling is not well understood. Some of the participants revealed that they would like to be paid back the sum of the contributions they have made at the end of a year if they did not fall sick within that year.

Most of the participants heard about the new social health insurance proclamation but only few have further information. The majority of the participants were happy about that and appreciated the effort. Others question whether the objective of health insurance is to address financial inaccessibility to health care or to be another source of revenue for the government.

4.3.2 Determinants of the Demand for Health Insurance

Once the knowledge of the participants regarding health insurance was explored and awareness was created, discussions were made regarding the factors that are important in their preference of health insurance. The main health insurance design elements raised to be most important are monthly contribution rate, benefit packages, health care providers, enrolment, co-payment, and payment mechanism.

4.3.2.1 Premium

In spite of the appreciation of the initiation of social health insurance (SHI), the majority of participants for the FGDs both from public enterprises and civil service organizations were not happy about making contributions for the scheme. But further discussion regarding health care resources provided awareness and consensus that there should be contribution by beneficiaries. Nevertheless, the civil servants remain concerned and reluctant about contributions to SHI. They stressed that it would be very difficult for them to make contribution for different but interrelated reasons including low salary scale, very high and ever increasing cost of living, and burden of other contributions made from their salary. Thus, they proposed a pay rise if they have make contributions for social health insurance.

“... We currently make many expenses in the form of contribution... and now we are required to contribute for health insurance ... in the short run we may fail to meet our basic needs... we may even fail to adequately feed our family. This indirectly leads to health problems, and lack of capacity to resist illness... The idea of health insurance is good but they need to consider civil servants’ ability to pay among different contributions and expenses with our low salary...”

“...to make the workers contribute for the insurance, the government has to increase the salary of the civil servants. Currently we are just signing on the payroll but go home with empty pockets.”

Considering their views about premium, discussions were made on payment modalities of out of pocket and prepayment to further explore their demand for health insurance. Most of the participants revealed that they prefer health insurance on certain conditions such as freedom in provider choice, availability of quality of service, provision of comprehensive benefit packages and if other access barriers are addressed. They stressed that in present condition paying the premium will just be additional cost and that addressing only financial barrier will not solve the problem of inaccessibility.

“...even if the premium is deducted from your salary, you still go to other providers and pay out of pocket. So I prefer to pay out of pocket... to pay myself when I need care... I can go to the provider of my choice... so unless the services are first made accessible, it is better to leave the insurance and we pay out of pocket.”

Key informants also share this idea, and they have indicated that quality and availability of healthcare services is the very important issue that needs to be addressed. They indicated that there are different reforms in addition to the health care financing reform that is undergoing in the health sector to address the other issues. They also indicated that this is one of the issues which led to delays of implementation of the SHI.

The key informants revealed that the proposed premium for social health insurance is 3% of gross salary to be contributed by both employees and employers. Considering the current cost of service provision, they contend that it cannot be large contribution to be made. Rather, there may not be sufficient resources mobilized to provide all the services the target population need.

On the contrary, the participants from civil service organization claim that the proposed contribution rate to be rather high:

“The proposed amount of premium for the social health insurance is 3%. When I see this with our utilization of health care, it is a lot. We don't have the culture of

going to health care providers unless we have serious problem. So we will only be incurring additional cost from paying the premium. So I suppose it should be between 1-1.5%. Then, adjustments can be made through time as the utilization level increase, quality of services increase, and cost of service provision increase, 3% is the maximum in the current situation with poor quality of health care providers, and inadequate resource.”

“3% is a lot. I may not pay that amount of money in a year for my health if I pay out of pocket”

However, participants tended to offer higher premium levels for comprehensive benefit packages:

“... the contribution rate should depend on the types of services covered. If there is comprehensive coverage especially for types of services which are very expensive and life threatening, 3% is fine. Otherwise if the coverage is only limited for some services, it shouldn't be more than 1%.”

Participants from public enterprises offered higher contribution rates. They offered a minimum of 3% of their monthly salary for type of benefit package with exclusion of some chronic diseases and dental care while the civil servants offered 0.5% for a comparable type of benefit packages. A maximum of 10-15% of contribution was offered by a participant from public enterprise but most participants claimed that the maximum premium should not exceed 5%.

The participants also suggested a progressive type of contribution to address the issues of social welfare in making contribution like wealth redistribution.

4.3.2.2 Benefit packages

There is very limited knowledge about benefit packages even among those with employment based insurance. As would be expected participants opted for comprehensive benefit packages and they did not understand why there is a need for exclusion of health care services from the benefit packages. It appeared for them as if it means that the health of some people is more important than others. Some claim that they are not in a position to offer or discuss about benefit packages and it should be determined by healthcare professional. They argue that unless health insurance

provides comprehensive coverage, they will still feel and cannot be protected because they do not know what health problem they will face.

“...an illness is illness as it affects and prohibits the normal way of life why do we prioritize?”

After long discussions some of the participants were able to identify and prioritize their preferences of benefit packages though others challenge that there should be comprehensive coverage.

Most of the participants opted for full coverage of inpatient care and drug. Drugs are listed as the most important and expensive element of health care expenditure.

“... especially drug is expensive even if you afford to pay for the services, you may fail to buy drugs”

Some of the participants presented their arguments about benefit packages in two categories; at country level and individual level. Considering the disease burden of the country, communicable diseases were argued to be given emphasis. Communicable diseases are said to lead in to economic, political and social crisis in short period of time. However others mentioned the changes in disease pattern indicating that a large number of people are being exposed to non-communicable diseases. Consequently, these problems are referred to be associated with more expenses and need consideration. Likewise, outpatient services with high occurrence and low cost are also said to lead to financial ruin and be covered with co-payments. Then, emergencies are raised to be covered without any condition. In some cases, individual preferences are different from propositions at national level especially among people with specific personal health condition. Obviously, they opted for coverage of their conditions.

“...it is the question of priority... in most poor countries like Africa, the main health problems are communicable such as TB, water-born diseases, diseases related to poverty, and diseases related to personal hygiene. So there should be effective coverage for these types of problems...”

“... for me, I need coverage of diabetes because I have it”

“However, chronic diseases also need to be considered since they lead to substantial expenditure...”

In the identification of benefit packages the capacity of the country in service provision is also raised beside preferences. The participants discussed that unless the country have the service to provide with adequate number and specialty of health care personnel, equipment and other inputs, including the services in the benefit packages do not help. They emphasized that these issues need to be considered while defining the benefit packages.

“...the other thing that should be considered is the ability of the country. How much can the country provide? ... Do we have specialized health care personnel to provide the services which are proposed in the benefit packages? This also needs to be answered... otherwise we just give the right to the people and there are not services to utilize.”

The benefit packages offered by employment based health insurance of public enterprises were raised for discussion. Both the beneficiaries and civil servants question the basis for the exclusion of vision and dental care which is the case in most cases. They argue that the exclusions did not consider the disease burden of the country.

“...in case of our country, eye illness is common. After some age, most people get eye diseases may be because of the dust or lack of proper hygiene. There is great chance of acquiring eye disease. I don't know why vision care is excluded from our health care benefit. I think it would have been better if they exclude many other services and include vision care.”

The proposed exclusions from social health insurance which includes cosmetic surgery, implantation, transplantation, dialysis, dental care, eye glasses and other medical aids, transportation cost were also forwarded for discussion. The participants of the FGDs agreed that there should be some exclusion because resources are not adequate.

“the luxurious services such as cosmetic surgery can be excluded but dialysis and dental care should not be...”

Rather than identifying the benefit packages some participants preferred to state the cap that can be paid per person per year. They hesitate to discuss about priorities because they are not sure what kind of health problem they will face.

“Specifying the benefit packages by services may not be important because one person may not be affected by the same health problem every time. So I think it is better if we can just decide the maximum coverage in terms of money and then people can utilize any type of service they need until the money is fully utilized...”

There is also a perception that social health insurance is there to address work related injuries only and that some of the participants stress full coverage for work related health problems. They were not sure if they can request for other health problems.

Moreover, participants proposed the opening of private clinics by organizations which have capacity to do so as alternative. In doing so, organizations will have better capacity to provide services and there may not be need for exclusions. Employees will only be referred for problems beyond the capacity of these private clinics. But, some other participants revealed their frustration if these private clinics are the only primary service providers to the employees and may not be accessible in care of emergencies.

4.3.2.3 Healthcare providers

Participants revealed that health care seeking is complicated due to service providers. They expressed their dilemma about providers.

“Seeking treatment is difficult... if you go to public providers you will not get the services and if you go to private providers you get the services but it is expensive...”

The most important factor which made participants to hesitate about health insurance was the perceived low quality of services especially in public providers. They questioned if it is manageable to provide good quality healthcare service with the current status of health system.

“... in this current situation of health facilities, I don't need health insurance”

“... With the current situation, it cannot work. We need to improve the system first: the health care providers, type and quality of the services provided and many other concerns need to be addressed. The government may solve the financial barrier but what about the waiting time? How can it ensure that I am getting the right service I need? Still I am not concerned about the payments I make especially in public facilities but the quality of the service...”

Most participants rate the services of private facilities of good quality and that they prefer to get services from those facilities. They questioned whether they can get services from private providers once they are enrolled to the social health insurance.

“...with current situation, it is difficult to get services from government hospitals...in terms of waiting time, accessibility, quality... so private facilities provide quality services”

They believed that the private providers are more accessible and they should be given the mandate to provide the social health insurance. However, there is also a view that such mandate should be provided to government facilities since they would be accountable and that the private may abuse the scheme. They also pointed out that the scheme may go bankrupt if it is left to private providers since the services are expensive. All agree that first capacity should be built for the public providers in terms of quality improvement. Then services could be provided by mix of public and private providers. Some participants also appreciated that the improvement in service provision of some public hospitals in Addis as a result of large scale health sector reform. However, the services of health centres are still questionable. They revealed that there are not adequate professionals at health centres which will compromise the services that will be provided to them.

“...private providers may be involved to some extent but predominantly the services should be provided by government facilities”

“The services should be provided both by private and public providers. When we prefer private, we consider quality and waiting time... but now we also need to consider their expense. We do not need as such luxurious hospitals but those who provide quality service with modest payment.”

Respondents both from the public enterprises and civil servants underline that the premium should depend on the benefit packages and type of provider. But they come in to agreement that it is not the type of provider but the type of service that should determine the premium level.

4.3.2.4 Enrolment

The type of enrolment at organization which currently provide health benefits was criticized because most of them give coverage for the staff only and not for their families. There were also people who experienced the down grading of the enrolment.

“I was supposed to get my families enrolled then they changed the policy and they (my families) are no longer in the health benefit. So I have to pay myself if my wife or children are sick”

They considered individual level enrolment as a kind which ignored the type of strong social attachment of the population and thus unsatisfactory

“If they insure only me, doesn't help me much, I may not get sick for long. But because I have many dependents some of them may get sick and I have to pay”

One of the issues that were raised regarding employment based health insurance was the practice of insuring professionals only in some organizations. Normally those which are not enrolled are with low status and salary and thus employment based health insurance increases inequity. They consider this to be unfair.

“We are working in the same organizations but we are insured and they are not, this is not fair”

Moreover, delays in the enrolment of some employees who are entitled for health insurance was also raised as one of the factors leading in to dissatisfaction. As a result they are denied reimbursements and are paying for healthcare out of pocket.

“I do not want to go into the details... we are entitled to the benefits but every time we ask for enrolment they give us different reasons not to enrol us”

4.3.2.5 Co-payments and payment mechanism

The participants of the FGDs with employment based health insurance revealed that they have some kind of financial protection from health care expenses. However they are not comfortable with the procedures of getting the insurance. Most organizations that provide employment based health insurance mainly use retrospective reimbursements to individuals; that is, employees are expected to pay the health care expenditure when they need care; then, they request for reimbursements from their organizations or the insurance companies.

“...the objective of health insurance is to secure employees when they get sick. But in our case, first you have to pay it out of pocket, but you may not have money in your pocket. It was rather good if we could get the right to medical care from the providers. For me, it doesn't make much difference to recover the money latter or not. I think the essence of insurance is lost if you are paying out of pocket at the time you need care.”

All respondents share this idea and they pointed out that they are not happy with such arrangement. They revealed they need the insurance when they are strained with the need for medical care and payment for the care

“When I am sick I have to pay out of pocket and then I will ask for reimbursements. If I do not have money at the time I am sick, I still be in trouble though I am insured. I have to find someone to borrow from. Though I get the money latter, it does not make much difference because there is also a cap and they do not reimburse more than that cap”

Regarding co-payments, most of the participants agree that there may be need to have co-payments for outpatient services in order to reduce moral hazard. But they point out that there should not be co-payments for inpatient care, emergencies and drugs.

“There should be 100% coverage for emergency. Inpatient care is also induced by the physician and not the person, so there should not be any co-payment”

4.3.3 Barriers to Development of Health Insurance

Key informants were asked to share their knowledge on the low development of health insurance in Ethiopia and why some employees used to be insured while others were not. They revealed that health benefits were not available for civil servants in part because they were not aware of these benefits. However, still there were challenges of infrastructure to provide services even if there was wish to provide them. Otherwise, health benefits were there in the proclamation for civil servants also.

“It (proclamation number 515/2007 on health benefits) was not operational because the civil servants do not know that they have this right and they didn't ask for. Even if the civil servants demanded the service, the facilities at the time were not in a position to provide that service. There was only proclamation but it was not clear how the services should be provided. For instance which services should be provided? Are drugs included? Or is it only for consultation? So nobody saw this being practiced; may be some civil servants had benefited. There was also no work from the government side to let the civil servants know that they have this benefit...”

The key informants indicated the underlying reason for the new reform is because health is underfinanced as shown by the National Health Accounts (NHA) of 1995/96. Thus, there was need for resource mobilization and sharing of healthcare costs. In addition, there was need for new proclamation since the previous one did not work.

With regard to medical insurance provided by commercial insurance companies, the clients are found to be mainly organizations that purchase the scheme on behalf of their employees. Only very few people purchase this medical insurance personally. These people are usually found to be well educated and lived abroad for certain period of time. On the other hand, the insurance companies are reluctant to promote and expand the provision of medical insurance since it is not profitable. The premiums are high and are not affordable to the general public. Moreover, there are many restrictions in terms of benefit packages, the maximum cap, co-payments, and the unit of enrolment. Claim management of medical insurance was said to be the

most important factor for the companies that make the provision of medical insurance expensive.

“...we are profit making company and in case of medical insurance there are many claims compared to other types of insurance... there are lots of claims for medical insurance per year...”

The key informants indicate there is still a view that Ethiopia is not yet ready for health insurance considering the capacity of the health system coupled with ever increasing population pressure. However, there will still be a need to start health insurance somewhere and use incremental approach to expand coverage by learning from practices.

4.4 Discussions

This study revealed that there are both demand and supply side factors which hindered the development of health insurance in the country. People were unaware of the health insurance benefit they were entitled to in the past. Having little experience with health insurance, they are also found to be unfamiliar with some health insurance concepts though they have some ideas about what health insurance is. There is also lack of awareness about the medical insurance that had been provided by commercial insurance corporations in the country. Most of the beneficiaries of these schemes are found to be employees of public enterprises, NGOs and other international organizations. The participants knew the new social health insurance proclamation though there is lack of detailed information.

Dissatisfaction with the current employment based insurance is observed for a variety of reasons such as limited benefit packages, retrospective reimbursement of healthcare expenses, cap, co-payments, and individual level enrolment. Some of the employees which are entitled to the services are not enrolled in some organizations for variety of reasons and discrimination between professionals and supportive staff in the same organization is said to be unacceptable.

Social health insurance is endorsed to be initiated to all formal sector employees in Ethiopia (MOH 2008). The potential beneficiaries of the scheme are concerned about the quality and availability of services though they appreciate the effort. The

key informants also raised quality as the main concern in the process of the initiation of the scheme. Though improvements in quality of services are cited in some of the government facilities they are still not satisfactory. Nevertheless, there is a need to initiate the scheme somewhere since out of pocket payments are unacceptable and improvements can be achieved through time. No country has reached effective scheme at once. The experience of developed countries also shows that most of them are still far from achieving all of the objectives of SHI. Improvements and amendments may come time. But there is a need to clearly define the design of the scheme in order to ensure equity and sustainability. Though it is indicated that the people do not have the culture of going to health care this may partly be due to payments; once insured that habit may change. Thus, the likely increase in service utilization following the introduction of SHI also needs to be considered in the design of the scheme. Otherwise SHI may increase the problems of governing the health system instead of improving healthcare provision (Carrin 2001; Steffen 2010).

Most of the participants are not happy about making contribution to the scheme. They believe that it is the responsibility of the government to provide healthcare to its citizens. Their view is partly influenced by the current practice of providing health benefits free of charge by public enterprises and other organization. On further discussions, the participants opted to low premium levels with a maximum of 5% of the basic salary. Other studies also show that people opt for lower premium levels and co-payments (Danis, Biddle et al. 2002b). Still the premium offered increased with respect to quality of services and expansion of benefit packages. Participants of FGDs from public enterprises suggested higher contribution rates than the civil servants showing the income effect; that is people with more income (salary) are willing to contribute more.

Benefit packages are not well understood by the participants. Little knowledge of benefit packages is also observed in West Africa even among those who are covered by health insurance (De Allegri, Sanon et al. 2006). They contend that every health problem should be treated in the same way as any illness prevents normal way of life. However, participants understood the need for prioritization due to the scarcity of resources though they are not happy about it.

There is also a view that there should be an incremental approach to benefit packages as adopted in other countries (Barnighausen and Sauerborn 2002). Consequently, the participants picked inpatient care, drugs, and emergency as very important benefit packages. Non access to these services was indicated to lead in to catastrophic expenditure. This is comparable with a study in the USA among Maryland state employees which showed that hospitalization coverage the most important attribute for health insurance decision (Chakraborty, Ettenson et al. 1994). A study in India also revealed that respondent select drug, inpatient, outpatient, and diagnostic tests as major benefits since they represent the highest expense (Chakraborty, Ettenson et al. 1994; Dror, Koren et al. 2007).

The participants were also aware that the disease burden of the country and the capacity of the health system be included in defining benefit packages. Some of the services are said to be available but they are not actually there. These are among the most important issue that needs to be addressed while defining benefit packages (Normand and Weber 2009). The benefit packages should not include services which are not available (Busse and Schwartz 1997). The participants favour different benefit packages while considering personal need or the need of the population as a whole. They gave emphasis to prioritization of communicable disease at country level followed by non-communicable conditions. This shows that people can prioritize health care benefits depending on societal need or constraints. Effective prioritization of benefit packages under income constraints is also found elsewhere (Danis, Goold et al. 2007).

The participants are found to be uncomfortable with the current tradition of excluding dental and vision care from the benefit packages. They particularly argue that vision care should be included in the benefit packages since eye illness is among the major disease burden in the country. On the contrary, low income uninsured population in the USA emphasize dental and long term care (Danis, Biddle et al. 2002a).

The experience of Germany shows that the improvement in the benefit packages was made constantly (Barnighausen and Sauerborn 2002). This is a lesson for other countries which are on process on initiating social health insurance. The country may start with limited benefit packages and use incremental approach as the pool

increases, utilization changes and economy grows. The expansion of benefit packages in other countries was also observed during economic growth (Busse and Schwartz 1997).

The results of this study also revealed the frustration shared among the participants in terms of getting the right service. They may be forced to pay out of pocket even after being enrolled in SHI if services are not given by the provider of their choice. Other studies also revealed flexibility in the choice of doctors and choice of hospitals among the attributes in the decision making regarding health insurance (Chakraborty, Ettenson et al. 1994; Danis, Biddle et al. 2002b).

An interaction among the elements of the health insurance design was observed during the discussions. Respondents offered higher premium levels for increase in benefit packages and option of private provider or improvement in quality of services. The respondents have shown a preference for wide range of benefit packages. They opted for partial coverage of all services rather than full coverage of some expensive services. This is comparable with study from India which showed the preference for wide range of benefit packages at basic levels than a narrow benefit with higher coverage levels (Dror, Koren et al. 2007).

One of the issues in the current employment based health insurance was retrospective reimbursements to individuals. If beneficiaries are still required to pay out of pocket at the point of service, it may still constitute burden of health care expenditure especially for those who do not readily have cash. Thus, there still is barrier to health care utilization. With regard to co-payments, the participants argue that it should not be applied on inpatient care since it is induced by physician and do not constitute moral hazard. Clear evidence in moral hazard is require to apply co-payments since it may reduce needed health care (Normand and Weber 2009).

4.5 Study Strengths and Limitation

The study explored the determinants of demand for health insurance both from policy makers and potential beneficiaries of social health insurance. The use of qualitative methods helps to explore more views as health insurance is not well developed. However, the participants of the FGDs are mainly low level and ordinary

workers. It was not possible to investigate the views' of employers and high level management team as the discussions were conducted during working hours. This may bias or limit the findings of the research. In addition more probing was not possible as the participants were new the health insurance concepts.

4.6 Conclusions

Knowledge about the concepts of health insurance such as risk pooling and cost sharing is limited. In addition there is awareness gap about the health insurance proclamation, the elements, and progress of the policy. Therefore there is need for further sensitization activities. Quality and availability of services is the main factor that determines the demand for health insurance. The potential enrollees of social health insurance also opt for wide range of benefit packages and availability both public and private healthcare providers. Full coverage of drug expenses is also important as it shares larger proportion of health care expenses.

Chapter 5 Designing Discrete Choice Experiment

To address the research question on the demand for health insurance, the empirical research was conducted in two phases. The first phase of the research consists of an interview survey and a qualitative study (Chapters 3 and 4). The survey assessed the features of currently available employment based health insurance while the qualitative study explored the knowledge and factors affecting the demand for health insurance. The findings from these two studies helped the identification and refinement of attributes of health insurance that are used to construct the DCE questionnaire. This Chapter deals with the design of the discrete choice experiment for this research. It gives a brief description of the DCEs followed by the details of the DCE design.

5.3 General Principles of DCE Design

As discussed in chapter 2, a discrete choice experiment is a quantitative methodology used to evaluate the relative importance of different attributes of goods or services on the choice of consumers (Louviere, Hensher et al. 2000). This technique is based on random utility theory (Thurstone 1927; McFadden 1974) which states that the total utility of individuals is unobservable but decomposable into systematic (deterministic/observable) component and random component. DCE also draws on Lancasterian consumer theory (Lancaster 1966; Ryan, Gerard et al. 2008) which proposes that utilities for goods come from characteristics of the goods.

The method of DCE involves the development of hypothetical scenarios (choice sets) composed of two or more alternatives. The choice scenarios are described by several attributes (characteristics). The attributes and attribute levels are determined through preliminary work thus DCE is usually preceded by preliminary investigation of attributes and attribute levels of the variable under consideration (Adamowica, Louviere et al. 1998; Gerard, Ryan et al. 2008). The survey and qualitative study conducted in phase one serves this purpose even though they stand by themselves to contribute to the knowledge regarding health insurance in Ethiopia. Details of conducting DCE can be found elsewhere (Louviere, Hensher et al. 2000; Hensher, Rose et al. 2005; Lancsar and Louviere 2008; Ryan, Gerard et al. 2008).

Evaluating all possible combination of health insurance attributes and including these attributes is not possible. Identifying and refining attributes and attribute levels is an important and often challenging task in DCE. A limited number of the attributes that are most important are chosen based on the preliminary study. The optimum combinations of the attributes and attribute levels are then determined using experimental design techniques. The experimental design produces combinations which optimize information obtained from respondents. The scenarios generated from the experimental design are then organized into a series of choice sets. Then the respondents would be asked to make their choices for each of the choice sets (Adamowica, Louviere et al. 1998; Amaya-Amaya, Gerard et al. 2008; Ryan, Gerard et al. 2008).

Once the DCE data were collected, discrete choice modelling within a random utility framework is used to analyse the respondents' choices as a function of the attributes of scenarios. For dichotomous choice sets (e.g. which of the two alternative insurance schemes would you choose? Insurance A or Insurance B), binary choice models would be used. Common binary choice modelling includes random effects logit or probit and conditional logit models. If the number of alternatives in the choice sets is more than two, more sophisticated tools such as multinomial logit/probit or mixed logit models are used (Amaya-Amaya, Gerard et al. 2008).

5.3.1 Stages 1 and 2: Identification of Attributes and Assigning Levels

The aim of this research is to identify attributes that are important in the demand for health insurance. Analysis of choices individuals make in DCE helps to measure the values placed to different design attributes of health insurance. Information from the literature review, quantitative survey, and qualitative study (Chapters 3-4) is used to identify the attributes and attribute levels (Figure 5.1).

As depicted in Figure 5.1, to identify attributes that are important in the preference for health insurance and design of the DCE, this research started with the review of literature to have an idea of the kinds of health insurance designs available worldwide. The determinants of health insurance demand are found to be of various kinds; such as, types and qualities of services, cost, providers of services, and

benefit packages (Chapter 2, Section 2.3.1). Accordingly, DCEs in health insurance used various attributes such as premium, providers of services, types and choice of physicians, coverage for drugs, coverage for health care services (outpatient, inpatient, emergency, etc.), co-payments, waiting time, etc. (Chapter 2, Section 2.3.2) to design alternative health insurance profiles.

In order to contextualize these attributes, a quantitative survey was conducted and information collected on design features of existing employment based health insurance schemes in Ethiopia. The survey provided information on premiums, co-payments, providers, enrolment, and benefit packages. The findings of the survey indicated that benefit packages of health insurance are not, in particular, clear to the beneficiaries. This in part can be due to the challenges of defining benefit packages as described in the systematic review of the literature (Chapter 2, Section 2.3.3). Specification of benefit packages has never been an easy task and remained the underlying issue across countries.

Following the quantitative survey, which gave an overview of the characteristics of health insurance design attributes, a qualitative study was conducted to explore and determine the most important factors for health insurance among potential enrollees (Chapter 4). FGDs based on the features of health insurance packages that are generally available to those in EBHI and the feature of proposed social health insurance revealed the most important attributes and attribute levels for the participants.

For instance, the participants accepted the issue of prioritization (though with few reservations) with regard to benefit packages, as opposed to comprehensive coverage of services. Wide range coverage of services may be ideal particularly in such a resource poor country. They understood the need for prioritization since services may practically be unavailable though entitlements are given.

Identification of benefit packages was also limited to the understanding and experience of the participants. For instance, there was poor understanding of what implantation and transplantation are. Thus, a general classification of benefit packages was considered with details of the proposed exclusions on the social health insurance.

The participants indicated that all services should be available for them if they have to make contribution to health insurance. However, they indicated that 'luxurious' services can be excluded. They also stated that services normally unavailable because of the capacity constraints of the country could be excluded.

Among the excluded services by EBHI are vision care, dental care, chronic diseases, and pregnancy related services. On the other hand, the proposed exclusions from the social health insurance include transportation cost, cosmetic surgery, implantation, transplantation, dialysis, dental care, eye glasses and other medical aids, and health care services sought abroad. The participants of the study indicated that exclusions of dental care, vision care, dialysis, chronic diseases, and pregnancy related services would not be acceptable. Thus, this attribute is further refined considering the fact that chronic diseases and pregnancy related services are included in the proposed social health insurance. Thus, coverage of dental care and dialysis by the health insurance were identified to be among attributes that needed to be included in the DCE design.

The FGDs also indicated that providers of services as very important in the preference of health care services and thus health insurance. If there would be restriction on providers of services, it would influence health care utilization of the people. They indicated that providers of services are the question of actually using the health insurance or not. If provider of their choice is not among the preferred providers list of the health insurance scheme, they do not need health insurance at all. They would rather pay out of pocket when they need care at the provider of their choice.

With regard to contribution and cost-sharing; premium, co-payments, and deductibles; the FGDs revealed that people have difficulty distinguishing between co-payments and deductibles. Since there is an experience with co-payments, deductibles were dropped.

Among the attributes identified from the qualitative study, quality of service was one of the underlying factors for preference of health insurance. Quality indicating dimensions such as waiting time, type of health professionals, reception and treatment of health professionals, waiting area, are indicated to be among the factors that affect preference. With regard to these quality related variables, the respondents

also stated that private health care providers are in general of better quality compared to public providers. However, in other dimensions, such as availability of specialized equipments, some public facilities could be better. The quality indicating variables are not included in the design of the DCE. This is because the DCE design will be of large size which would be unmanageable. However, quality is captured by an attribute ‘type of provider’ as providers are also linked with quality of service.

The process of identification and refinement of attributes and levels resulted in the most important attributes of monthly contribution to social health insurance (premium), benefit packages, co-payments, type of service provider, and type of enrolment. Details of each attributes and levels are presented in the following sections.

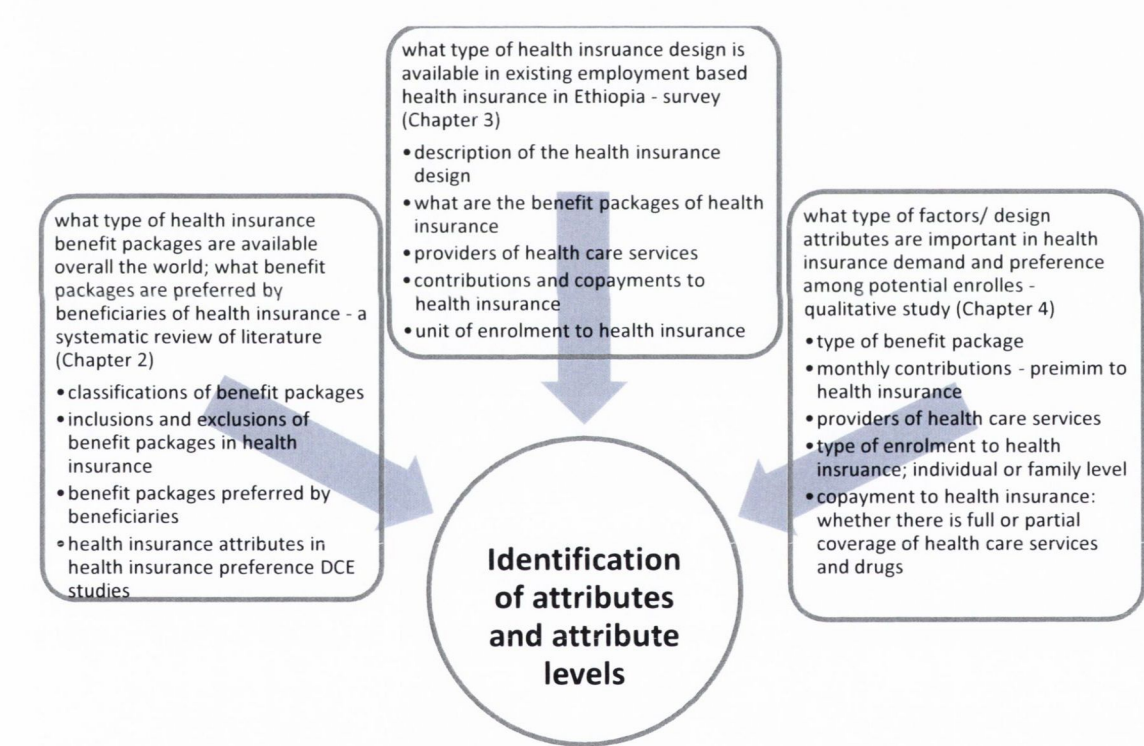


Figure 5.1: Identification process of attributes and attribute levels for theDCE study on health insurance preferences

5.3.1.1 Premium

The unit of measurement for premium is percentage of monthly salary. Percentage of monthly salary is chosen as unit of measurement to be in line with the proposed social health insurance (SHI) strategy of the country. Thus, it is more practical. According to the strategy quoted here, the formal sector employees will make

contributions as a percentage of their salary to the SHI scheme which would be deducted from their monthly salary and earmarked to health insurance.

Premium was found to be an important attribute in the demand for health insurance a minimum of 0.5% contribution and a maximum of 5% were offered by most participants of the FGDs. However, there were a few who proposed higher monthly contributions, the maximum being 15%. The draft SHI strategy suggested 3% of monthly salary as a premium. However, participants from civil service organization and those with lower salary argued that the contributions should be between 0.5% - 2%.

Finally the level of the premium was decided to be of four levels; 1%, 2%, 3%, and 5% of monthly salary.

5.3.1.2 Desired (Expressed) Health Insurance Benefit packages and Co-payments

There are different classifications of benefit packages depending on the criteria used and the priorities of respective countries (Harries and Keane 1999; Kifmann 2002; Kerssens and Groenewegen 2003; Busse, Stargardt et al. 2005). Benefit packages can be defined either positively or negatively. In positive definition the services which are included in the health insurance would be listed. In the case of negative definition, services which are not covered (exclusions) by the health insurance are listed (Bellanger, Cherilova et al. 2005).

The results from the survey show that respondents cannot give accurate information about the benefit packages of existing employment based health insurance since they are not well communicated. Still respondents were able to identify some of the services excluded from benefit packages. In general, there is a trend of excluding health care services such as vision care, dental care, dialysis, pregnancy and related services, and some chronic diseases (Chapter 3).

Participants of the FGDs were not happy about limitations in benefit packages; they have argued for comprehensive benefit packages. However, discussion about shortage of resources and the implied increase in monthly contribution of comprehensive benefit packages opened the forum for discussion. The respondents indicated that they need coverage for expensive health care services. Producing list

of health care services was challenging since there is limited knowledge about the details of health care services and there was always disagreement between participants about the services that should be included or excluded from the benefit packages.

Hence, the type of services and exclusions of the proposed benefit packages of the SHI are used for the discussions. The exclusions of the proposed social health insurance strategy include transportation cost, dialysis, eye glasses, dental care, implantation, cosmetic surgery and services which are covered by other law such as car accident. Most of the respondents agreed that there should be some exclusion. However, most of the participants strongly argued that dialysis and dental care should not be in exclusions. As a result, dental care and dialysis are included in this study as levels of exclusion in order to see the values attached to these two services.

Initially the benefit package was proposed to be an attribute with four levels, namely of inpatient services, outpatient services, laboratory and other diagnostic tests (tests), and drugs (Table 5.1). However, this implies that a given health insurance can be defined by only one of the four levels (for example tests only, in which case the other three services are excluded). Thus there was need to refine the benefit package in such a way that each of the four levels of benefit package are attributes by themselves. To define the levels of the four benefit package attributes (inpatient, outpatient, tests, and drugs) co-payments are used.

Table 5.1 Preliminary Definition of a Benefit Package Attribute for the DCE Study on Health Insurance Preferences in Addis Ababa, 2013

Attribute	No of levels	Attribute levels
Benefit package	4	• Inpatient services • Outpatient services • Laboratory and other diagnostic tests • Drugs

The results of the survey shows that most of employment based health insurance provide partial coverage (Chapter 3). The co-payments beneficiaries make ranges from 10% to 50% of total health care expenditure. FGD participants proposed low levels of co-payments the maximum being 10% of total health care expenditure. The

key informants explained that the draft proposition regarding co-payments is 5% on outpatient services and no co-payments for inpatient and generic drugs.

Finally, two levels of co-payments is considered; no co-payment (100%/ full coverage) or 10% coinsurance (90%/ partial coverage).

Therefore the four attributes and attribute levels of the benefit packages were:

- Coverage of outpatient services: 100% or full coverage (level 1), 90% coverage (10% coinsurance) (level 2)
- Coverage of inpatient services: 100% or full coverage (level 1), 90% coverage (10% coinsurance) (level 2)
- Coverage of laboratory and other diagnostic tests: 100% or full coverage (level 1), 90% coverage (10% coinsurance) (level 2)
- Coverage of drugs: 100% or full coverage (level 1), 90% coverage (10% coinsurance) (level 2)

In addition exclusion is considered to be another attribute with four levels (exclusion of dialysis, exclusion of dental care, exclusion of both dental care and dialysis, and no exclusion).

- Exclusions: exclusion of dialysis (level 1), exclusion of dental care (level 2), exclusion of both dialysis and dental care (level 3), no exclusion (level 4)

5.3.1.3 Service provider

The qualitative study results (Chapter 4) show quality of services to be the most important factor in the demand for health insurance. The participants of the FGDs associate the quality of services with service providers. Thus, the choice of service provider was found to be the most important factor that influences the participants to consider health insurance or not. The respondents indicated that if the provider of their choice is not among the provider network of the health insurance scheme, they would be forced to go to the providers of their choice in order to get better quality services.

Therefore, service provider was defined to be one of the attributes with three levels described here below. The levels of the providers are specified based on the health

care providers available in the country. The major health care providers are public and private. However, there are few NGO health care facilities as well. The definition of the attributes and levels of service provider is as follows:

- Health care providers: public providers (level 1), private providers (level 2), both public and private providers (level 3)

5.3.1.4 Type of enrolment

The type of enrolment of the proposed social health insurance was also questioned during FGD. Particularly, respondents with low salary and those who are unhappy with the individual level enrolment of employment based health insurance stressed that the coverage should include dependents. However, the interest in level of level enrolment was varied. Some respondents believe that the enrolment should extend to all their young and old dependents (children and parents); however, others argue that coverage of children only may suffice. Therefore, the levels for attribute 'type of enrolment' are defined as follows:

- Type of enrolment: enrolment of core family (level 1), enrolment of extended family (level 2)

Core family enrolment includes the spouses and children while enrolment of extended family includes spouses, children, and parents.

In general, 8 attributes are identified (Table 5.2); two of the attributes are of level 4, one attribute of level 3, and five attributes of level two.

Table 5.2: List of Attributes and Attribute Levels identified for DCE Study on Health Insurance Preference in Addis Ababa, 2013

Attribute	Number of levels	Levels	Measurement
Premium	4	1% of monthly salary 2% of monthly salary 3% of monthly salary 5% of monthly salary	Percentage of monthly salary
Coverage of outpatient services	2	100% (full) coverage 90% (partial)coverage	
Coverage of inpatient services	2	100% (full) coverage 90% (partial)coverage	
Coverage of drugs	2	100% (full) coverage 90% (partial)coverage	
Coverage of tests	2	100% (full) coverage 90% (partial)coverage	
Exclusions	4	Dialysis Dental care Both dialysis and dental care None	
Providers of services	3	Public Private Both	
Enrolment	2	Core family Extended family	Core family includes spouses and children. Extended family include spouses children and parents

5.3.2 Stage 3: Experimental Design

5.3.2.1 Experimental design and choice sets

As discussed in Chapter 4, experimental design an important part of DCE design in which attributes and attribute levels are combined to produce various profiles. As depicted in Table 4.2, the number of attributes and attribute levels for this study are:

- Two attributes with 4 levels
- One attribute with 3 levels
- Five attributes with 2 levels

Thus, the full factorial design results in 1536 combinations or profiles

$$FFD = 4^2 \times 3^1 \times 2^5 = 1536$$

Obviously, the number of combinations is too large to consider full factorial design. Thus there is a need to consider fractional factorial design.

This DCE study used main effects only design since ‘main effects plus interaction’ produced a large design which would be unmanageable. The experimental design was generated using SAS software. Optimal fractional factorial design of 32 combinations with D-efficiency of 99.6% was generated. Generic choice sets with two alternatives are considered for this DCE study. This is because there are no different health insurance types to label alternatives. Moreover, the objective of this study to assess the preferences to a social health insurance scheme to be initiated.

5.3.2.3 Creating choice questions

A choice set represents a mechanism in which alternatives – described by attributes and attribute levels – are presented to respondents. The respondents are then expected to compare the alternatives and choose the one which they prefer. Thus, a choice set is also a mechanism in which information on choice is collected from respondents (Hensher, Rose et al. 2005).

Sixteen binary choice sets were generated using SAS. In addition to these 16 choice sets, 2 holdout choice sets were also constructed and included to test the consistency of choices. Thus, the questionnaire consists of a total of 18 DCE choice questions. Choice question number 6 and 12 are the holdout choice sets (Appendix VI).

Binary choice set implies that there are two health insurance alternative in each of the choice sets. Then, the respondents would compare each of the two alternatives and choose the one which gives them maximum utility.

Generic naming of alternatives ‘Insurance A’ and ‘Insurance B’ is used to label the alternatives. In addition, the choice sets are ‘forced choice sets’ in which there are no an ‘opt-out’ option. The respondents were required to choose either of the two alternative health insurance scenarios. Forced choice set is used because the type of health insurance under consideration is social health insurance which is compulsory. Table 3.6 presents an example of the choice set.

Test of consistency was performed by comparing the probability of the actual choices made for the holdout choice sets (choice set 6 & 12) with the predicted

probabilities. The random effects logit model was estimated excluding the holdout data set. Then, probabilities of choice (for the holdout choice sets) were predicted using the coefficients of the random effect logit estimation results. These predicted probabilities were compared with actual probabilities of the holdout choice sets which were calculated using frequencies. If the predicted probabilities are close to the actual probabilities, it confirms that the choices were consistent.

Table 5.3: Example of Choice Set Used for the DCE Study on Preference for Health Insurance in Addis Ababa, 2013

	Insurance A	Insurance B
Contribution from monthly salary	3% of salary	2% of salary
Enrolment (families covered by the HI)	Extended family	Extended family
Exclusion (Services that will not be covered by the insurance)	Dental and dialysis care	Dental care
Provider of the services	Private	Public and private
Coverage of outpatient service	100% coverage	90% coverage
Coverage of inpatient service	100% coverage	90% coverage
Coverage of drugs	90% coverage	100% coverage
Coverage of laboratory tests and other diagnostics	90% coverage	100% coverage

Which insurance would you choose?
(Please tick one box only)

Insurance A

☐

Insurance B

☐

5.3.2.4 Question design

A self-administered questionnaire was designed (Appendix VI). Description of the attributes, attribute levels and how the questionnaire should be filled-in was provided. An example was also presented and explanation of the example was provided. The first part of the questionnaire consists of description of percentages. Questions about specific percentage of respondent’s monthly salary are also included. Questions on percentages are incorporated in the questionnaire since contribution to health insurance (premium) is described as a percentage of monthly salary. Thus, there is a need to know respondents understanding of percentages and if they can correctly calculate certain percentages of their salaries.

The DCE questionnaire also includes questions on socio-demographic characteristics, asset ownership and attitude and motivation questions. This

information included for sub-group analyses of the DCE data. Questions on asset ownership were used to classify the respondents into three wealth groups (upper, middle, and lower) using a principal components' analysis. Then, comparative analysis of preference is made among respondents which belong to the three classes.

Similarly, attitude/motivation related statements are included to assess respondents overall attitude towards health insurance. It is also used to do subgroup analysis using the DCE data. Twelve attitude/motivation related statements which are mainly extracted from the qualitative study were stated in the questionnaire. Then, respondents were asked whether they strongly agree, agree, neutral, disagree, or strongly disagree to the statements.

5.3.2.5 Hypotheses

Hypothesis 1: as the percentage of monthly contributions increases, the change in individual utility is negative

Hypothesis 2: as the coverage of outpatient services change from 90% (partial) to 100% (full) coverage, the change in utility would be positive

Hypothesis 3: as coverage of inpatient services change from 90% (partial) to 100% (full) coverage, the change in utility would be positive

Hypothesis 4: as coverage of drugs change from 90% (partial) to 100% (full) coverage, the change in utility would be positive

Hypothesis 5: as coverage of laboratory and other diagnostic tests change from 90% (partial) to 100% (full) coverage, the change in utility would be positive

Hypothesis 6: as exclusions in benefit packages change from 'exclusion of both dialysis and dental care' to 'exclusion of dialysis only' the change in utility would be positive

Hypothesis 7: as exclusions in benefit packages change from 'exclusion of both dialysis and dental care' to 'exclusion of dental care' the change in utility would be positive

Hypothesis 8: as exclusions in benefit packages change from 'exclusion of both dialysis and dental care' to 'no exclusions' the change in utility would be positive

Hypothesis 9: exclusions of dental care is less important than exclusion of dialysis

Hypothesis 10: as health care service providers change from 'public' to 'private' the change in utility would be positive

Hypothesis 11: as health care service providers change from 'public' to 'both public and private' the change in utility would be positive

Hypothesis 12: 'providers of both public and private' would be highly valued than 'private providers only' and 'private providers' would be more valued than 'public providers'

Hypothesis 13: as enrolment to health insurance changes from 'extended family' to 'core family' the change in utility would be negative.

Hypothesis 14: men would be willing to pay more for health insurance packages compared to women showing an income effect. This is because men in general have more income compared to women. On the other hand, women would also be willing to pay proportionally more of their income. This is because women (people with less income) are in general risk averse. In addition, women need more health care compared to men, thus they would be willing to pay more.

Hypothesis 15: those never married would be willing to pay more compared to married. This is because never married in general have more disposable income.

Hypothesis 16: respondents in higher wealth group would be willing to pay more compared to those in lower groups. This is because they have more disposable income. However, people at lower wealth classes could also be willing to pay proportionally more of their income if they are risk averse.

Hypothesis 17: respondents with strong demand based on attitude/motivation classifications would be willing to pay more of their income compared to their counterparts. However, this may not be the case if the specific attitude/motivation question does not show the overall attitude/motivation of the respondents.

5.3.3 Stage 4: Survey Design and Data Collection

The DCE study focuses on civil servants as they will to be the initial beneficiaries of the social health insurance and to make the survey more manageable. The total number and list of civil service organization in Addis Ababa was collected from the Civil Service Agency. The total number of the organizations was found to be 126.

The sample size of the respondents was calculated using a single population proportion. In 2007, about 7.36% of the population were formally employed (CSA 2007). Therefore assuming a proportion (*p*) of 0.0736, 2% design effect, 5% margin of error, and 20% non-response rate; the sample size is calculated as follows:

$$n = \frac{z^2 p(1 - p)}{d^2}$$
$$n = \left(\frac{1.96^2 * 0.0736(1 - 0.0736)}{0.05^2} * 2 \right) + 0.2 \left(\frac{1.96^2 * 0.0736(1 - .0736)}{0.05^2} * 2 \right)$$
$$n = 250$$

A design effect of 2 is used to account for the sample variability which results from the multi stage sampling. A design effect is a measure of a relationship between the variance when using complex sample and the variance when using simple random sample. Thereby, it quantifies the difference in variability between true population value and sample value (Salganik 2006). A non-response rate of 20% is also included since the result from pilot study found a non-response rate of about 20% (Chapter 6, Section 6.3.3.1).

The DCE questionnaire was distributed to employees of civil service organizations at their workplace. The PhD researcher with one assistant distributed the DCE questionnaire to the 25 sampled organizations out of the 126 civil service organizations (Appendix VII). The data were collected in February 2013; 8-10 respondents were chosen from each of the organization to participate in the study. After the respondents consent to participate in the study, explanation about the purpose of the study and the DCE questionnaire was made either individually or in groups.

A maximum of three days was given to respondents to complete the questionnaire. Upon collecting the questionnaire, completeness was checked immediately. In case of incomplete questionnaire, respondents were requested to complete the questionnaire if they were willing.

5.3.4 Stage 5: Data Input, Analysis, and Interpretation

5.3.4.1 Aggregate analysis of DCE data

The data were entered in to SPSS version 15 by the PhD researcher. The data were cleaned and imported to STATA for analysis.

According to random utility theory, consumers choose an alternative which gives them the highest utility subject to constraints. The utility function of the consumer contains random component which is unobservable to the analyst. In such a case, the analyst can only estimate the probability of choice for an alternative (McFadden 1974).

The choice sets of this DCE survey are binary (Insurance A or Insurance B). For such binary response variables, the probability of choosing one of alternative (Insurance A) over the other (Insurance B) would be:

$$Prob(I_A = 1) = Prob(U_{InsuA} > U_{InsuB}) = Prob[(V_A + \varepsilon_A) > (V_B + \varepsilon_B)]$$

Where I_A is a choice variable which equals one when insurance A is chosen and zero otherwise. Insurance A would be chosen if the utility an individual gets from Insurance A is greater than the utility the individual gets from Insurance B.

The latent utility (U), an individual derives from consumption of health insurance can be specified by the attributes of the health insurance and the error term as follows:

$$U = \beta_0 + \beta_1 prem + \beta_2 enrol_{core} + \beta_3 exclu_{no} + \beta_4 exclu_{dia} + \beta_5 exclu_{dent} + \beta_6 prov_{priv} + \beta_7 prov_{bot h} + \beta_8 op_{full} + \beta_9 ip_{full} + \beta_{10} drug_{full} + \beta_{11} test_{full} + \varepsilon_i$$

Where

U - unobservable utility function

$prem$ - percentage of monthly contribution (premium)

$enrol_{core}$ - enrolment of core family (husband wife and children)

$exclu_{no}$ - no exclusion in the benefit packages of health insurance

$exclu_{dia}$ - exclusion of dialysis from benefit packages of health insurance

$exclu_{dent}$ - exclusion of dental care from benefit packages of health insurance

$prov_{priv}$ - private providers of health care services

$prov_{bot h}$ - both public and private providers of services

op_{full} - full coverage of outpatient services

ip_{full} - full coverage of inpatient services

$drug_{full}$ - full coverage of drugs

$test_{full}$ - full coverage of laboratory tests and other diagnostics

ε_i - error term

β_i are the parameters, or regression coefficients, of the model to be estimated. The significance and magnitude of the regression coefficients, $\beta_1 - \beta_{11}$ show the importance of a marginal change in any given attribute. The negative of the ratio of two coefficients indicate the trade-offs respondents made between the two attributes. When the coefficient of cost (percentage of monthly salary for this study) is used as denominator, the ratios of the coefficients provide an estimate of the average willingness to pay for the particular attribute.

Given the generic choice sets, the constant term of the estimation result, β_0 , is expected to be insignificant. This implies that the respondents do not have pre-inclination in to choosing either of the two alternatives.

Having binary choice or response variable implies that logit or probit models are appropriate for data analyses. However, in DCE, there are multiple observations and

responses for each sampled individuals and the logit and probit binary choice models do not allow multiple observations from individuals (Greene 2003). The availability of multiple observations per individuals also implies that responses across individuals can be correlated (Hensher, Rose et al. 2005). In such cases, random effects models are appropriate as the error terms in random effects model account for the correlation among choices that may arise due to multiple observations from the same individuals (Gyrð-Hansen and Sothuus 1999; Gerard and Shanahan 2008). Therefore, a random effects logit specification was used to estimate the above utility function. The probability that a respondent will choose alternative i from the choice set C_n is given by (Huber and Zwerina 1996; Greene 2003).

$$p_{in}(x_n, \beta) = \frac{e^{x_{in}\beta}}{\sum_{j=1}^J e^{x_{jn}\beta}}$$

However, there are also more flexible models which account for heterogeneity in choice and unobserved variability in responses such as mixed logit and latent class models (Louviere and Street 2002; Louviere 2006; Amaya-Amaya, Gerard et al. 2008). This research focuses on observed heterogeneity thus it does not make use of these models.

5.3.4.2 Methods for Sub-group Analyses

A sub-group analysis provides further information about the differences in valuation of attributes and preferences. Studies have shown that respondents may have different preferences to health insurance by age, gender, income, marital status, and attitudes (Chakraborty, Ettenson et al. 1994; Becker and Zweifel 2005; Kerssens and Groenewegen 2005; Monheit and Vistnes 2008; Trujillo, Ruiz et al. 2012). Thus, analyses of preferences for this research is also performed by disaggregating respondents in to different groups using socio-demographic characteristics; gender, wealth class, marital status; and attitude/motivation based classifications to assess if preferences are different across groups.

The data collected on ownership of different assets was used to classify respondents in to three wealth quartiles. Ownership of asset instead of income was used because using income to assess socio-economic well-being of people in developing countries

has limitations; such as seasonal variability of income, having income in kind, and under-reporting of income during surveys (Moser and Felton 2007). As a result, the use of wealth as a measure of living standards has been used as better alternative. The wealth measures combine data on durable assets and housing characteristics and access to different utilities and services which cannot have measurement problems or recall bias (Filmer and Pritchett 2001). Based on the asset ownership data, a principal component analysis (PCA) is used to construct a wealth index (Vyas and Kumaranayake 2006). The wealth index is then used to classify the respondents in to three equal parts; the upper class (rich) which accounts for the upper 33.3% of the respondents; the middle class (middle) which consists of the middle 33.3% of the respondents; and the lower 33.3% of the respondents (lower class/poor).

Respondents were also segmented in to different groups based on their attitudes to health insurance. Considering each of the attitudinal statements (Table 5.4), respondents were categorized as having weak demand, strong demand, or neutral to health insurance. Respondents who strongly agree/agree to statement number 1, 2, and 3 are regarded as having strong demand for health insurance while those who strongly disagree/disagree are considered as having weak demand. On the other hand, respondents who strongly agree/agree to statements number 4-12 are categorized as having weak demand and those who strongly disagree/disagree are said to have strong demand for health insurance. Those who are neutral to all the statements are classified as indifferent/neutral about having health insurance.

In addition, factor analysis is used to assess whether the questions actually measure aspects of attitude and motivation. This method helps to classify the questions in to groups (Field 2009).

Table 5.4: Attitude/Motivation Related Statements Used to Assess Demand for Health Insurance in Addis Ababa, 2013

R. No.	Attitude/motivation related statements
1	It is good to share health care costs between the poor and rich
2	Health insurance is good, once I am enrolled, I do not worry about getting sick or not
3	Even though health insurance has many expenses, the advantage outweighs
4	I am too healthy and I do not need health insurance
5	Health insurance is necessary but I have many expenses and I do not want to make contributions
6	I do not need health insurance because I can pay for my health care any time out of pocket
7	Even though health insurance is necessary, I do not trust the system and prefer to pay out of pocket
8	I do not want to make contributions to health insurance because health care services are not effective
9	It is the duty of the government to provide health care so I do not have to make contributions
10	Once I make contribution to health insurance, I am not sure if the money goes to health system
11	I do not want to be enrolled to health insurance if it is not compulsory because it does not work
12	If many people are enrolled to health insurance, I have to be enrolled I do not have other option

Descriptive analysis using frequencies was used to analyse the demand for health insurance based on these statements. Moreover, a subgroup analysis using the DCE data is performed using one of the statements. Out of the total attitudinal statements, statement number 4, “I am too healthy and I do not need health insurance” is used to do the subgroup analysis on respondents’ preferences to health insurance using the DCE data. This statement was preferred to the others since the same statement is used elsewhere (Monheit and Vistnes 2008) to assess respondents preference by difference in attitudes. Moreover, the group analysis is also performed based on the result from the factor analysis.

Tests of difference in preference across sub-groups

Confidence intervals of the β -coefficients and the WTP estimates, and the likelihood ratio (LR) test are used to assess whether differences in preferences across models are statistically significant or not (Greene 2003). The LR statistic is calculated by subtracting the log-likelihood of an unrestricted (LL_{UR}) model from the log-likelihood of a restricted model (LL_R) and multiplying the difference by 2.

$$LR = -2(LL_R - LL_{UR})$$

The unrestricted log-likelihood is the sum of log-likelihoods from the model estimations disaggregated by a grouping variable while the restricted log-likelihood is the log-likelihood from the estimation of the aggregate model. For instance, in order to estimate differences in preference across gender, first the random effects logit model is estimated for men and women separately. The sum of the log-likelihoods from the two models gives the unrestricted log-likelihoods (LL_{UR}). This is said to be unrestricted because there is no restriction on the models to say the coefficients from men and women are the same. The restricted log-likelihood (LL_R) is the log-likelihood from the estimation of an aggregate model which consists of the observations both for men and women. This is a restricted model because there is a restriction which assumes the parameters for men and women are equal.

The LR test statistic has a chi-squared distribution with degrees of freedom equal to the number of predictors in the models.

$$LR = -2(LL_R - LL_{UR}) \sim \chi^2_{df}, \text{ where } df = \text{number of predictors (11)}$$

If the LR test statistic is significant, it proves that the restricted and unrestricted models are significantly different. This implies preferences are different across the models.

Confidence intervals of the average willingness to pay estimates are also considered in the analyses and comparison of models for sub-groups. Overlapping confidence intervals imply insignificant difference between models. Alternatively, comparison of the Wald statistics of the separate models can also be used to compare sub-group models.

In addition, to the willingness to pay, trade-offs between different attributes is also conducted. Trade-offs are compared based on the utility scores of the different profiles.

Chapter 6 PREFERENCE OF HEALTH INSURANCE DESIGN – A DISCRETE CHOICE EXPERIMENT

This chapter presents the results of a DCE survey. The objective of the DCE survey was to elicit preference to health insurance. This study answers the questions on relative importance of health insurance design elements. It also shows how respondents' trade-off attributes and attribute-levels. Sub group analyses in terms of gender, marital status, wealth class, and attitude to health insurance also conducted to further investigate and compare the valuation of attributes across the different groups of respondents. Summary of the findings is presented below. This is followed by methods, results and discussions. Study strengths and limitation, and conclusions cover the last pages of this chapter.

6.1 Summary

This study seeks to measure preferences for social health insurance among potential enrollees. A discrete choice experiment was conducted among formal sector employees in Addis Ababa. Participants of the study were asked to make choice between sequences of hypothetical social health insurance scenarios described by eight attributes. The results of the study show that the greatest value was attached to benefit packages of health insurance respectively followed by health care providers and coverage of drug. The least valued attribute was type of enrolment. Respondents were willing to pay almost 4% of their monthly salary for health insurance with comprehensive coverage of health care services. However, they would trade-off their preference of comprehensive benefit packages for lower monthly contribution or full coverage of drugs or for services of both public and private health care providers. Respondents who had never married and women were willing to pay consistently more of their monthly salary for the attributes compared to their counterparts. This provides evidence of need and income effect in determining the demand for health insurance; never married normally have more disposable income compared to married and women need more health care than men. Similarly, disaggregation of respondents in to three wealth classes (lower class, middle class, and upper class) shows that upper class respondents were willing to pay about 5% of their monthly salary for benefit package without exclusions. However, lower class

respondents were willing to pay about 4% of their monthly salary while middle class respondents were willing to pay 2.81% of their monthly salary. For services provided by both public and private providers, the middle and upper class respondents were willing to pay 3.03% and 2.17% of their monthly salary. This implies that even though respondents with more wealth (upper class) are willing to pay more for some of the attributes, respondents from lower level are also willing to pay proportionally more of their monthly salary for other attributes, showing tendency of risk aversion among the relatively poor. Lower weight was attached to full coverage of outpatient services and laboratory tests, both in overall analysis and subgroup analysis. Hence, effective co-payments may be applied for these services.

6.2 Introduction

As described in chapter four, a discrete choice experiment (DCE) is a quantitative method of eliciting preferences. In this PhD work, DCE is used to elicit preferences to health insurance. The DCE involves hypothetical health insurance scenarios that were designed and presented to respondents. The health insurance alternatives were designed using eight health insurance attributes. The respondents of the survey are formal sector employees who are potential enrolees of social health insurance.

A pilot survey was conducted prior to the main study to assess the feasibility of the study. Based on the results of the pilot, few amendments were made on the questionnaire. Then, a self-administered DCE questionnaire was distributed among the respondents for the main survey.

6.3 DCE Pilot

Piloting the DCE is a crucial part of a DCE surveys. A pilot was conducted among the formal sector employees who are not sampled for the main survey.

6.3.1 Methods

The method of the DCE was described in detail in chapter five. Here the method is discussed with particular reference to preferences for health insurance package.

6.3.1.1 Stages 1 and 2: Identification of attributes and assignment of levels

Stages 1 and 2 involve the identification and refinement of attributes of health insurance. The attributes were identified based on the literature review (Chapter 2), the survey (Chapter 3), and qualitative study (Chapter 4). Accordingly eight attributes were identified to be the most important factors in the demand for health insurance: premium; enrolment; excluded services from benefit packages (exclusions); type of service providers (providers); and coverage of inpatient, outpatient, drugs, and laboratory and other diagnostic tests (tests). Premium and exclusions are of four levels while 'providers' is of three levels. The remaining attributes are of two levels each.

6.3.1.2 Stage 3: Experimental design

The experimental design is generated using SAS Software. The full factorial design which contains all combinations of attributes and attribute levels resulted in 1536 combinations. This is very large and unmanageable design. Thus, main-effects only optimal fractional design is considered. Using SAS Software, 32 combinations and 16 binary choice sets are generated. In addition, two hold out choice sets are designed in order to test the consistency of choice. This resulted in 18 choices in the DCE.

A self-administered DCE questionnaire is prepared which includes the 18 choice sets, socio-economic characteristics (gender, age, marital status, household size, years of work experience, position at workplace, and salary), asset ownership, and attitude and motivation related questions. Data on asset ownership is collected in order to classify the respondents in to different wealth classes. This helps to analyze and compare the preferences over different wealth classes. Similarly, data on motivation/attitude were collected to assess the attitudes/motivations of the respondents to health insurance which also affects the demand for health insurance. Respondents were presented with attitude/motivation related statements which are mainly extracted from the qualitative study. Respondents were classified in to different groups based on whether they agree, disagree or were neutral to the statements. Classifying respondents to different attitude/motivation segments was also used to do a sub-group analysis in which preferences were compared across different groups.

6.3.2.3. Stage 4: Survey design and data collection

The pilot survey was conducted in 3 formal sector organizations which are not sampled for the main survey. Twelve respondents are selected from each of the organizations. Explanation of the purpose of the study and the questionnaire is made for the respondents either in groups or individually. Then the respondents were given a maximum of three days to fill out the questionnaire. The questionnaires are collected by the PhD researcher and an assistant.

6.3.1.4 Stage 5: Data input, analysis and interpretation

The data were entered in to SPSS Software version 15 by the PhD researcher then it was exported to STATA version 12 for analysis. Random effects logit model was used to analyse the results. A description of the dependent and explanatory variables used in the estimation of the pilot data are presented in Table 6.1

Table 6.1: Description of Dependent and Explanatory Variables Used in Health Insurance Preference PilotDCE Analysis, Addis Ababa 2013

Dependent variable	Measurement	Reference category
Health insurance design choice	Insurance A Insurance B	
Independent variables		
Premium	Continuous	-
Enrolment	Categorical Extended family (0) Core family (1)	Extended family (0)
Exclusion	Categorical Exclusion of dialysis (0) Exclusion of dental care (1) Exclusion of both dialysis and dental care (2) No exclusion (3)	Exclusion of dialysis (0)
Provider	Categorical Public provider (0) Private provider (1) Both (2)	Public provider (0)
Coverage of OP	Categorical 90% coverage (0) 100% coverage (1)	90% coverage (0)
Coverage of IP	Categorical 90% coverage (0) 100% coverage (1)	90% coverage (0)
Coverage of Drugs	Categorical 90% coverage (0) 100% coverage (1)	90% coverage (0)
Coverage of Tests	Categorical 90% coverage (0) 100% coverage (1)	90% coverage (0)

6.3.2 Results

The total number of respondents who completed the pilot questionnaire was 30 out of 36. Respondents of the pilot survey were also found to have a good understanding of percentages.

The random effect logit estimation result of the pilot survey is presented in Table 6.2. As depicted in the Table, the Wald statistic is found to be significant ($p < 0.01$), implying the predictors significantly contribute to explaining choice of insurance packages. The constant term is insignificant implying, everything else equal, there is no a general preference between either of the two health insurance alternatives (A or B). The constant term is expected to insignificant given generic alternatives in the choice sets.

All the attributes resulted in the expected direction of relation with utility except for 'enrolment of core family'. Seven of the eleven attribute levels were found to be significant ($p \leq 0.1$) determinants of preference to health insurance. Enrolment of core family, exclusion of dialysis, full coverage of inpatient services, and full coverage of outpatient services were found insignificant.

A marginal increase in premium results in utility fall. The greatest marginal change is a change in benefit packages from exclusion of both dental care and dialysis to no exclusions. This provides the greatest marginal increase in utility. Utility increases by 1.16 as exclusion changes from 'both dental care and dialysis' to 'no exclusion'. The least impact on utility comes from attribute full coverage of inpatient services though insignificant.

Table 6.2 Random Effects Logit Estimation Results of Health Insurance Preference Pilot DCE Survey in Addis Ababa, 2013

Attributes	Expected sign	Coefficient	p-value
Premium	-	-.3925736	0.000
Type of enrolment (reference – enrolment of extended family)			
Enrolment of core family	-	.0654426	0.702
Exclusion of services from benefit packages (reference – exclusion of dialysis)			
Exclusion of dental care	+	.5507902	0.040
Exclusion of dialysis	+	.2974192	0.154
No exclusions	+	1.159968	0.001
Providers of services (reference – public providers)			
Private providers	+	.4414028	0.014
Both public and private providers	+	.621768	0.012
Coverage of inpatient services (reference – 90% coverage)			
Full (100%) coverage of inpatient services	+	.0458949	0.712
Coverage of outpatient services (reference – 90% coverage)			
Full (100%) coverage of outpatient services	+	.3004878	0.118
Coverage of drugs (reference – 90% coverage)			
Full (100%) drugs	+	.4727911	0.100
Coverage of tests (reference – 90% coverage)			
Full (100%) tests	+	.2358929	0.072
Constant		.2548193	0.394

Log likelihood=-278.28195, Wald chi2(11)=83.73, prob>chi2=0.000
Number of observations=480, Number of individuals=30

Tests of consistency of choice

As discussed in chapter 5 section 5.3.2.5, the holdout choice sets (number 6 and 12) are used to test the consistency of choice. The test of consistency is performed by comparing the predicted and actual probabilities of choice. To calculate the predicted probabilities, first the deterministic utilities for holdout questions are calculated as follows:

$$\begin{aligned}
V = & 0.255 + (-0.393)prem + (0.065)enrol_{core} + (0.551)exlu_{dental} \\
& + (0.297)exlu_{dialysis} + (1.160)exlu_{none} + (0.441)prov_{private} \\
& + (0.622)prov_{both} + (0.046)ip_{full} + (0.300)op_{full} \\
& + (0.473)drug_{full} + (0.236)test_{full}
\end{aligned}$$

$$\begin{aligned}
V(6A) = & 0.255 + (-0.393)(0.01) + (0.065) + (1.160) + (0.622) + (0.236) \\
= & 2.33407
\end{aligned}$$

$$V(6B) = 0.255 + (-0.393)(0.05) + (0.441) + (0.473) = 1.11935$$

$$\begin{aligned}
V(12A) = & 0.255 + (-0.393)(0.05) + (0.065) + (0.551) + (0.441) + (0.046) \\
& + (0.236) = 1.57435
\end{aligned}$$

$$V(12B) = 0.255 + (-0.393)(0.03) + (1.160) + (0.046) + (0.473) = 1.92221$$

The predicted probabilities for choice set number 6 and 12 are calculated using the probability formula for discrete response variable of:

$$p_{in}(x_n, \beta) = \frac{e^{x_{in} \beta}}{\sum_{j=1}^{J_n} e^{x_{jn} \beta}}$$

The predicted probabilities for ‘Insurance A’ of holdout questions 6 and 12 are respectively 0.77 and 0.41 respectively.

$$Pred. prob(I_{6A}) = \frac{e^{2.33407}}{e^{2.33407} + e^{1.11935}} = 0.7711$$

$$Pred. prob(I_{12A}) = \frac{e^{1.57435}}{e^{1.57435} + e^{1.92221}} = 0.4139$$

The actual probability for ‘Insurance A’ of the holdout questions is calculated using the frequencies. The number of respondents who chose ‘Insurance A’ is 26 and 6 out of 30 respectively for question number 6 and 12 respectively. Therefore, the actual probabilities are:

$$Act. prob(I_{6A}) = \frac{26}{30} = 0.87$$

$$Act. prob(I_{12A}) = \frac{6}{30} = 0.2$$

Therefore, for the holdout choice set 6, the predicted probability of health insurance alternative 'A' is 0.77 while the actual probability is 0.87. Similarly for the holdout choice set 12, the predicted and actual probabilities of choosing health insurance alternative 'A' is 0.41 and 0.2 respectively. The consistency test shows that the predicted and actual probabilities are quite different particularly for the holdout choice set 12. This shows that the respondent are not consistent in their choice particularly as they go through the choice process may be due to boredom.

6.3.3 Discussions and Lessons Learned from the DCE Pilot

6.3.3.1 Response rate

The total number of respondent was 30 out of 36. This implies a response rate of 83.3. Thus there is need to allow for a non-response rate of about 20% in the calculation of the sample size for the main survey.

6.3.3.2 Experimental design

Since the results of the pilot survey resulted in theoretically valid coefficients (except for the type of enrolment), no change is made on the experimental design for the main survey. Only few minor changes were made on the wording of some questions. The most important lesson learnt for the main DCE survey is the need for clear explanation of the DCE questionnaire. The respondents of the pilot DCE thought that they have to choose the most preferred among all choice sets. Some of them did not understand and were questioning why they have to make repeated choices. They argued that they have to choose only one health insurance design they would prefer. Further explanation was made why sequence of choices are presented.

There is also a need to make choices more consistent. This will be ensured by making the respondents' understand the DCE questionnaire. Deep explanations of the purpose of the study, the attributes, attribute levels, and choice process. The respondents will also be given sufficient time to complete the questionnaire so that respondent fatigue would be minimized.

6.3.4 Summary of Findings from the DCE Pilot Survey

The attribute with large marginal effect on preference of health insurance was ‘no exclusions’. The second and third marginal effect came from ‘providers of both public and private’ and ‘full coverage of drugs’. The least marginal effect (among statistically significant attributes) on utility came from full coverage of tests.

6.4 Main DCE Survey

The main DCE survey was conducted in January-February 2013. It was conducted in 25 civil service organizations which were random selected from 126 civil service organizations. A self-administered DCE questionnaire was distributed to the respondents. Explanation of the purpose of the study and questionnaire was made to the respondents by the PhD researcher and an assistant.

6.4.1 Method

6.4.1.1 Stages 1, 2 and 3

The attributes, attribute levels, and the experimental design used for the main DCE survey are the same as that used in the pilot survey. Sixteen choice sets (and 2 holdout choice sets) are generated. The choice sets are composed of eight attributes and two alternatives. Details of the methods used for the DCE can be found in Chapter 5.

6.4.1.2 Stage 4: Survey design and data collection

A cross sectional survey was designed to administer the study. A self-administered questionnaire was distributed among civil servants who worked in 25 randomly selected civil service organizations. The sample size was 250; thus 8-12 questionnaires were distributed in each of the organizations. Details of the sampling and sample size calculation are explained in Chapter 3, section 3.3.4. The respondents were required to have a minimum of college diploma so that they can understand the DCE questionnaire. The respondents of the study were selected from different units of the respective organizations by the managers.

Once the respondents were identified they were asked for their willingness to participate in the study. In case they were not willing to be part of the study, they were replaced by other respondents from the same organization.

Informed consent was made orally. Then respondents were explained about the purpose of the study and the DCE questionnaire. A maximum of three days were given to respondents to complete the questionnaire. Upon collecting the questionnaire, completeness was checked immediately and respondents were requested to complete when incomplete questionnaire were found.

6.4.1.3 Stage 5: Data input, analysis, and interpretation

The data were entered in to SPSS version 15 by the PhD researcher. The data were cleaned and then transferred to STATA 12 for analysis. Random effects logit model is used to estimate the data. Magnitude and significance of the coefficients is used for the interpretation of the estimation results. Willingness to pay estimates was estimated for marginal changes in attributes to see how much the respondents would be willing to pay for the different attributes of health insurance. Sub-group analysis is also used to see the difference in valuation of attributes among the different segments of the respondents. Disaggregation of respondents is made in terms of wealth class, marital status and gender. Interpretations of the results are made in reference to the hypotheses. Details of the hypotheses are found in Chapter 5, Section 5.3.2.5.

6.4.2 Results

As described in Chapter 5, Section 5.3.4.1, and discussed in relation to this specific application, the indirect utility function of a respondent is specified as follows:

$$V = \beta_0 + \beta_1 prem + \beta_2 enrol_{core} + \beta_3 exclu_{no} + \beta_4 exclu_{dia} + \beta_5 exclu_{dent} + \beta_6 prov_{priv} + \beta_7 prov_{both} + \beta_8 op_{full} + \beta_9 ip_{full} + \beta_{10} drug_{full} + \beta_{11} test_{full}$$

Where

prem– percentage of monthly contribution (premium)

enrol_{core} – enrolment of core family (husband wife and children)

exlu_{no} – no exclusion in the benefit packages of health insurance

exlu_{dia} – exclusion of dialysis from benefit packages of health insurance

$exlu_{dent}$ – exclusion of dental care from benefit packages of health insurance

$prov_{priv}$ – private providers of health care services

$prov_{both}$ – both public and private providers of services

op_{full} – full coverage of outpatient services

ip_{full} – full coverage of inpatient services

$drug_{full}$ – full coverage of drugs

$test_{full}$ – full coverage of laboratory tests and other diagnostics

Thus, the deterministic part of the utility function is specified with eleven variables one of which is a continuous variable (Table 6.3).

Table 6.3: Attributes, Attribute levels, and Measurements Used in Health Insurance Preference DCE Main Survey in Addis Ababa, 2013

Attributes	Levels	Types of variables	Measurement
Monthly contribution (premium)	1% of monthly salary 2% of monthly salary 3% of monthly salary 5% of monthly salary	Continuous	Percentage of monthly gross salary
Type of enrolment	Extended family (husband, wife, children and parents of husband and wife) Core family (husband wife and children under 18)	Categorical	Reference category
Benefit packages	Exclusion of dialysis and dental care No exclusion Exclusion of dialysis from the benefit packages Exclusion of dental care from the benefit packages	Categorical	Reference category 1 – no exclusion 0 – exclusion of dialysis and dental care 1 – exclusion of dialysis 0 – exclusion of dialysis and dental care 1 – exclusion of dental care 0 – exclusion of dialysis and dental care
Provider of services	Public provider Private provider Both public and private providers	Categorical	Reference category 1 – private provider 0 – public provider 1 – both public and private providers 0 – public provider
Coverage of outpatient services	10% copayment on outpatient services (90% coverage) Full coverage of outpatient services	Categorical	Reference category 1 – full coverage of outpatient services 0 – 10% copayment on outpatient services
Coverage of inpatient services	10% copayment on inpatient services (90% coverage) Full coverage of inpatient services	Categorical	Reference category 1 – full coverage of inpatient services 0 – 10% copayment on inpatient services
Coverage of drugs	10% copayment on drugs (90% coverage) Full coverage of drugs	Categorical	Reference category 1 – full coverage of drugs 0 – 10% copayment on drugs
Coverage of laboratory tests and other diagnostics	10% copayment on laboratory tests and other diagnostics (90% coverage) Full coverage of laboratory tests and other diagnostics	Categorical	Reference category 1 – full coverage of laboratory tests and other diagnostics 0 – 10% copayment on laboratory tests and other diagnostics

6.4.2.1 Response

The total number of respondents who completed the questionnaire was 208 out of 250. This gives a response rate of 83.2%. This response rate is similar to the expectation based the results from the pilot survey.

6.4.2.2 Characteristics of respondents

As depicted in Table 6.4, the sample consists of 208 respondents. The respondents are predominantly young, with half 20-29 years old. Slightly more than half (119/57.21%) of the respondents are men. The proportion of never married and married is almost equal with a ratio 1:1.01. Ninety-one (44%) of the respondents live in households of 2-4 people. Large majority (159/76.4%) of the respondents had been working in the organizations for a maximum of 5 years. Most of the respondents (141/68%) were ordinary workers without management position. The mean salary of the respondents was Birr 2757.48 (\$149.86).

Table 6.4: Characteristics of Respondents to HI Preference Main DCE Survey in Addis Ababa, 2013

	Male	Female	Total
Gender	119 (57.21%)	89 (42.76%)	208 (100%)
Age group			
20 - 29 years	58	47	105 (50%)
30 - 39 years	32	29	61 (29%)
40 - 49 years	26	10	36 (17%)
50 - 59 years	3	3	6 (3%)
Marital status			
Never married	56	45	101 (49%)
Married	59	44	103 (50%)
Other	4	0	4 (2%)
Household size			
1 person	35	11	46 (22%)
2-4 people	53	38	91 (44%)
5-7 people	27	34	61 (29%)
more than 7 people	4	6	10 (5%)
Years of work experience			
less than 1 year	30	35	65 (31%)
1.01-5 years	62	32	94 (45%)
5.01-10 years	11	10	21 (10%)
10.01-20 years	10	8	18 (9%)
20.01-30 years	6	4	10 (5%)
Position			
Professional job	5	4	9 (4%)
Top level management	4	0	4 (2%)
Mid level management	8	3	11 (5%)
Low level management	16	11	27 (13%)
Ordinary job position	84	57	141 (68%)
Low level position	2	14	16 (8%)
Salary			
900-1400	3	17	20 (10%)
1400-2350	38	38	76 (37%)
2351-3550	37	23	60 (29%)
3551-5000	33	10	43 (21%)
5001-7000	8	1	9 (4%)
Wealth class			
Upper class	34	36	70 (33.6%)
Middle class	39	28	67(32.2%)
Lower class	46	25	71(34.1%)
Mean salary (in Birr)			2757.48
(1USD=18.4 Birr)			\$ 149.86

6.4.2.3 Random effects logit regression analysis of choice data

A random effects logit model is used to estimate the DCE data. The results of the estimation are presented in Table 6.5. The Wald statistic is found to be significant ($p<0.01$), implying the predictors of the preference for health insurance significantly contribute to explaining choice of insurance packages.

The magnitudes of coefficients represent the degree of importance of factors in determining the utility from alternative health insurance packages. More specifically, the coefficients show the change in utility for a marginal shift in the attribute. In the case of the continuous attribute – premium – the coefficient represents the change in utility for a % increase in the premium. For the discrete attributes, the coefficients represent a change in utility for a change in variable from the reference category to the category of interest. Accordingly, the most important marginal change in an attribute is benefit package with a level of ‘no exclusion’ (0.914, $p<0.01$). The second and third most important marginal changes are, respectively, providers of ‘both public and private’ ($\beta=0.551$, $p<0.01$) and ‘full coverage of drugs’ ($\beta=0.402$, $p<0.01$). On the other hand, the least important marginal change in an attribute is found to be enrolment of core family ($\beta=0.125$, $p<0.05$).

If a health insurance benefit package has ‘no exclusions’, the utility of the respondents increases by 0.914 ($p<0.01$). Next to benefit packages, respondents attached higher value for an attribute of ‘providers of services’. Providers of services represent type of health care facilities that are supposed to provide health care services once the respondents are enrolled health insurance. Consequently, respondents gave highest importance to health insurance packages with providers of ‘both public and private’. As provider of service changes from ‘public provider’ to ‘both public and private providers’, the utility of the respondents rises by 0.551 ($p<0.01$). The third most important attribute is ‘full coverage of drugs’ which resulted in 0.402 rise in utility as coverage of drugs changes from partial (90%) to full (100%) of total drug expenses.

An increase in monthly contribution is associated with a decrease in utility of health insurance. Accordingly, a rise in premium by 1% of monthly salary reduces the utility derived from health insurance by 0.233 ($p<0.01$).

In the case of benefit packages, the changes from ‘exclusion of both dental care and dialysis’ to ‘exclusion of dental care only’ or to ‘exclusion of dialysis only’ increases utility as expected. However, respondents attach more positive weight to ‘exclusion of dialysis’ ($\beta=0.302$, $p<0.01$) over ‘exclusion of dental care’ ($\beta=0.213$, $p<0.05$). This means respondents derive more utility if dental care is included in benefit packages than dialysis. This result is contrary to the hypothesis.

Table 6.5: Random Effects Logit Estimation Results of HI Preference Main DCE Survey in Addis Ababa, 2013 – All Respondents

Attributes	Expected sign	Coefficient	Standard error	P-value
Premium	Negative	-0.2331892***	0.0189042	0.000
Exclusion of services from benefit packages (<i>reference – exclusion of dialysis and dental care</i>)				
No exclusion	Positive	0.9144273***	0.1179811	0.000
Exclusion of dialysis	Positive	0.3020342***	0.0701334	0.000
Exclusion of dental care	Positive	0.2137659**	0.0992984	0.031
Provider of services (<i>reference – public provider</i>)				
Private provider	Positive	0.1964183***	0.0654157	0.003
Both public and private providers	Positive	0.5506278***	0.0832086	0.000
Coverage of drug (<i>reference – 90% coverage</i>)				
Full coverage of drug	Positive	0.4024747***	0.1032943	0.000
Coverage of inpatient services (<i>reference – 90% coverage</i>)				
Full coverage of inpatient services	Positive	-0.0095578	0.0450294	0.832
Coverage of outpatient services (<i>reference – 90% coverage</i>)				
Full coverage of outpatient services	Positive	0.1436833**	0.0665031	0.031
Coverage of tests (<i>reference – 90% coverage</i>)				
Full coverage of tests	Positive	0.1480323***	0.047019	0.002
Enrolment of core family (<i>reference extended family</i>)	Negative	0.1245947**	0.0615257	0.043
Constant		0.4069335***	0.095624	0.000

Log likelihood = -2151.1895, Wald chi2(11)=267.38, Prob>chi2=0.000

Number of observations=3328, Number of groups=208

***, **, significance levels of coefficients at 1% and 5% respectively

As shown in the Table, three unexpected results are found. Firstly, based on this data, the PhD researcher was unable to find evidence of relationship between coverage of inpatient services and preference of health insurance. Secondly, the change in enrolment from extended to enrolment of core family resulted in a positive sign. Third, the constant term is found to be significant. Given generic choice sets, the constant term was expected to be insignificant implying that the respondents do not have prior preference/bias to either of the two alternative health insurance packages ('Insurance A' or 'Insurance B'). However, the significant positive coefficient implies respondents tended to choose 'Insurance B' in most cases.

6.4.2.4 Test for consistency of choice

The DCE questionnaire consists of two holdout questions (choice question 6 and 12 in the DCE questionnaire) to test the consistency of choices made by the respondents as was the case for the DCE pilot. The consistency of the choice is tested by comparing the predicted and actual probabilities of choices made for the two holdout choice sets. The predicted probability (p) is calculated from the main DCE estimation results as follows:

$$p_{in}(x_n, \beta) = \frac{e^{x_{in} \beta}}{\sum_{j=1}^{J_n} e^{x_{jn} \beta}}$$

The deterministic utilities of the holdout questions for alternatives 'Insurance A' and 'Insurance B' are calculated as follows

$$\begin{aligned} V(6A) &= 0.407 + (-0.233 * 0.01) + (0.125) + (0.914) + (0.551) + (0.148) \\ &= 2.14267 \end{aligned}$$

$$V(6B) = 0.407 + (-0.233 * 0.05) + (0.196) + (0.402) = 0.99335$$

$$\begin{aligned} V(12A) &= 0.407 + (-0.233 * 0.05) + (0.125) + (0.214) + (0.196) + (0.148) \\ &= 1.07835 \end{aligned}$$

$$V(12B) = 0.407 + (-0.233 * 0.03) + (0.914) + (0.402) = 1.71601$$

Then, the predicted probabilities for 'Insurance A' of holdout questions 6 and 12 are found to be respectively 0.756 and 0.341.

$$Pred.prob(I_{6A}) = \frac{e^{2.14267}}{e^{2.14267} + e^{0.99335}} = 0.759$$

$$Pred.prob(I_{12A}) = \frac{e^{1.07835}}{e^{1.07835} + e^{1.71601}} = 0.345$$

The actual probability for ‘Insurance A’ of the holdout questions is calculated using the frequencies. The number of respondents who chose ‘Insurance A’ is 157 and 71 out of 208 for question number 6 and 12 respectively. Therefore, the actual probabilities for ‘Insurance A’ of choice sets 6 and 12 are:

$$Act.prob(I_{6A}) = \frac{157}{208} = 0.755$$

$$Act.prob(I_{12A}) = \frac{71}{208} = 0.341$$

Therefore, the predicted probability predicts well the actual probability. This implies that respondents were consistent in their choice.

6.4.2.5 Welfare Analysis

6.4.2.5.1 Willingness to Pay

Average willingness to pay (WTP) is estimated in terms of percentage of monthly contribution from monthly salary. Percentages instead of absolute level of contribution, is used to make results practical as the premiums for social health insurance are going to be deducted from monthly salary (Chapter 4). The average marginal willingness to pay is calculated by dividing the coefficient of the variables of interest by the negative of the coefficient of the ‘premium’ attribute. That is, mean marginal WTP is equal to $\beta_i / -\beta_1$ where β_1 is the coefficient on the premium attribute and $\beta_i \neq \beta_1$. Intuitively, marginal WTP estimates are in agreement with the level of value attached to attribute levels from random effects logit estimation; i.e., the willingness to pay is higher for attributes with higher weight.

As shown in Table 7.6, other things being equal, respondent would be willing to pay 3.93% of their monthly salary on average for health insurance benefit packages with ‘no exclusions’ (as opposed to exclusions of dialysis and dental care). On the other hand, the mean marginal willingness to pay for benefit packages ‘no exclusions’ rather than a benefit package with ‘exclusion of dialysis’ is 2.63% of monthly salary

$(\beta_3 - \beta_4)/\beta_1$. In comparison the average marginal willingness to pay for benefit packages with 'no exclusion' rather than benefit packages with 'exclusion of dental care' is 3.01% $(\beta_3 - \beta_5)/\beta_1$ of monthly salary.

With regard to providers of services, respondents were willing to contribute 2.36% of their monthly salary for health insurance package having health care providers of 'both public and private' while they were prepared to pay 0.84% of their salary for health insurance package with only 'private providers'. The mean marginal willingness to pay for getting services from public providers on top of private providers over getting the services from private providers only is 1.52% of monthly salary.

In terms of coverage of services, respondents showed higher WTP for full coverage of drugs compared to full coverage of outpatient services and laboratory tests. The mean marginal willingness to pay for full coverage of drugs is 1.7% monthly salary while it is 0.61% monthly salary for outpatient services.

Table 6.6: Mean Willingness to Pay for Attributes of Health Insurance in HI Preference DCE Survey in Addis Ababa, 2013 – All Respondents

Attributes	WTP	95% Confidence Interval for WTP
Exclusion of services from benefit packages (reference – exclusion of dialysis and dental care)		
No exclusion	3.9272683	2.7845752 – 5.0699613
Exclusion of dialysis	1.2961057	.66765388 – 1.9245576
Exclusion of dental care	0.9153479	0.06387117 – 1.7668246
Provider of services (reference – public provider)		
Private provider	0.8426465	0.25643948 – 1.4288535
Both public and private providers	2.3667245	1.5634854 – 3.1699635
Coverage of drug (reference – 90% coverage)		
Full coverage of drug	1.72665	0.89844158 – 2.5548584
Coverage of outpatient services (reference – 90% coverage)		
Full coverage of outpatient services	0.61931266	0.03380626 – 1.2048191
Coverage of tests (reference – 90% coverage)		
Full coverage of tests	0.63488157	0.24387892 – 1.0258842

6.4.2.5.2 Trade-offs among attributes

Apart from the WTP estimations in which respondents show trade-off between cost and other attributes, individuals could also give up some level of one attribute in order to get more of another. The trade-offs among different attributes and levels are investigated by comparing the utilities for different combinations of attributes and levels. Coverage of inpatient services is excluded from this analysis since it is found to be insignificant.

Based on the results of the random effects logit model, the utility function is specified as follows:

$$\begin{aligned} V = & 0.407 - (0.223 * prem) + (0.125 * enrol_{core}) + (0.914 * exclu_{no}) \\ & + (0.302 * exclu_{dia}) + (0.214 * exclu_{dent}) + (0.196 * prov_{priv}) \\ & + (0.551 * prov_{both}) + (0.144 * op_{full}) + (0.402 * drug_{full}) \\ & + (0.148 * test_{full}) \end{aligned}$$

Trade-offs between providers of services and monthly contribution

To assess the trade-off between ‘monthly contribution’ and provider of services, utility levels are calculated for different levels of providers of services and premium. The levels of monthly contributions considered in the analysis are 5% and 3%. A monthly contribution of 5% is considered because it is the maximum payment respondent suggested as a monthly contribution from qualitative study and 3% is chosen because it was suggested by most. Moreover, it is the proposed amount of contribution by the draft health insurance strategy of the government (Chapter 3).

Scenario 1: monthly contribution of 5% with ‘private provider’

Scenario 2: monthly contribution of 5% with ‘providers of both public and private’

Scenario 3: monthly contribution of 3% with ‘public provider’

Other things are kept constant at: ‘no exclusion’ for benefit packages, ‘90% coverage of drug’, ‘90% coverage of outpatient services’, ‘90% coverage of tests’, and ‘enrolment of core family’.

$$V(\text{scenario 1}) = V_{\text{private}} = 0.407 + (-0.233 * 5) + (0.914) + (0.196) + (0.125) \\ = 0.477$$

$$V(\text{scenario 2}) = V_{\text{both}} = 0.407 + (-0.233 * 5) + (0.914) + (0.551) + (0.125) \\ = 0.832$$

$$V(\text{scenario 3}) = V_{\text{public}} = 0.407 + (-0.233 * 3) + (0.914) + (0.125) = 0.777$$

All the above scenarios result in an increase in utility. The greatest increase in utility comes from health insurance package with 5% of monthly contribution and providers of 'both public and private' ($V=0.832$) followed by a premium of 3% with 'public provider' ($V=0.777$). Thus even if private providers are in general preferred to public providers, respondents would opt to get services from public provider with lower monthly contribution over getting services from private providers making higher monthly contribution. However, if services are provided by 'both public and private providers', respondents would rather pay more and get the services from 'both public and private providers' than contributing low premium per month and getting services from 'public providers only'.

Trade-offs between benefit packages and monthly contribution

The following scenarios are used to assess the trade-offs between benefit packages and monthly contribution.

Scenario 4: monthly contribution of 5% and 'no exclusion' in the benefit packages

Scenario 5: monthly contribution of 3% and 'exclusion of both dialysis and dental care'

Scenario 6: monthly contribution of 1% and 'exclusion of both dialysis and dental care'

Other things are kept the same as providers of 'both public and private'; 90% coverage of drugs, outpatient services, and tests; and enrolment of core family.

$$V(\text{scenario 4}) = V_{\text{no exclusion ,5\%}} \\ = 0.407 + (-0.233 * 5) + (0.914) + (0.551) + (0.125) = 0.832$$

$$\begin{aligned}
 V(\text{scenario 5}) &= V_{\text{exclu (dialy \& dental ,3\%)}} \\
 &= 0.407 + (-0.233 * 3) + (0.551) + (0.125) = 0.384
 \end{aligned}$$

$$\begin{aligned}
 V(\text{scenario 6}) &= V_{\text{exclu (dialy \& dental ,1\%)}} \\
 &= 0.407 + (-0.233 * 1) + (0.551) + (0.125) = 0.85
 \end{aligned}$$

These results show that respondents are not ready to give up ‘no exclusion’, for ‘exclusion of dental care and dialysis’ even though monthly contribution reduces from 5% to 3% of salary. However, if monthly contribution reduces to 1%, respondents would get proportionally higher increase in utility from services of public health care providers. Thus, under this situation in which coverage of outpatient services, tests and drugs is 90%, respondents do not trade ‘no exclusion’ for ‘exclusion of dialysis and dental care’ unless the premium of the health insurance is very low.

Trade-offs between coverage of drug and providers of services

The following scenarios are used to assess the trade-offs between coverage of drugs and benefit packages.

Scenario 7: full coverage of drugs, public and private providers

Scenario 8: partial coverage of drugs, public and private providers

Scenario 9: full coverage of drugs, public provider

Scenario 10: partial coverage of drugs, public provider

Other attributes are the same for all scenarios as: 3% of monthly contribution; partial coverage of outpatient services and laboratory tests; exclusion of both dialysis and dental care, and enrolment of core family.

The utilities of the four scenarios are calculated as follows

$$\begin{aligned}
 V(\text{scenario 7}) &= V_{\text{full drug ,bot h}} \\
 &= 0.407 + (-0.233 * 3) + (0.551) + (0.402) + (0.125) = 0.786
 \end{aligned}$$

$$\begin{aligned}
 V(\text{scenario 8}) &= V_{\text{partial drug ,bot h}} = 0.407 + (-0.233 * 3) + (0.551) + (0.125) \\
 &= 0.384
 \end{aligned}$$

$$V(\text{scenario 9}) = V_{\text{full drug, public}} = 0.407 + (-0.233 * 3) + (0.402) + (0.125) \\ = 0.235$$

$$V(\text{scenario 10}) = V_{\text{partial drug, public}} = 0.407 + (-0.233 * 3) + (0.125) = -0.167$$

Scenario 7 and 8 produce an improvement in utility of the respondents. Thus, as long as providers of services are ‘both public and private’, people get positive utility from health insurance with a benefit package which does not include dialysis and dental care whether coverage of drug is partial or full. Intuitively, the increase in utility is higher for full coverage of drugs ($V=0.786$) than partial coverage of drugs ($V=0.384$). However, as provider of services change from ‘both public and private’ to ‘public only’ utility drops sharply from 0.786 to 0.235. Besides, ‘partial coverage of drug’ with provider of ‘public only’ result in a utility fall ($V= -0.167$).

Trade-offs between monthly contribution and co-payments

Scenario 11: 5% of monthly contribution and 90% coverage for drugs, laboratory tests, and outpatient services

Scenario 12: 5% of monthly contribution, 90% coverage of drugs, 100% of coverage for laboratory tests and outpatient

Scenario 13: 5% of monthly contribution with 100% coverage for drugs and 90% laboratory tests and outpatient services

Other things are constant for scenario 11-13 as exclusion of both dialysis and dental care, providers of both public and private, enrolment of extended family. The utility functions of the respective scenarios are:

$$V(\text{scenario 11}) = V_{11} = 0.407 + (-0.233 * 5) + (0.551) = -0.207$$

$$V(\text{scenario 12}) = V_{12} \\ = 0.407 + (-0.233 * 5) + (0.551) + (0.144) + (0.148) \\ = 0.085$$

$$V(\text{scenario 13}) = V_{13} = 0.407 + (-0.233 * 3) + (0.551) + (0.402) = 0.195$$

The above results show that, the utility of the respondents decrease if they are contributing 5% of their monthly salary to health insurance scheme and get partial coverage for the services of outpatient, laboratory and diagnostic tests, and drugs. However, the utility of the respondents can gradually increase as the coverage of drugs changes to 100% though the coverage of tests and outpatient services remain partial ($V=0.195$). Alternatively, the respondents can be kept with positive increment of utility with 90% coverage of drugs and 100% coverage of laboratory tests and outpatient services.

6.4.2.5 Sub group analysis

The values attached to the different attributes of the health insurance packages and WTP is further analysed by stratifying the respondents in to homogenous groups. As discussed in Chapter 5, Section 5.3.4.2, gender, marital status, attitude toward health insurance, and wealth class are used for the group analyses. The test results of the sub-group analyses show that preferences are not significantly different across groups. Thus, the results should be interpreted cautiously.

Sub-group analysis by gender

Relatively more attributes are found to be important in the decision making for women compared to men (Table 6.7). Full coverage of outpatient services, full coverage of tests, and exclusion of dental care are insignificant determinants of utility for men while they were significant for women. Both women and men attach greatest weight for attribute level benefit package with level 'no exclusion' ($p<0.01$). Men give more negative weight to monthly contribution than women. A 1% increase in premium from monthly salary reduces utility by 0.286 for men and 0.189 for women. Full coverage of drugs are indicated to be very important factor however women attach more weight ($\beta=0.463$, $p<0.001$) to full coverage of drugs compared to men ($\beta=0.359$, $p<0.01$). The mean willingness to pay results shows that women are consistently willing to pay higher for each of the attributes than men except for a benefit package which excludes dialysis. Women are prepared to pay 4.49% of their monthly salary for health insurance with 'no exclusion' in the benefit packages while men were willing to pay 3.59% of their monthly expenditure. The

willingness to pay for providers of 'both public and private' is 3.02% and 1.99% of monthly salary for women and men respectively.

However, the confidence intervals for the β -coefficients and the WTP estimates show that there are overlaps in the CI between the unrestricted models. Moreover, the likelihood ratio test ($\chi^2(11) = 18.192$) is found to be highly insignificant (p-value >0.9) indicating that preferences do not differ across the models.

Sub-group analysis by marital status

More variables are also found to be significant determinants of health insurance package choice among 'never married' respondents compared to the married ones (Table 6.8). The married respondents attach slightly more value to monthly contribution ($\beta = -0.251$, $p < 0.01$) than the 'never married' ($\beta = -0.215$, $p < 0.01$). The 'never married' segments of the respondents were willing to pay 5.08% of their monthly salary for 'no exclusion' in the benefit packages while the married group were willing to pay 2.97% of their monthly salary. The willingness to pay for services of 'both public and private' providers is also higher among 'never married' (WTP=2.91%, $p < 0.01$) compared to married (WTP=1.91%, $p < 0.01$). As is the case with analysis of groups by gender, the confidence intervals and the likelihood ratio test ($\chi^2(11) = 95.356$, p-value >0.995) indicated that preferences do not significantly differ by marital status.

Sub-group analysis by wealth class

In terms of socioeconomic class, relatively less attributes are found to be significant determinants of health insurance choice among respondents in lower class; respectively followed by the respondent from upper and middle classes (Table 6.9). 'Exclusion of dental care', and 'private providers' are found to be significantly important for middle class respondents only.

Respondents from lower and upper class get highest rise in utility from benefit packages among other attributes. A benefit package with 'no exclusions' produces an increase in utility of 1.08 ($p < 0.01$) for those in the lower class and 0.92 ($p < 0.01$) for those in the upper class. Respondents in the middle class; on the other hand, drive the highest increase in utility from an attribute of providers with 0.82 ($p < 0.01$) increase in utility from 'both public and private'. The highest value for full coverage

of drugs is given by middle class respondents ($\beta=0.525$, $p<0.01$) respectively followed by lower class ($\beta=0.428$, $p<0.05$) and upper class ($\beta=0.287$, $p<0.1$).

Respondent in the lower class are willing to pay more of their monthly salary for health insurance with 'no exclusions' (WTP=1.08% of monthly salary) than respondent in the middle class (WTP=0.766% of monthly salary). On the other hand, respondents in middle class were found to be willing to pay higher (WTP=1.93% of monthly salary) for 'full coverage of drugs' compared to those in lower (WTP=1.61% of monthly salary, $p<0.05$) and upper (WTP=1.61% of monthly salary, $p<0.01$) classes.

The likelihood ratio test ($\chi^2(11) = 34.19$, $p\text{-value}>0.99$) showed that the preferences are not significantly different across the wealth quartiles as well, as is the case with gender and marital status.

Table 6.7: Results of Random Effects Logit Estimation and Mean Willingness to Pay from HI Preference DCE Survey in Addis Ababa, 2013 – By Gender

Attributes	Men		Women	
	Coefficient [95%CI]	WTP [95%CI]	Coefficient [95%CI]	WTP[95%CI]
Premium	-.2687831*** [-.3187744, -.2187918]		-.189926*** [-.2455417 -.1343103]	
Enrolment of core family – <i>reference extended family</i>	.1253489 [-.0363946 .2870924]	.46635702 [-.1504901,1.0832041]	.1206363 [-.0614918 .3027644]	.63517542 [-.3565848, 1.626936]
Benefit packages – <i>reference exclusion of both dialysis and dental care</i>				
No exclusion	.9651741*** [.6546685 1.27568]	3.5909029 [2.3084519, 4.8733539]	.8519129*** [.5031748 1.200651]	4.4854992 [2.320115, 6.650884]
Exclusion of dialysis	.3611181*** [.1782792 .543957]	1.3435298 [.62714454, 2.0599151]	.2268516** [.017684 .4360193]	1.1944212 [.04534645, 2.343496]
Exclusion of dental care	.1774067 [-.0844626 .4392761]	.66003678 [-.31448048, 1.634554]	.2696114* [-.0240675 .5632903]	1.4195603 [-.1579754, 2.997096]
Provider – <i>reference public provider</i>				
Private provider	.1779851** [.0065679 .3494024]	.66218873 [.00341034, 1.3209671]	.2278524** [.0330476 .4226571]	1.1996903 [.0831867, 2.316194]
Both public and private providers	.5343915*** [.3155041 .7532789]	1.9881886 [1.1021436, 2.8742337]	.5734161*** [.3275569 .8192754]	3.0191556 [1.450151, 4.588161]
Full outpatient coverage – <i>reference 90% coverage</i>	.103316 [-.0723377 .2789697]	.38438435 [-.2790462, 1.047815]	.1941474* [-.0016204 .3899152]	1.0222265 [-.0763519, 2.120805]
Full inpatient coverage – <i>reference 90% inpatient coverage</i>	-.0400393 [-.1586997 .0786211]	-.14896524 [-.5869019, .2889715]	.0296027 [-.1034807 .1626862]	.15586462 [-.5528202, .8645494]
Full coverage of drugs – <i>reference 90% coverage of drugs</i>	.3593048*** [.0898818 .6287278]	1.3367833 [.38906646, 2.2845002]	.463883*** [.1546489 .7731171]	2.4424409 [.9058681, 3.979014]
Full coverage of test – <i>reference 90% coverage of test</i>	.0731869 [-.0500816 .1964554]	.27228994 [-.178582, .7231619]	.2429452*** [.1033873 .3825032]	1.2791574 [.5404246, 2.01789]
Constant	.3576045*** [.1051017 .6101072]		.478153*** [.1952228 .7610832]	

Number of observations (Men)=1904, Number of individuals(Men)=119, Number of observations (Women)=1424, Number of individuals(Women)=89;

Log likelihood (Men) = -1209.2046, Wald chi2(11)=185.72, Prob>chi2=0.000; Log likelihood (Women) = -932.88894, Wald chi2(11)=94.69, Prob>chi2=0.000;

***,**, * significance at p<0.01, p<0.05, p<0.1 respectively

Table 6.8: Results of Random Effects Logit Estimation and Mean Willingness to Pay from HI Preference DCE Survey in Addis Ababa, 2013 – By Marital Status

Attributes	Married		Never married	
	Coefficient [95%CI]	WTP[95%CI]	Coefficient[95%CI]	WTP[95%CI]
Premium	-.2544076*** [-.3069297 -.2018854]		-.2151783*** [-.2680169 -.1623397]	
Enrolment of core family – <i>reference extended family</i>	.1503064 [-.0188872 .3195]	.59080945 [-.09740333, 1.2790222]	.1021631 [-.0709145 .2752407]	.47478332 [-.3472771, 1.296844]
Benefit packages – <i>reference exclusion of both dialysis and dental care</i>				
No exclusion	.7560147*** [.4339901 1.078039]	2.9716673 [1.6012837, 4.3420509]	1.092723*** [.757077 1.428369]	5.0782214 [3.197339, 6.959104]
Exclusion of dialysis	.2600287*** [.0670341 .4530234]	1.0220951 [.23552188, 1.8086683]	.3520901*** [.1544754 .5497048]	1.6362714 [.6560844, 2.616459]
Exclusion of dental care	.0954688 [-.1805631 .3715007]	.37525925 [-.70852341, 1.4590419]	.3362746** [.0598892 .61266]	1.5627719 [.2479375, 2.877606]
Provider – <i>reference public provider</i>				
Private provider	.276413*** [.0960475 .4567785]	1.0864967 [.330062, 1.8429314]	.1152771 [-.0683899 .2989441]	.53572818 [-.3432259, 1.41468]
Both public and private providers	.4849307*** [.2597563 .710105]	1.9061173 [.94117447, 2.8710601]	.626049*** [.3873497 .8647484]	2.909443 [1.599542, 4.219344]
Full outpatient coverage – <i>reference 90% coverage</i>	.1317615 [-.0503321 .313855]	.51791485 [-.21361965, 1.2494494]	.1578535 [-.0303882 .3460953]	.73359416 [-.1773188, 1.644507]
Full inpatient coverage – <i>reference 90% inpatient coverage</i>	-.0543227 [-.1791589 .0705134]	-.21352632 [-.69955533, .27250268]	.0362755 [-.0893547 .1619057]	.16858351 [-.423016, .760183]
Full coverage of drugs – <i>reference 90% coverage of drugs</i>	.4059736*** [.1225523 .689395]	1.5957608 [.5438625, 2.6476592]	.4074038*** [.1156904 .6991171]	1.8933311 [.627845, 3.158817]
Full coverage of test – <i>reference 90% coverage of test</i>	.0876486 [-.0419962 .2172934]	.34452039 [-.15509704, .84413782]	.2130844*** [.0809642 .3452045]	.99026888 [.3890655, 1.59147]
Constant	.4145362*** [.1459899 .6830824]		.4077553*** [.1443562 .6711543]	

Number of observations (Married)=1648, Number of individuals(Married)=103, Number of observations (Never married)=1616, Number of individuals(Never married)=101;

Log likelihood (Married) = -1059.5592, Wald chi2(11)=140.53, Prob>chi2=0.000; Log likelihood (Never married) = -1043.9523, Wald chi2(11)=131.24, Prob>chi2=0.000;

***, **, * significance at p<0.01, p<0.05, p<0.1 respectively

Table 6.8: Results of Random Effects Logit Estimation and Mean Willingness to Pay in HI Preference DCE Survey in Addis Ababa, 2013 – By Wealth Class

Attributes	Poor		Middle		Rich	
	Coefficient[95%CI]	WTP[95%CI]	Coefficient[95%CI]	WTP[95%CI]	Coefficient[95%CI]	WTP[95%CI]
Premium	-.2654788*** [-.33042 -.2005376]		-.2723946*** [-.3417543 -.203035]		-.1783671*** [-.2392967 -.1174375]	
Enrolment of core family – <i>reference extended family</i>	.0817188 [-.1303677 .2938053]	.30781674 [-.50145768, 1.1170912]	.0596643 [-.155788 .2751165]	.21903608 [-.5812962, 1.0193684]	.2165018** [.0133142 .4196893]	1.2137987 [-.02451217, 2.4521095]
Benefit packages – <i>reference exclusion of both dialysis and dental care</i>						
No exclusion	1.080189*** [.672994 1.487385]	4.0688349 [2.3250541, 5.8126157]	.7655209*** [.3484023 1.18264]	2.8103376 [1.1683435, 4.4523318]	.9086769*** [.5228825 1.294471]	5.09442 [2.4539533, 7.7348867]
Exclusion of dialysis	.3432907*** [.10422 .5823614]	1.2931004 [.34830931, 2.2378915]	.3515036*** [.1019901 .6010171]	1.2904204 [.32793967, 2.2529011]	.2312272** [.0012094 .4612449]	1.2963555 [-.05350538, 2.6462163]
Exclusion of dental care	.1263168 [-.2156443 .4682779]	.47580743 [-.81126231, 1.7628772]	.5096229*** [.1586053 .8606404]	1.870899 [.5290426, 3.2127554]	.0346107 [-.2904825 .3597038]	.19404173 [-1.6262898, 2.0143732]
Provider – <i>reference public provider</i>						
Private provider	.118261 [-.1074667 .3439888]	.44546323 [-.42147461, 1.3124011]	.4971545*** [.2688915 .7254176]	1.8251259 [.84674351, 2.8035084]	.0019022 [-.2153581 .2191626]	.0106648 [-1.207829, 1.2291586]
Both public and private providers	.4621159*** [.1745923 .7496394]	1.7406886 [.57910915, 2.9022681]	.8278755*** [.5294231 1.126328]	3.0392501 [1.745864, 4.3326362]	.4059369*** [.1368377 .6750361]	2.2758506 [.56881371, 3.9828876]
Full outpatient coverage – <i>reference 90% coverage</i>	.1282355 [-.1018878 .3583588]	.48303479 [-.40196992, 1.3680395]	.2080763* [-.027848 .4440006]	.76387801 [-.13511832, 1.6628743]	.1033963 [-.1126741 .3194667]	.57968273 [-.66749361, 1.8268591]
Full inpatient coverage – <i>reference 90% inpatient coverage</i>	-.0088392 [-.1634318 .1457534]	-.03329533 [-.61448468, .54789402]	-.0532859 [-.2138619 .10729]	-.19562039 [-.77727637, .38603559]	.0231941 [-.1239972 .1703854]	.13003577 [-.70184134, .96191288]
Full coverage of drugs – <i>reference 90% coverage of drugs</i>	.4282006** [.0766053 .7797959]	1.6129371 [.36555363, 2.8603206]	.5245718*** [.1543383 .8948054]	1.9257788 [.65939135, 3.1921663]	.2873802* [-.0514249 .6261852]	1.6111726 [-.18006604, 3.4024112]
Full coverage of test – <i>reference 90% coverage of test</i>	.1260142 [-.0350098 .2870382]	.47466769 [-.11741083, 1.0667462]	.1755652** [.0093699 .3417605]	.64452523 [.04850232, 1.2405481]	.1481431* [-.0067591 .3030452]	.83055143 [-.015709, 1.6768119]
Constant	.4501738*** [.1170073 .7833404]		.458008*** [.1140405 .8019754]		.331551** [.0260321 .63707]	

Number of observations (Poor)=1120, Number of individuals(Poor)=70, Number of observations (Middle)=1072, Number of individuals(Middle)=67, Number of observations (Rich)=1136, Number of individuals(Rich)=71;

Log likelihood (Poor) = -710.90439, Wald chi2(11)=106.04, Prob>chi2=0.000; Log likelihood (Middle) = -672.90557, Wald chi2(11)=114.61, Prob>chi2=0.000; Log likelihood (Rich) = -750.28583, Wald chi2(11)=65.70, Prob>chi2=0.000;

***, **, * significance at p<0.01, p<0.05, p<0.1 respectively

6.4.2.7 Motivation and attitude for health insurance

As described in Chapter 5, twelve attitude/motivation related statements are used to assess the attitudes/motivations to health insurance among the respondents of the DCE questionnaire. The results from these statements show that respondents in general have positive attitude towards health insurance – thus strong demand to health insurance. However, there is difference in agreement/disagreement to specific statements.

Table 6.10 Strong and Weak Demand for Health Insurance Based on Attitude/Motivation Statements from HI Preference DCE Survey in Addis Ababa, 2013

Statements	Strong demand	Weak demand	Neutral
It is good to share health care costs between the poor and rich	154(74.0%)	23(11.1%)	31(14.9%)
I am too healthy and I do not need health insurance	160(76.9%)	33(15.9%)	15(7.2%)
Health insurance is necessary but I have many expenses and I do not want to make contributions	44(21.2%)	120(57.7%)	44(21.2%)
I do not need health insurance because I can pay for my health care any time out of pocket	172(82.7%)	16(7.7%)	20(9.6%)
Even though health insurance is necessary, I do not trust the system and prefer to pay out of pocket	123(59.1%)	40(19.2%)	45(21.6%)
I do not want to make contributions to health insurance because health care services are not effective	183(88.0%)	12(5.8%)	13(6.3%)
It is the duty of the government to provide health care so I do not have to make contributions	124(59.6%)	40(19.2%)	44(21.2%)
Once I make contribution to health insurance, I am not sure if the money goes to health system	75(36.1%)	66(31.7%)	67(32.2%)
I do not want to be enrolled to health insurance if it is not compulsory because it does not work	150(72.1%)	37(17.8%)	21(10.1%)
Health insurance is good, once I am enrolled, I do not worry about getting sick or not	79(38.0%)	87(41.8%)	42(20.2%)
Even though health insurance has many expenses, the advantage outweighs	141(67.8%)	26(12.5%)	41(19.7%)
If many people are enrolled to health insurance, I have to be enrolled I do not have other option	155(74.5%)	30(14.4%)	23(11.1%)

As depicted in table 6.10, 154 (74.03%) of the respondents strongly agreed/agreed to the statement 'It is good to share health care costs between the poor and the rich'. Similarly, only 33(15.9%) of the respondents strongly agreed/agreed to the statement 'I am too healthy and I do not need health insurance' and 15(7.2%) were neutral. One hundred seventy two (82.7%) of the respondents strongly disagreed/disagreed to the statement 'I do not need health insurance because I can pay for my health care any time out of pocket'. The result also shows that the respondents are more concerned with the payment.

However, respondents seem not sure about the health system. The number of respondents who agreed/disagreed/neutral to the statement: "once I make contribution to health insurance, I am not sure if the money goes to health system" are almost proportional.

The result of the factor analysis shows that, the attitude and motivation related questions cluster in to three groups. Out of the twelve questions, nine of them load together. The three questions which do not load with the others are: 'it is good to share healthcare costs between the poor and the rich', 'health insurance is good, once I am enrolled, I do not worry about getting sick or not', and 'if many people are enrolled, I need to be enrolled, I do not have other option' (Table 6.11). The first component is mainly related to the general lack of knowledge about the advantages of health insurance, distrust on the health system. The second component is around solidarity and security from the unforeseeable health care expenses. The third component relates to the influence group decision making.

Table 6.11: Summary of factor analysis results for attitude and motivation related questions, Health Insurance Preference Survey, Addis Ababa 2013

Component One	Component Two	Component Three
I do not want to be enrolled to health insurance if it is not compulsory because it does not work	It is good to share health care costs between the poor and rich	If many people are enrolled to health insurance, I have to be enrolled I do not have other option
Health insurance is necessary but I have many expenses and I do not want to make contributions	Health insurance is good, once I am enrolled, I do not worry about getting sick or not	
Even though health insurance is necessary, I do not trust the system and prefer to pay out of pocket		
I do not want to make contributions to health insurance because health care services are not effective		
It is the duty of the government to provide health care so I do not have to make contributions		
I do not need health insurance because I can pay for my health care any time out of pocket		
Even though health insurance has many expenses, the advantage outweighs		
Once I make contribution to health insurance, I am not sure if the money goes to health system		
I am too healthy and I do not need health insurance		

A sub group analysis of preference for health insurance is performed by classifying the respondents in to two groups based on the statement “I am too healthy and I do not need health insurance” (Table 6.12). Those who strongly agreed/agreed to the

statement are classified as having strong preference and those who did not agree/neutral to the statement are classified as having weak preference. Only four attributes are found to be significant determinants of preference for respondents with weak preference. For those with strong preference, only coverage of inpatient service is insignificant. For respondents in both groups “no exclusion” produces the largest marginal change in utility. Respondent with strong preference were willing to pay consistently higher to the marginal changes in attributes. Respondents with strong preference were willing to pay about 4.2% of their monthly salary while those with weak preference were willing to pay about 2.9% of their salary for ‘no exclusions’ compared to exclusions of dental care and dialysis. However, preferences do not significantly differ across the models as indicated by insignificant likelihood ratio test and overlapping confidence intervals of parameters and WTP estimates.

A group analysis is also done using component one of the factor analysis (Table 6.11). Component one is preferred because most of the questions load to that group. Using the scores of component one; respondents were classified in to two equal groups. The upper 50 percent were considered as having positive attitude and highly motivated and the lower 50 percent were attached to negative attitude and lower motivation to health insurance.

The results of the random effect logit estimation shows that, those respondents with positive attitude are in general willing to pay more compared to their counterparts (Table 6.13). As is the case with the other sub-group analyses, the two models do not differ significantly.

Table 6.12: Random Effects Logit Estimation and Willingness to Pay Results from HI Preference Survey in Addis Ababa, 2013 – Sub-group Analysis Based on Attitudinal Statement “I am too healthy and I do not need health insurance”

Attitudinal statement	“I am too healthy and I do not need health insurance”			
Attributes	Disagreed (strong preference)		Agreed& neutral (weak preference)	
	Coefficient [95%CI]	WTP [95%CI]	Coefficient [95%CI]	WTP [95%CI]
Premium	-.232261*** [-.274595 -.1899272]		-.2396982*** [-.3170113 -.162385]	
Enrolment of core family – reference extended family	.1370101* [-.000433 .2744533]	.58989706 [-.02057051, 1.2003646]	.0881634 [-.1640918 .3404186]	.36781 [-.70407053, 1.4396905]
Benefit packages – reference exclusion of both dialysis and dental care				
No exclusion	.9772639*** [.713289 1.241239]	4.2076087 [2.8990632, 5.5161542]	.7187695*** [.2348467 1.202692]	2.9986441 [.82291133, 5.1743768]
Exclusion of dialysis	.3550477*** [.1972954 .5128001]	1.5286577 [.80365454, 2.2536608]	.1322049 [-.150825 .4152348]	.55154729 [-.640128, 1.743217]
Exclusion of dental care	.2725037** [.0518308 .4931766]	1.1732644 [.21254696, 2.1339819]	.0195583 [-.3978994 .4370159]	.08159539 [-1.658831, 1.8220218]
Provider – reference public provider				
Private provider	.1771608** [.0308532 .3234685]	.76276587 [.10447263, 1.4210591]	.264765* [-.0041133 .5336433]	1.1045767 [-.09133999, 2.3004934]
Both public and private providers	.5741508*** [.3883086 .759993]	2.4720058 [1.5590682, 3.3849434]	.4727799*** [.1310531 .8145067]	1.9723968 [.41841676, 3.5263768]
Full outpatient coverage – reference 90% coverage	.1625941** [.0144386 .3107497]	.70004883 [.03851594, 1.3615817]	.0724646 [-.2033135 .3482426]	.30231585 [-.86079878, 1.4654305]
Full inpatient coverage –reference 90% inpatient coverage	.0274644 [-.0727529 .1276817]	.11824783 [-.31696608, .55346174]	-.1403517 [-.3287489 .0480456]	-.58553496 [-1.3628252, .19175524]
Full coverage of drugs – reference 90% coverage of drugs	.4347329*** [.2028534 .6666123]	1.8717421 [.93692025, 2.8065639]	.3007411 [-.1185912 .7200735]	1.2546659 [-.40961723, 2.9189491]
Full coverage of test – reference 90% coverage of test	.1891704*** [.0838291 .2945117]	.81447304 [.37248545, 1.2564606]	.0143926 [-.1783886 .2071737]	.06004457 [-.74081745, .86090659]
Constant	.3993545*** [.1867214 .6119876]		.4415055** [.0433166 .8396943]	

Number of observations (strong preference)=2560, Number of individuals(strong preference)=160, Number of observations (weak preference)=768, Number of individuals(weak preference)=48

Log likelihood (strong preference) = -1652.8905, Wald chi2(11)=212.33, Prob>chi2=0.000; Log likelihood (weak preference) = -492.00971, Wald chi2(11)=61.26, Prob>chi2=0.000

***, **, * significance at p<0.01, p<0.05, p<0.1 respectively

Table 6.13: Random Effects Logit Estimation and Willingness to Pay Results from HI Preference Survey in Addis Ababa, 2013 – Sub-group Analysis Based on Positive and Negative Attitude/Motivation to Health Insurance

Attributes	Positive		Negative	
	Coefficient [95%CI]	WTP [95%CI]	Coefficient [95%CI]	WTP [95%CI]
Premium	-.2236971*** -.2758072 -.171587		-.2442499*** -.2972444 -.1912553	
Enrolment of core family – <i>reference extended family</i>	.0697362** -.1004552 .2399275	.31174368 -.45834949 1.0818369	.1825465 .0109015 .3541915	.74737595 .00947984 1.4852721
Benefit packages – <i>reference</i> <i>exclusion of both dialysis and dental care</i>				
No exclusion	.9333057*** .609955 1.256656	4.1721849 2.5233734 5.8209965	.9120341*** .5779339 1.246134	3.7340208 2.187956 5.2800856
Exclusion of dialysis	.3379919** .1437042 .5322796	1.5109356 .59064663 2.4312246	.2690261*** .073437 .4646151	1.1014379 .26652497 1.9363508
Exclusion of dental care	.2556365 -.0191793 .5304523	1.1427797 -.09699837 2.3825577	.168126** -.1083528 .4446047	.68833591 -.44565074 1.8223226
Provider – <i>reference public provider</i>				
Private provider	.0611018*** -.1206503 .2428539	.2731454 -.54869294 1.0949838	.3350257 .1533842 .5166671	1.3716514 .55236834 2.1909344
Both public and private providers	.4063677*** .1838514 .6288839	1.8165979 .74063452 2.8925613	.7129981*** .4699804 .9560159	2.919134 1.7464642 4.0918039
Full outpatient coverage – <i>reference</i> <i>90% coverage</i>	.055818** -.1246074 .2362435	.24952512 -.56490542 1.0639557	.2432053 .0527036 .4337071	.9957234 .1717574 1.8196894
Full inpatient coverage – <i>reference</i> <i>90% inpatient coverage</i>	-.0048932 -.1292287 .1194422	-.0218744 -.57697083 .53322204	-.0134408 -.1390899 .1122082	-.05502904 -.56771402 .45765593
Full coverage of drugs – <i>reference</i> <i>90% coverage of drugs</i>	.4892219** .2018563 .7765875	2.1869837 .98191616 3.3920513	.3182124*** .0317546 .6046701	1.3028149 .19297485 2.412655
Full coverage of test – <i>reference</i> <i>90% coverage of test</i>	.1657509** .0352237 .2962781	.7409615 .1732514 1.3086716	.1329661** .0023069 .2636254	.54438562 .02223594 1.0665353
Constant	.4908976** .2245181 .757277		.3260514** .0612695 .5908333	

Number of observations (positive attitude)= 1664, Number of individuals(positive attitude)=140, Number of observations (negative positive)= 1664, Number of individuals(negative attitude)=140

Log likelihood (positive attitude) = -1087.3653, Wald chi2(11)= 112.38, Prob>chi2=0.000; Log likelihood (negative attitude) = -1057.3607, Wald chi2(11)= 161.57, Prob>chi2=0.000

***, **, * significance at p<0.01, p<0.05, p<0.1 respectively

6.5 Discussions

This DCE study resulted in coefficients most of which are theoretically valid. Among the attributes considered in this DCE, respondents gave the highest marginal value for benefit package with ‘no exclusions’. This is consistent with the findings from the qualitative study (Chapter 4) in which participants of FGDs strongly emphasized a comprehensive benefit package. However, the attachment of higher positive value for ‘exclusion of dialysis’ compared to ‘exclusion of dental care’ is not expected. It was hypothesized that respondents give less weight to ‘exclusion of dental care’ over ‘exclusion of dialysis’. This may be due to lack of awareness about the severity of the diseases that require dialysis and the financial burden of undergoing dialysis. On the other hand, it implies that respondents prefer for coverage of most frequent illness over rare events. Alternatively, availability of services may have influence on the valuation of dental care versus dialysis. Respondents may have considered the availability of services. In this case, dental care services are widely available compared to dialysis, which is found in a couple of facilities. This may also in part be due to the design of the questionnaire. The levels for exclusions is stated negatively; that is, ‘exclusion of dental care’, ‘exclusion of dialysis’, ‘exclusion of both dental care and dialysis’ and ‘no exclusion’.

Respondents were not ready to trade ‘no exclusions’ for lower monthly contribution unless they are compensated with full coverage of drugs or outpatient services and other laboratory and diagnostic tests. Disaggregation of the respondents by gender and marital status produced similar results.

In case of ‘health care providers’ attribute, respondents gave greater marginal weight for ‘providers of both public and private’. This is also in line with the findings from the qualitative study in which respondents showed preference for both providers for different dimensions. In terms of socioeconomic classification, providers of services were given highest marginal weight by middle class respondents.

Respondents attached higher marginal value for full (100%) coverage of drug expenses compared to full coverage of outpatient services or laboratory and other diagnostic tests. This is in relation to the expected costs which are usually higher for

drugs. This may also be due to the relative access and lower prices of outpatient services and laboratory and other diagnostic tests in public facilities.

Respondents also give more marginal weight to premium compared to full coverage of outpatient services and tests. The analysis of trade-offs between premium and coverage of outpatient services and tests also shows that respondents prefer lower monthly contribution with partial coverage of outpatient and tests over higher monthly coverage with full coverage of outpatient services and tests. This also shows that respondents made comparisons considering the overall payments they have to make. Co-payments are made when they get ill (possibly few times in a year) while premium is made every month. Therefore, higher premium means they have to make large sum of contribution within a year. However, co-payment may not be made at all (if they do not fall ill), or it may be made few times (when they get sick) in a year. Similar trade-offs between deductibles and premium was observed in Swiss (Becker and Zweifel 2008) in which participants of DCE study traded an increase in deductibles with a decrease in premium.

The lower marginal weight attached to full coverage of outpatient services, laboratory tests and other diagnostics examinations imply that effective co-payment can be applied to these services in order to recover some costs of service provision. Co-payments can also help to control moral hazard associated with low expenses for the services though they should be applied cautiously (Normand and Weber 2009).

Enrolment resulted in unexpected direction of relation. It was assumed that as enrolment changes from extended family (which includes husband, wife, children, and parents of husband and wife) to core family (husband, wife and children only) utility derived from health insurance decreases. However, a change from extended to core family resulted in positive coefficient which implies an increase in utility. Three explanations may be given for this result. First, respondents may attach implicit cost of enrolling their extended family. Second, the costs of health care for parents may be shared among siblings. Third, the parents of the respondents live out of Addis (which is the case for a good number of the population in Addis) and they are not immediately responsible for their health. Alternatively, there may not be services where the parents live. Thus, respondents would be satisfied with enrolment of their immediate family than including their extended family.

In general, women and 'never married' segments of the respondents considered more variables in their comparison of alternative than their counter parts. Women and 'never married' were willing to pay consistently higher for most of the attributes. This may be explained by the fact that women normally need more health care services than men. On the other hand, married respondents are willing to pay less due to more expenses they face related to their families over the 'never married' population. In other words, this shows the income effect. Non married have comparatively more disposable income over married groups thus they are willing to contribute more of their salary per month. However, sub-groups analysis by gender, marital status, wealth class, and attitude showed that preferences do not significantly differ among segments of the population.

Low enrolment to health insurance also arises due to poor attitudes to health insurance (Monheit and Vistnes 2008). In case of attitudes and motivations, respondents have shown that they have positive attitude to health insurance. They have agreed to statements which show positive attitude towards health insurance. However, they are worried about the contributions to health insurance since they have many expenses with their low salaries.

Unexpectedly, it was not possible to find evidence between health insurance preference and coverage of inpatient services. This may be because respondents overlooked this attribute as the DCE was of large design size. In addition, the constant term is found to be positive and significant. Given generic choice sets, the constant term was assumed to be insignificant. A positive significant constant term implies respondent tend to choose the second alternative (Insurance B) in most cases. Since choices are consistent as shown by the holdout choice sets, this implies that health insurance alternative 'B' was associated with better utilities and more attractive to the respondents.

6.6 Study Strengths and Limitations

This study used a discrete choice experiment which is a rigorous method of preference elicitation. The use of this method to elicitation of health insurance preferences is very limited. Thus, this study contributes in filling the gap particularly

in Africa. It has produced extensive information which is timely and can be used by MOH.

The study is also with some limitation. The use of large number of attributes and large design may have resulted in cognitive burden and fatigue among the respondents. Thus the respondents may overlook some attributes or may not well compare alternative when making choices. The study is also not easy to compare with other studies since there are few studies. Those studies which are found also used different attributes and attribute level which made the comparison difficult.

Unobserved heterogeneity among respondents is not also considered. This DCE study is limited to assessing observed heterogeneity among the respondents. More sophisticated models such as mixed logit and latent class would have been considered to assess unobserved heterogeneity.

The other limitation of this DCE study comes from using dummy coding of categorical variables. With dummy coding, it is not possible to measure the utilities associated with reference category. A regression results with dummy coding of non-linear attributes produces the total average utility confounded by the base level attributes. Effects coding would have removed bias.

6.7 Conclusions

Preference for health insurance is mainly determined by the type of benefit packages, type of service providers, and coverage of drugs. Benefit packages need to be as comprehensive as possible, services need be provided by both public and private providers, and coverage of drugs need to be as full as possible. People in general have positive attitudes and motivation to health insurance. However, there is need to build confidence among beneficiaries about the objective of health insurance and health system. Premium is also more important than co-payments. Lower premium may be applied with co-payments to outpatient services and diagnostic tests.

Chapter 7 GENERAL DISCUSSIONS AND CONCLUSIONS

This PhD work assessed the demand for social health insurance among formal sector employees. Four specific objectives were formulated to address the issue: (1) a systematic review of literature on health insurance benefit packages; (2) assessment of features of employment based health insurance; (3) exploration of knowledge and determinants of demand for health insurance; and (4) elicitation of preferences among different health insurance design packages. Three empirical studies were conducted to address the aim of the research: an interview survey, qualitative study, and a discrete choice experiment.

There are two sets of determinants for a choice of health insurance; these are the characteristics of the health insurance and the characteristics of the beneficiaries (Asenso-Okyerre, Osei-Akoto et al. 1997; Wiesmann and Jutting 2001). The features of the available employment based health insurance were assessed by an interview survey.

The survey describes the characteristics of currently available employment based health insurance (EBHI). Most employees are not very clear about the benefit packages of their health insurance. This is also a case in other low income countries (De-Allegri, Sanon et al. 2006b). In general, expensive services are excluded. Besides, there is a tendency of excluding services such as eye care, dental care, and some chronic diseases including hypertension and diabetes. Pregnancy related services are also among the exclusions in some organizations. This shows that the specification of benefit package did not consider the disease burden of the countries. Ethiopia is among countries with highest burden of eye illnesses (Berhane, Worku et al. 2007). There is also an increasing burden of chronic diseases particularly in Addis Ababa (Misganaw, Hailemariam et al. 2012). Thus, there is a need for further investigations of health benefits and the basis for definitions of benefit packages from the providers' perspectives.

There are no direct contributions made by beneficiaries as premium to EBHI. However, in most cases, there are cost sharing mechanisms such as co-payments and a cap on maximum health care expenditure coverage. The application of co-payment to health insurance is usually justified with a reduction in moral hazard. However, it

can also potentially discourage utilization of needed services (Normand and Weber 2009). The richest afford co-payments compared to the people in lowest quintiles (Wagstaff, Lindelow et al. 2009) the poor would still be denied access to health services. Cap also affects the neediest and the poor most as their health care expenses are no longer paid from health insurance scheme once they use up the maximum fund allotted per individual. The effects of cap and co-payments also need further investigation.

The qualitative study focused on exploring determinants of demand for health insurance. It also assessed the knowledge regarding health insurance and progress of proposed social health insurance. The data were collected from key informant interviews and focus group discussions. Health insurance had been provided by some commercial insurance corporation. However, most people were not aware of the availability of the health insurance in the insurance companies. On the other hand, those people who were aware cannot purchase it since it is expensive with large premium rate. Therefore, main health insurance customers of these insurance companies are different formal sector organizations which purchase the policies on behalf of their employees. EBHI had been the main health insurance mechanism in the country. It is characterized by inequitable coverage of the benefits. Health insurance benefits depend on the status of the staff in the organizations. Employees with management positions usually get a wide range of benefits compared to those at lower levels.

The insurance companies claim health insurance is not profitable; so that, they are reluctant to promote and provide it. There are some private insurance companies who stopped the provision of health insurance. Other studies also have shown that in private health insurance is characterized with cream skimming premium escalation and fraud (Drechsler and Jutting 2007). Private health insurance providers in South Africa also try to take government subsidies by dumping expensive

There is an understanding of what health insurance is, among the participants of the FGDs. However, most people were not very clear with health insurance concepts such as risk pooling and cost sharing. Similar poor understanding of health insurance concepts is found elsewhere (De Allegri, Sanon et al. 2006). Further discussion on these issues resulted in some understanding of these concepts. Thus

the participants stated that it would be important to introduce lower co-payments for some services to make the people use the services responsibly. A maximum of 10% of total health care expenditure was proposed as a co-payment.

Most participants of the qualitative study had heard about the proposed new social health insurance and its proclamation. However, only few of them knew the details. For instance, most were not clear if the scheme would be compulsory and that they have to make monthly contributions. The participants were unhappy about such conditions. The initial reaction was against the compulsory nature of the scheme and premiums. Further discussions about health care resource created an understanding of the need to share health care costs. The participants claim that their monthly salaries are too low to make large amount of contribution to health insurance. Most of them stated that they may contribute 1-3% of their monthly salary. A maximum of 5% of monthly salary contribution was proposed for comprehensive benefit packages and good quality health care services. However, people with low salaries were consistently against large monthly contributions and they offered 1-2% of their monthly salary. These propositions of contributions are higher than a similar study in India in which respondents offered a maximum of 1.35% of their annual income for health insurance (Dror, Koren et al. 2007). The key informants revealed that, the proposed monthly health insurance premium is 3% of monthly salary to be contributed by each employees and employers.

Introducing new system is challenging especially if beneficiaries have make contributions. In the case of Ethiopia, the ever increasing inflation is making real income lower and participants of the research have shown resistance to make payments on top of other expenses and taxes. The same resistance is found in other even better- off countries. For instance in Malaysia formal sector employees are found to be not willing to make contributions to social health insurance but rather use the previous tax based system (Tangcharoensathien, Patcharanarumol et al. 2011)

For the participants of the FGDs the main concern with the initiation of health insurance was the quality and availability of health care services. Most stated that they prefer to pay out of pocket if the quality of services continues with the current poor conditions. They emphasized an improvement in quality of health care services

prior to introducing health insurance. This view was shared by the key informants – they indicated that quality improving activities had been underway in most health care facilities. Some FGD respondents also acknowledged the quality improvements in some health care facilities. Quality of services is a cross cutting issue in provision of services and remains a major challenge (Berendes, Heywood et al. 2011). For instance, India's national health insurance program is concerned with fraud and quality of providers (Lagomarsino, Garabrant et al. 2012). Individuals in British and Spanish are opting out of the National Health Services because they perceive NHS lacks quality and flexibility (Costa and Garcia 2003).

The participants of the FGDs associate quality of services with providers of the services. They state that if they are going to be enrolled to health insurance, they need to get the services from the providers of their choice. Most of them claim that private providers have better quality of services compared to public providers. In contrast, others state that private providers are profit oriented and they prescribe unnecessary diagnosis and drugs. As a result, they contend that public providers are more responsible and they prefer to get services from public facilities.

Specification of health insurance benefit packages was challenging as participants opt for comprehensive coverage of health care services. Further discussions on implied resource need and an increase in premium made understanding on the need for prioritization. Accordingly, priority was given to diseases with highest burden including communicable diseases of air borne, water borne, eye disease, etc. However, some also indicated an increasing burden of non-communicable diseases. The key informants stated some of the proposed exclusions from benefit packages including cosmetic surgery, implantation, transplantation, medical aids, dental care, and dialysis. Participants of the FGDs indicated that the exclusions would be acceptable except for exclusions of dental care and dialysis.

Intuitively, people prefer comprehensive coverage of health care services. The systematic review on benefit packages also shows that people always prefer wide range of benefit packages (Dror 2006; Onwujekwe, Onoka et al. 2010). However, given budget constraints and limited services people can effectively prioritize the services of their choice (Dror 2006; Danis, Goold et al. 2007; Dror, Koren et al. 2007).

Countries have either explicitly or implicitly defined benefit packages. The criteria used to define benefit packages include need, safety, efficiency, costs, effectiveness, cost-effectiveness, and budget (Planas-Miret, Tur-Prats et al. 2005; Schreyögg, Stargardt et al. 2005). The main exclusions from benefit packages of different countries are non-conventional treatments and alternative care. However, the boundary between basic and extra services is not clear (Soderlund 1999). Services such as cosmetic surgery, services related to leisure, and those services with uncertain efficiency are among major exclusions. There are also health care services which need eligibility conditions or provided with co-payments such as health care provided by paramedicals or specialists. Some countries place conditions on services such as physiotherapy, transplantation, sterilization, and medical aids (Bellanger, Cherilova et al. 2005; Schreyögg, Stargardt et al. 2005). The provision of dental care particularly for those above 18 years is also limited in some countries (Planas-Miret, Tur-Prats et al. 2005; Stolk and Rutten 2005).

In order to accommodate the preferences of people, some European countries introduced supplementary health insurance benefits on top of statutory health insurance (Kifmann 2002; Kerssens and Groenewegen 2003; Costa-Font and Garcia-Villar 2009; Augurzky and Tauchmann 2011); the objective of which is to stimulate managed competition so that social health insurance organization become more consumer oriented. Consequently, consumers who are not satisfied with their health insurance provider would switch insurance schemes with different benefit packages or quality of services.

Definition of benefit package is a work-in-progress as inclusions and exclusions changes through time depending on different factors (Barnighausen and Sauerborn 2002; Kifmann 2002; Augurzky and Tauchmann 2011). There are limited studies which addressed this issue. The systematic review of literature resulted in 28 studies 16 of which describe benefit packages provided by different health insurance schemes and 12 of which address the preferences for health insurance among beneficiaries. Most of these studies come from Europe and USA while only 4 of them are from Africa. This shows the research gap and need for further study. The studies show that in most cases benefit packages are defined implicitly. This results in inequitable access to health care as health services depend on availability (Khosa, Soderlund et al. 1997; Soderlund 1999).

In order to get a deeper understanding of the potential enrolees' preferences for social health insurance, a discrete choice experiment (DCE) is designed with 8 attributes (factors). The attributes are identified from the literature review, survey, and qualitative study. Sixteen choice sets that vary with the 8 attributes are prepared and presented to the DCE respondents. The attributes used are premium, enrolment, exclusions, and coverage of outpatient services, inpatient services, tests, and drugs.

The results of the DCE show that most of the attributes considered are theoretically valid and consistent with the results from qualitative study. The most decisive attribute for health insurance is found to be benefit package with 'no exclusions' (comprehensive benefit package) followed by service providers of 'both public and private'. The third most important attribute is 'full coverage of drugs'; other things being equal.

However, people can trade-off preferences when they are faced with constraints. Accordingly, the result of the DCE survey shows that respondents would give up 'no exclusion' for exclusion of dental care, exclusion of dialysis, or exclusion of both dental care and dialysis if they are compensated with full coverage of drugs. Alternatively, they would trade 'no exclusion' for full coverage of tests and outpatient services. Similar results are found by gender and marital status. Middle class respondents value 'providers of both public and private' more than 'no exclusions' in benefit packages. This implies they would prefer to get better services whatever the service is. For upper level respondents this may not be an issue since they can go to the provider of their choice if the perceived quality of the authorized provider is poor. On the other hand, for those in lower level, it is getting any services that matters most.

There are few studies which used a DCE to investigate preferences for health insurance (Chakraborty, Ettenson et al. 1994; Gates, McDaniel et al. 2000; Kerssens and Groenewegen 2003; Becker and Zweifel 2008; Vroomen and Zweifel 2011; Trujillo, Ruiz et al. 2012). These studies come either from Europe or USA with one study from Columbia. As to the PhD researcher's knowledge, there are no studies which used DCE to assess the preference of health insurance in Africa so far. The studies that come from Africa used either qualitative studies or simple exercises such as ranking.

It was not possible to make direct comparison among the findings of the DCE study of this PhD research with other DCE studies since the attributes and/or levels used in the design of DCE are different. For instance, the attributes used for a study in The Netherlands (Kerssens and Groenewegen 2003) are premium, deductible, no-claim discount, extension of services, amount of red tape, medical help desk, choice of family physician, choice of hospitals, dental benefits, physical therapy benefits, benefits for prescription drugs, and benefits for homeopathy. This study found dental care to be the most important attribute followed by prescription drugs and homeopathy. Moreover, families with children prefer scenarios with complete benefits for prescription medication than families without children. In terms of socioeconomic status, low income persons are relatively more opposed to co-payment for expensive medication.

The attributes used for a study in the USA (Gates, McDaniel et al. 2000) are doctor quality, hospital choice, monthly premium, physician network, cost per doctor visit, prescription coverage, wellness visits, dental coverage, vision coverage, and carrier providing health care coverage. The regression results shows that physician network (physician choice) is the most important attribute in health insurance preference respectively followed by prescription drug coverage, cost of a routine doctor visit, coverage of wellness visits and monthly premium.

The DCE results of this research also shows that women and never married are willing to pay consistently higher than their counterparts showing biological need and income effect. Women usually need more health care services compared to men. In terms of income effect, never married had more disposable income than married ones. The results also show that respondents prefer for enrolment of core family over extended family. In context of the respondents who reside in the capital city of the country, three possible explanations can be given. Most of these respondents usually have their family out of the capital city – Addis Ababa. Thus, they may find it unnecessary to enrol their parents since most health care services are not available out of Addis Ababa. On the other hand, they may not be immediately responsible for the health care of their parents. This may also be due to the fact that health care expenses for parents are shared among siblings. The ever increasing cost of living can also provide additional explanation. However, this needs further studies.

In general, health insurance is provided by government or NGOs and the beneficiaries are usually passive recipients. The formal sector employees have little knowledge about health insurance concepts, the social health insurance proclamation, and progress. On the other hand, currently insured employees are not happy with retrospective reimbursements, cap, co-payments, and benefit packages. The respondents in general had positive attitude/motivation to health insurance. It appears that they need quality and availability of services to demand health insurance. Once these issues are addressed comprehensiveness or type of benefit packages, type of service providers, and full coverage of drugs are the most important factors in their choice of health insurance. They would be willing to contribute an average of 3.92% of their monthly salary for benefit packages with no exclusions. On the other hand, they would pay 2.36% of their monthly salary to get services from both public and private providers, and 1.72% of their monthly salary to get full coverage of drugs. Other studies also show that type of benefit packages, coverage of drugs, and choice of providers or physicians among the most important determinants in the preference of health insurance (Harries and keane 1999; Gates, McDaniel et al. 2000; Kerssens and Groenewegen 2003; Danis, Goold et al. 2007). Full coverage of outpatient services, tests, and type of enrolment are less valued in the preference for health insurance.

The introduction of social health insurance in Ethiopia offers better access to health services for those insured. However, ability to pay, quality, and availability of services are indicated to be the main challenges that would be faced. As discussed above, evidence in other countries also show similar challenges in the provision of health insurance. Thus, further studies are required to address these issues and the ways of addressing the problems.

The other foreseeable challenge with the introduction of social health insurance is an increase in utilization of health care services as a result of lower cost for health care seeking. Therefore, the capacity of health facilities needs to be improved and upgraded so that they would be able to accommodate the increasing inflow of clients. The increase in health care utilization may also bankrupt the scheme if the outflow and inflow of finance are not balanced. To address such shortage of funding countries increase government budget for the schemes. For instance, Government spending had increased 5-11% in Ghana, Indonesia, Rwanda, and Vietnam with

implementation of health insurance (Lagomarsino, Garabrant et al. 2012). Thus, the Ethiopian government also need to consider a financial assistance especially at the initial stage.

This research has shown that the most relevant attributes for the introduction of health insurance to be benefit packages and providers of services. Quality of services and premium level are also found to be among the attributes important in the beneficiaries' decision on health insurance. However, detailed account variables indicating perceived quality of services was not considered. The researcher would consider this variables if starts afresh. Moreover, increasing the sample size at least twice may have solved the insignificance of the variables in sub group analyses of the DCE. Further studies may consider these issues. Moreover, the supply side factors in the initiation of social health insurance and the viability of the scheme may be investigated.

Apart from further studies on health insurance demand, there is also a need for further work on the sensitization of health insurance concepts, progress, and design. Lower valuation to full coverage of outpatient services and tests also imply that a maximum co-payment of 10% can be applied to health insurance scheme. However the effect of this cost sharing mechanism need investigation after reasonable duration of implementation. Lower success in health insurance can partly be attributed to low understanding of the demand for health insurance.

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Appendices

Appendix I: List of Articles Identified for Systematic Review on Benefit Packages

R. No	Reference	Research objective	Type of data	Respondent group
1	(De Allegri, Sanon et al. 2006)	Investigation of consumers' preferences to community based health insurance	In-depth interviews, Focus group discussions	Enrolled and non-enrolled households to community based health insurance in Nouna District, Burkina Faso
2	(Witter and Garshong 2009)	Assessment of the Ghanaian National Health Insurance	Desk review and key informant interviews	National, regional and district level stakeholders
3	(Busse and Schwartz 1997)	Analysis of Philippines' National Health Insurance Act in comparison to German experience	Desk review	
4	(Danis, Biddle et al. 2002b)	Assessment of the feasibility of making uninsured patients to define their own benefit packages	CHAT exercise, self-administered questionnaire before and after CHAT exercise	Residents of North Carolina without health insurance
5	(Chakraborty, Ettenson et al. 1994)	Assessment of the preference for different health insurance benefit packages	Discrete choice experiment (DCE)	Maryland State employees
6	(Soderlund 1999)	Definition and costing of minimum benefit packages of for hospital care in South Africa	Policy analysis	
7	(Polikowski and Santos-Eggimann 2002)	Comparative analysis of benefit packages in France, Germany, Israel, Luxembourg, The Netherlands, and Switzerland	Data from government ministries and sickness fund	
8	(Dror, Koren et al. 2007)	Assessment of health insurance priorities of poor people in India	CHAT exercise, data on utilization and cost is obtained from household survey conducted earlier	Residents of Karnataka and Maharashtra towns
9	(Barnighausen and Sauerborn 2002)	Analysis of German social health insurance system	Policy analysis	

10	(Danis, Biddle et al. 2002a)	Assessment of priorities of beneficiaries of Medicare	CHAT exercise	Residents of central North Carolina
11	(Chinitz, Meislin et al. 2009)	Examination of role of new public management – case of benefit packages	Quantitative: survey – phone interview Qualitative: documentation of the priority setting process, in-depth interviews, FGDs	Israeli public and physicians
12	(Becker and Zweifel 2008)	Analysis of willingness to pay additional benefit packages in Swiss social health insurance	Telephone interview	Residents of German and French speaking residents in Switzerland
13	Oregon Health Services Commission (1991)	Analysis of health care priorities and benefit packages	Policy analysis	
14	Holland (1992)	Review of the benefit packages of Netherlands	Desk review	
15	Harris and Keane 1999	Investigation of consumers' preferences and perception to health plan choice alternatives	Questionnaire survey	Elderly Medicare beneficiaries in Minneapolis
16	Kerssens and Groenewegen 2005	Investigation of consumer preferences for health plan	Postal survey	Beneficiaries of social health insurance in The Netherlands
17	Onwujekwe, Onoka et al. 2010	Investigation of preferences for benefit packages	Survey and focus group discussions	Beneficiaries of community based health insurance in Nigeria
18	Busse, Stargardt et al. 2005	Analysis of criteria and methods used in the definition of benefit packages of Germany	Policy analysis	
19	Danis, Goold et al. 2007	Analysis of employees choice and understanding for health insurance	CHAT exercise	Employees of public and private organizations in Northern California
20	Danis, Binnendijk et al. 2007 Danis Biddle et al., 1997)	Analysis of benefit package priorities among illiterate people	CHAT exercise	Both insured (by community based micro insurance) and uninsured respondents from Karnataka and Maharashtra, India
21	Burke and Jain 1991	Analysis of health care plan in the US	Policy analysis	

22	Bilde, Ankjaer-Jensen et al. 2005	Description of benefit packages for curative services in Denmark	Policy analysis	
23	Bellanger, cherilova et al 2005	Description of benefit packages in France	Policy analysis	
24	Stolk and Rutten 2005	Description of the benefit packages and entitlements of benefit packages in The Netherlands	Policy analysis	
25	Smith 2010	Comparison of Irish benefit packages with other selected countries	Policy analysis	
26	Employee benefit research institute (EBRI) 2003	Analysis of the health benefit provided by employers in the US	Policy analysis	
27	Planas-Miret, Tur-Prats et al. 2005	Description of entitlements, benefits and decision criteria for curative health services in Spain	Policy analysis	
28	Kaiser Family Foundation 2009	Description and comparison of health benefits of HMO, Blue Cross/Blue Sheild	Minute	

Appendix II: EBHI Survey Questionnaire

Health insurance demand analysis amongst formal sector employees in Ethiopia: A discrete choice experiment

Preliminary study on utilization of employment based health insurance

Survey to be completed by employees who get health care insurance

English Version

I. Identification

Name of the Organization	
Type of the organization	Public for profit.....1 Public not for profit2 Private3 Local NGO.....4 International NGO.....5 Bilateral Organization.....6 Multilateral Organization.....7 Other, Specify
Place of organization	Sub-city Woreda
Date	
Interviewer's name	
Result	Completed Refused
Supervisor ----- Signature----- Date-----	

II. Socio-demographic Characteristics

Line No	Questions	Skip
2.1	Gender Male 1 Female..... 2	
2.2	How old are you? _____	
2.3	Is your household man headed or woman headed? Man 1 Woman 2	
2.4	What is your religion? Orthodox 1 Catholic..... 2 Protestant..... 3 Muslim..... 4 Other, Specify _____	
2.5	What is your ethnicity? _____	
2.6	How many people usually reside in your household _____	
2.7	Have you ever attended formal school? Yes 1 No 2	If no skip to 2.9
2.8	What is the highest grade you completed? Primary 1 Secondary..... 2 Technical/vocational certificate..... 3 University/College Diploma 4 University/College Degree 5 Masters and above 6	
2.9	What is your marital status? Married 1 Never married 2 Cohabited 3 Separated 4 Divorced 5 Widow 6	
2.10	Whom do you live with? Family 1 Alone 2 Friend 3 Other, specify _____	
2.11	Do you have children? Yes 1 No 2	If no skip to 2.14
2.12	How many children do you have? _____	
2.13	How many children do you have with age less than 18 years? _____	

2.14	Where do you live? In Addis Ababa 1 Out of Addis Ababa 2	
2.15	What means of transport do you usually use to come to office? Walking1 Public transport.....2 Government car.....3 Transportation service by employ.....4 Taxi5 Private car6 Other, specify _____	
2.16	What is the ownership of the house in which you live? Own 1 Rented from private..... 2 Rented from government..... 3 Other 4	
2.17	How many rooms does your house have?	If no skip to 2.20
2.18	Do any of your household members have any transportation means? Yes 1 No..... 2	If no skip to 2.20
2.19	Does any member of your family own: (circle all that apply) A bicycle 1 A motorcycle..... 2 A car or truck..... 3 Other, Specify _____	
2.20	What kind of toilet facility do members of your household usually use? Flush toilet 1 Pit latrine 2 No facility..... 3 Other, Specify _____	If no skip to 2.24
2.21	How is the ownership of the toilet facility? Shared 1 Private..... 2	
2.22	Where is the location of the toilet? In the house 1 In the compound..... 2 Outside the compound3	
2.23	How many people use this toilet facility?	
2.24	Does your household have any of the following assets: (circle all that apply) Radio 1 Television..... 2	

	Mobile telephone..... 3 Non mobile telephone..... 4 Refrigerator 5 Washing machine 6 Electric stove/Oven 7 Microwave 8 Electric mitad 9 Other, specify _____	
2.25	What type of fuel does your household <u>mainly</u> use for cooking? Electricity 1 LPG..... 2 Kerosene..... 3 Charcoal..... 4 Wood 5 Straw/shrubs/grass..... 6 Animal dung..... 7 Other, Specify _____	
2.26	What is your household monthly budget for the following items? Food Items _____ Electricity _____ Water _____ Education _____ Transport _____ Telephone _____ House Rent _____ Eder/Equb _____ Savings _____ Others _____	
2.27	Do you have a bank account? Yes 1 No..... 2	If no skip to 3.1
2.28	During the last six months, did you make deposit in your bank account? Yes 1 No 2	If no skip to 2.30
2.29	How many times did you make deposited in the last six months?	
2.30	During the last six months, did you make withdrawals from your bank account? Yes 1 No 2	If no skip to 3.1
2.31	How many times did you make withdrawals from you bank account	

III. Ask only married/cohabited respondents

Line No	Questions	Skip
3.1	Has your spouse ever attended school? Yes1 No2	If no skip to 3.3
3.2	What is the education level of your spouse? Primary 2 Secondary..... 3 Technical/vocational certificate..... 4 University/College Diploma 5 University/College Degree 6 Masters and above 7	
3.3	Does your spouse have a job? Yes 1 No 2	If no skip to 4.1
3.4	What is the profession of your spouse?	
3.5	How much does your spouse earn per month from the job?	
3.6	Where does your spouse work? Government organization employee 1 Private organization employee..... 2 NGO employee..... 3 Private job 4 Retired 5 Other 6	
3.7	What is the position of your spouse in their organization?	
3.8	Does your spouse get health insurance from his employer? Yes1 No.....2	If no skip to 4.1
3.9	Does the health insurance cover health care expenses of other family members? Yes 1 No.....2	If no skip to 3.12
3.10	How many members of the family are entitled to get health insurance form your spouse's organization?	
3.11	Which family members are covered in the insurance of your spouse? Husband/wife 1 Children.....2 Your parent 3 Your spouse parent 4 Other5	
3.12	Is there a limit to the maximum payments that will be covered by your spouse's organization to the health	

	expenditure? Yes1 No2	
3.13	How much is the maximum healthcare payments that will be covered by your spouse insurance? (For a year) Total _____ Yourself _____ Husband/wife _____ A child _____ A parent _____ Other, specify _____	

IV. Work and Health Insurance

Line No	Questions	Skip
4.1	How long have you been working in this organization? _____	
4.2	What is your position? _____	
4.3	How much net monthly salary do you get? _____	
4.4	Apart from the salary, do you get other benefits from your organization? Yes 1 No2	
4.5	What other benefits do you get apart from your salary? Transportation allowance1 Housing allowance.....2 Health insurance.....3 Pension4 Other, specify5	
4.6	Have you been covered by health insurance/do you get health care benefits from your organization? Yes1 No.....2 Don't know.....3	
4.8	Are newly recruited employees needed to get medical examination before employment? Yes.....1 No.....2	If no skip to 4.10
4.9	If a newly recruited employee is found to have pre-existing health problem, does he/she gets health insurance coverage for the pre-existing health problem? Yes1 No2 I do not know.....3	If no skip to 4.11
4.10	If a newly recruited employee is found to have pre-existing	

	health problem, how is the insurance coverage for this pre-existing health problem Full.....1 Partial.....2 I do not know.....3	
4.11	Are chronic health problems (such as diabetes, hypertension) covered in the health insurance? Yes.....1 No.....2	
4.12	If an employee has got chronic illness after being employed in the organization, does he/she get health insurance for this chronic illness Yes.....1 No.....2	
4.13	Did you make health status examination when you were recruited to this organization Yes1 No2	If no skip to 4.16
4.14	Did you have pre-existing health problem when you were recruited to this organization Yes1 No.....2	If no skip to 4.16
4.15	Did you get health insurance coverage in your organization to your pre-existing health problem? Yes.....1 No2	
4.16	Do you currently have chronic health problem? Yes.....1 No.....2	If no skip to 4.19
4.17	What is the chronic health problem you have?	
4.18	Do you get health insurance coverage for your chronic health problem Yes1 No.....2	
4.19	Do you have another health problem which comes frequently? Yes.....1 No.....2	If no skip to 4.22
4.20	What health problem do you face frequently?	
4.21	Do you get health insurance coverage for the health problem you face frequently? Yes 1 No.....2	
4.22	How difficult is paying for health care Very easy.....1 Easy.....2 Medium.....3 Difficult4	

	Very difficult5	
4.23	What is the enrolment type of health insurance you get? Individual1 Family.....2	
4.24	Does the health insurance cover health care expenses of other family members? Yes 1 No.....2	If no skip to 4.27
4.25	How many members of the family are entitled to get health insurance form your organization?	
4.26	Which family members are covered in the insurance of your organization? Husband/wife 1 Children.....2 Your Parent3 Your spouse's parent.....4 Other, specify _____	
4.27	Is there a limit to the maximum payments that will be covered by your organization to the health expenditure? Yes1 No2	
4.28	How much is the maximum healthcare payments that will be covered by your insurance? (in Birr) Total _____ Yourself _____ Spouse _____ A child _____ Your parent _____ Your spouse's parent _____ Other, specify _____	
4.29	Have you ever utilized the health insurance? Yes.....1 No.....2	If no skip to 4.31
4.30	For what kind of health problems do you use the health insurance Severe health problem1 Any health problem.....2 Other _____	If no skip to 4.32
4.31	If you do not utilization the health insurance for all kinds of health problems, what is your reason? _____	
4.32	Do you make contributions to the health insurance scheme? Yes.....1 No.....2	If no skip to 4.34
4.33	How do you make payments to the health insurance? Deductions from salary1 Cash contributions2 Other, specify _____	
4.34	How does reimbursements made by your organization?	

	Reimbursement to the individuals.....1 Reimbursement to health care providers.....2 Other, specify _____																			
4.35	How much of the health care payments reimbursed by your organizations? Fully1 Partially2	If no skip to 4.37																		
4.36	If partial reimbursement is made, how much percent of your medical bills are covered/ reimbursed? _____ _____																			
4.37	What type of health problems covered in the insurance? _____ _____ _____																			
4.38	What type of health problems are not covered by the insurance? _____ _____ _____																			
4.39	Are there specific providers you are required to visit when you need care? Yes.....1 No2	If no skip to 4.43																		
4.40	Describe the type of providers and their services <table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 33%;">Name of the provider</th> <th style="width: 33%;">Type of provider</th> <th style="width: 33%;">Type of service</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>	Name of the provider	Type of provider	Type of service																
Name of the provider	Type of provider	Type of service																		
4.41	Is there health care service that your need and not provided by the health providers described above? Yes1 No2	If no skip to 4.42																		
4.42	What is the health care service you need and not provided by the health care providers described above																			
4.43	If you incur a very high expenditure for your health care, how much is the maximum expenditure that can be covered by your organization?																			

4.44	Does your organization own health care clinic which provides health care service for employees Yes1 No2	If no skip to 4.49
4.45	If yes, do you make payments to get health care services from the clinic? Yes1 No2	If no skip to 4.47
4.46	Do you get reimbursements for the payments you make in the clinic Yes1 No2	
4.47	Is there any way that employees make support for the health care clinic? Yes.....1 No2	If no skip to 4.49
4.48	How do employees support the clinic? Regular deduction from salary1 Irregular deductions from salary2 Regular cash contribution3 Irregular cash contribution.....4 Other, specify _____	
4.49	Is there any other means of supporting each other to cover health care expenditures (e.g social committee) Yes1 No2	

V. Healthcare utilization and health insurance coverage

Line No	Questions	Skip
5.1	Do you face any health problem in the last one year? Yes.....1 No.....2	If no skip to 5.12
5.2	What was the nature of the health problem? Mild1 Medium2 Severe3	
5.3	What was your health problem?	
5.4	Did you seek medical care for the problem? Yes1 No.....2	If no skip to 5.12
5.5	Where did you seek care? Private clinic1 Private hospital.....2 Public health centre.....3 Public hospital.....4 NGO clinic5	

	NGO hospital6 Other, specify _____	
5.6	Did you make payments for the health care Yes1 No2	If no skip to 5.12
5.7	Who made payments for the health care? _____	
5.7.1	How much was the total payments you made? _____	
5.8	Where did you get money to pay for the health care? Private saving1 Borrowing from individual2 Help from relatives3 Selling asset4 Income5 Reducing other expenditures6 Other, specify _____	
5.9	Did you request reimbursements from your organization Yes1 No.....2	
5.10	Did you get reimbursements? Yes1 No2	If no skip to 5.12
5.11	How long is it since you request reimbursement? _____	
5.12	Do you have other health care expenditure not settled? Yes1 No2	If no skip to 5.14
5.13	When did you request reimbursement? _____	
5.14	How much time does it take to get reimbursements in your organization? Short1 Medium2 Long3	
5.15	On average how long does it take to get reimbursements? _____	
5.16	How do you describe the procedures to get reimbursements? Easy1 Somewhat difficult.....2 Complicated3	
5.17	Is there health care expenditure you incurred but did not request for reimbursement? Yes1 No2	If no skip to 5.19
5.18	Why didn't you request for reimbursement? _____	
5.19	How do you rate the benefit of health insurance in terms of financial protection against healthcare costs? _____	

	Not useful1 Low2 Medium3 High4	
5.20	Is there any member of your family who has health problem in the last one year? Yes1 No2	If no skip to 5.33
5.21	How many member of your family were sick in the last one year?	
5.22	What was the nature health problem of your family member who was sick most recently? Mild1 Medium2 Severe3	
5.23	What was the health problem of your family member who was sick most recently?	
5.24	How old was your family member most recently sick?	
5.25	What is the gender of your family member most recently sick?	
5.26	What is the relation to you of your family member who was sick most recently?	
5.27	Did your family member who was sick most recently seek medical care for the problem? Yes1 No.....2	If no skip to 5.33
5.28	Where did he/she seek care? Private clinic1 Private hospital.....2 Public health center.....3 Public hospital.....4 NGO clinic5 NGO hospital6 Other, specify	
5.29	Where did your family member get money to pay for the health care? Private saving1 Borrowing from individual2 Help from relatives3 Selling asset4 Income5 Reducing other expenditures6 Other, specify	
5.30	How much did he /she paid for health care?	

5.31	Who made the medical care payments for your family member who was sick most recently?	
5.32	Did you make payments out of pocket? Yes1 No2	
5.33	Can you tell me the three main times you or your family member used the health insurance and the amount covered? Time (year) Family member Expenditure (Birr) _____ _____	
5.34	Have you ever faced difficulty in getting money to pay for healthcare? Yes1 No.....2	If no skip to 5.39
5.35	Who was sick at the time you faced difficulty to pay for health care?	
5.36	What was the health problem?	
5.37	How did you manage to get money in the end?	
5.38	Why did you face difficulty to pay for health care? High expenditure and no health insurance coverage1 No cash at hand though covered by insurance.....2 Other, specify _____	
5.39	Is there anything you would like to suggest to improve the health insurance scheme? _____	

VI. Social Health insurance

Line No	Questions	Skip
6.1	Have you heard about the social health insurance strategy? Yes1 No.....2	If no skip to 6.3
6.2	If yes what do you know about the health insurance strategy? _____	
	***Provide information about the social health insurance.	

6.3	What is your view about the social health insurance? _____ _____ -	
6.4	How important is initiating the social health insurance for the society? Very unimportant.....1 Unimportant2 Neutral.....3 Important4 Very important5 Do not know6	If 1 or 2 skip to 6.5 If 3 skip to 6.6 If 4 or 5 skip to 6.7
6.5	If you consider initiating social insurance is very important/important, what is your reason _____	skip to 6.8
6.6	If you are neutral about the social insurance, what is your reason? _____	skip to 6.8
6.7	If you consider initiating social insurance is unimportant/very unimportant, what is your reason _____ _____	
6.8	How important will the social health insurance be to you and your family? Very unimportant.....1 Unimportant2 Neutral.....3 Important4 Very important5	
6.9	How much percentage of your salary would you like to contribute to the social insurance scheme per month? _____	
6.10	Do you prefer to pay out of pocket or make contribution to the insurance scheme and then health expenditure be paid by the insurance scheme? Pay out of pocket.....1 Make contributions to health insurance schem.....2	If 2 skip to 6.12
6.11	If you prefer out of pocket payments, what is your reason? _____	
6.12	If you prefer making contributions to health, what is your reason? _____	
6.13	Which health problems do you prefer to be covered by the social health insurance scheme? _____ Why _____	

6.14	Which health problems should not be covered by the social health insurance? Why	
6.15	Which modern healthcare provider do you prefer to seek care? Private clinic1 Private hospital2 Public health centre3 Public hospital4 NGO clinic5 NGO hospital6 Other, specify	
6.16	In general, what is your view about the initiation of social health insurance?	

Appendix III: List of Formal Sector Organizations with Employment Based Health Insurance (EBHI)

1	Association In Ethiopia	77	GTZ
2	Accountant And Auditors	78	Haddis Consult Plc
3	Addis Credit & Saving Institution	79	Haimanot General Business Plc
4	Adult And Nonformal Education	80	ICAP
5	Africa Insurance Company	81	Infonet Technology College
6	Afro German Chemicals Est. Plc	82	Iran Embassy
7	Aggar Micro Finance Institution	83	Israel Embassy
8	Alfoz Plc	84	Jesuit Refugee Service Ethiopia
9	Alia Abdulahi And Company Public	85	John Hopkins (JHU-TSEHAI)
10	Alliance For Development	86	Kahwobar P.L.C.
11	Alpha University College	87	Kokeb Janitorial Service Plc
12	Alta Computer	88	Lion Bank
13	Amba Echo Turism	89	Lion Insurance Company
14	American World Adoption	90	Ma Vie Transit
15	Amhara Micro Finance Institution	91	Management(Addis Office)
16	Amhara Water Works	92	Marie Stops International Ethiopia
17	Astu-Con Plc	93	Menshin For Mension
18	At Avorniga	94	Merlin (Medical Emergency Relif International)
19	Avorniga Technologies Ltd	95	Meron Trading Plc
20	Awash Insurance Company	96	Midroc Ethiopia
21	Awash International Bank	97	Ministry Of Justice
22	Awash Melkassa Aluminium Sulphate&Sulp	98	MOENCO
23	Bank Of Abyssinia	99	Mosambique Embassy
24	Bershaco Ethiopia	100	Namibia Embassy
25	BGI Ethiopia	101	National Alcohol and Liquor Factory
26	Brhan International Bank	102	National Tour Operation and Travel Agency
27	British Embassy	103	Nib Insurance Company
28	Buna International Bank	104	Nib International Bank
29	Business & Construction Bank	105	Nile Insurance Company
30	Canadian Embassy	106	Nyala Insurance Company
31	Commercial Bank Of Ethiopia	107	Onset Engineering Construction Plc.
32	Commercial Nominees	108	Orbis Trading & Technica Center Sc
33	Concern Ethiopia	109	Oromia Cooporative Bank
34	Construction and Design Share	110	Oromia Credit and Saving

	Company		Sc.
35	Continental Insurance Brokers	111	Oromia International Bank
36	Cultural Section Of The Embassy Of The Islamic Republic Of	112	Oromia International Insurance
37	Dashen Bank	113	Oromia Micro Finance Institution
38	Debit Credit & Saving Institution	114	OXFAM
39	Development Bank Of Ethiopia	115	Path
40	Development Bank Of Ethiopia	116	Path Finder International
41	Development Commission	117	Rural Water Supply
42	Dkt Ethiopia	118	Rwsep/Desalegn Simachew/ Sidama Micro Finance Institution
43	ECAE	119	
44	EEPCo	120	Sietco, Mekenajo-Nejo Road Project
45	E-Freight Int'l Forwarding & Mail Service Plc	121	Sino Hydro Corporation (Assosa - Kumruk)
46	Electrical Engineering System	122	Sino Hydro Corporation (Ethiopia Branch)
47	Embassy Of France	123	South Africa Embassy
48	Emporio Dell Auto	124	Star Bussines Group Plc
49	Engender Health	125	Sugar Corporation
50	Equatorial Business Grop	126	Teddy Plc
51	ESA	127	Tegen Guest Accommodation Hotel Plc
52	Ethio Life Insurance Company	128	The Carter Center Ethiopia
53	Ethiopian Insurance Corporation	129	The Horn Of Africa Cordination Of
54	Ethiopian Air Lines	130	The Joint Areas Of Case Studies
55	Ethiopian Postal Service	131	Tibebu General Hospital
56	Ethiopian Railway Authority	132	Timret Le-Hiwot Association
57	Ethiopian Red Cross Society	133	Total Ethiopia
58	Ethiopian Roads Authority	134	Transport and Construction Design Sc.
59	Ethiopian Shiping Line	135	United Bank
60	Ethiopian Telecommunication Corporation	136	United Insurance Company
61	Ethiopian Trade Contacts Plc. (Etcon)	137	Unity Business Plc
62	Excel Plastic	138	Unity University College
63	Fana Broadcasting Corporate Sc.	139	Universal Plastic
64	Federal Courts	140	Us Aid
65	Federal Police	141	Voca Ethiopia
66	Future Talents Accadamy	142	Water Aid Ethiopia
67	Gasco Trading	143	Wegagen Bank
68	Gasha Micro Finance Institution	144	Wisdom Micro Finance

			Institution
69	General Audit Company	145	Wise up
70	General Insurance Brokers & Consultants	146	World Bank
71	Genete Limat Plc	147	Wosas Micro Finance Institution
72	Get As Internationa Plc	148	Yerer Engineering
73	Ghion Commercial & Industrial Plc	149	Zamu Plc
74	Ghion Gas Plc	150	Zemen Bank
75	Global Insurance Company	151	Zikri Pvt.Ltd.Co.
76	Global Transit Plc	152	ZTE (H.K) Limited Ethiopia Br.

Appendix IV: Focus Group Discussions Guiding Questions

1. What is health insurance
 - a. Concepts
 - b. How it works
2. Availability of health insurance
 - a. Types
 - b. Providers
3. Why health insurance
4. Demand for health insurance
5. What kind of health insurance
 - a. What factors are important
6. Benefit packages
7. Providers
8. Exclusions

Appendix V: Key Informant Interviews Guiding Questions

Key informants from MOH

1. How is health financed?
 - i. Availability of health insurance
 - ii. Development of health insurance
2. Social health insurance proclamation
 - i. Why social health insurance
 - ii. Previous proclamations on health insurance or health care benefits to formal sectors employees
 - iii. Progress
3. Health insurance demand
 - i. Important factors
 - ii. Challenges
4. Health insurance benefit packages
5. Premium to health insurance

Key informants from insurance corporations

1. Types of insurance provisions
 - i. Health insurance
 - ii. Customers of health insurance
2. Reasons for low development of health insurance
 - i. Health insurance demand
 - ii. Health insurance utilization
3. Customers of health insurance
4. Benefit packages and preferred providers
5. Challenges for provision of health insurance
6. Prospects of social health insurance

Appendix VII: Discrete Choice Experiment (DCE) Questionnaire

QUESTIONNAIRE TO ASSESS HEALTH INSURANCE DEMAND AMONG FORMAL SECTOR EMPLOYEES IN ADDIS ABABA

We would be very grateful if you would complete this questionnaire. The questionnaire is concerned with your preference of different types of health insurance design that could be designed.

This survey is part of a PhD study that is being carried out to assess the factors that are important in the health insurance demand among formal sector employee in Addis Ababa.

Participation is entirely voluntary. Please read through the first section before filling it in. All responses will be strictly confidential and only be used for the purpose of this study. The choices you make on this questionnaire will not affect you in any way.

We hope you will take part in the study. The results will be of great value in the completion of the study.

Thank you for your participation.

Section I: Understanding Percentages

This questionnaire is about health insurance package preferences the you will be presented with a number of questions on the choice of insurance. However before directly going through the questions about health insurance, it is important that you understand percentages and provide certain percentages of your salary as inquired below. This will help you while comparing the different health insurance design alternatives that follow in the next section.

1. How much is your gross salary? _____
 - a. 1% of your salary? _____
 - b. 2% of your salary? _____
 - c. 3% of your salary? _____
 - d. 5% of your salary? _____
2. How much percent of your salary are you willing to contribute to health insurance?

Section II: Preference for health insurance package

Following there are 16 choice sets of different types of health insurance. Each of the choice set has two alternatives. Please tick your preferred option for each choice.

Each alternative in the choices are described by different type of health insurance design and benefit packages. There are 8 factors that explain the design. These are contribution to the health insurance, the type of enrolment, exclusions (services that will not be included by the health insurance), the provider of the services, and the percentage of coverage of outpatient, inpatient, drug and laboratory test and other diagnosis. Each of the eight factors is described as follows:

The contribution from monthly salary – is the monthly premium that will be deducted from you salary. It could be 1%, 2%, 3% or 5% of your salary.

Enrolment – describes the families that will be insured by the health insurance. It could be either core family or extended family. Core family represents mother, father and children of age below 18 in a household. Extended family includes core family, parents of the husband and parents of the wife in the family.

Exclusions – services that will not be covered by the health insurance. These are dental care, dialysis, both or none

Provider – this stands for the provider of services for those enrolled in the health insurance. The provider can be public, private, or both (private includes NGO health care facilities)

Percentage coverage for outpatient, inpatient, drug and tests – this explains the percentage of total health care expenditure that will be paid from the health insurance. It is either full coverage (100% coverage) or partial (90% coverage). When the coverage is 90% the remaining 10% of the total expenditure will be paid by the individuals themselves.

An example is provided below showing how you can fill out the choice sets.

Example

	Insurance A	Insurance B
Contribution from monthly salary	2% of salary	5% of salary
Enrolment (families covered by the HI)	Extended family	Core family
Exclusion (Services that will not be covered by the insurance)	Dialysis	Dialysis
Provider of the services	Public	Private
Coverage of outpatient service	90% coverage	90% coverage
Coverage of inpatient service	100% coverage	100% coverage
Coverage of drugs	90% coverage	100% coverage
Coverage of laboratory tests and other diagnostics	90% coverage	100% coverage

Which insurance
would you choose?
(Please tick one box
only)

Insurance A

☐

Insurance B

☒

So in the above example the individual chose ‘Insurance B’ over ‘Insurance A’ after comparing the two alternatives. From the above example we can see that the individual is willing to contribute 5% of his salary and get coverage for his spouse and children (core family) for services provided by private health facility rather than paying 2% of his salary for coverage of extended family with the services from public providers. Also we can see that he would like to get 100% coverage for inpatient care, drugs, laboratory tests and other diagnostic while 90% coverage for outpatient service rather than 100% coverage for inpatient care while 90% coverage for other services (outpatient, drugs, laboratory tests, and other diagnostics).

Accordingly, you may go through the choice sets and choose your preferred option. Please consider all the factors while comparing the two alternatives. The health insurance considered in this study is social health insurance which is compulsory. So please indicate your preferred option of either ‘Insurance A’ or ‘Insurance B’ for each of the choice sets.

Choice 1

	Insurance A	Insurance B
Contribution from monthly salary	1% of salary	5% of salary
Enrolment (families covered by the HI)	Extended family	Extended family
Exclusion (Services that will not be covered by the insurance)	Dialysis	Dental care
Provider of the services	Private	Public and private
Coverage of outpatient service	100% coverage	90% coverage
Coverage of inpatient service	100% coverage	90% coverage
Coverage of drugs	90% coverage	100% coverage
Coverage of laboratory tests and other diagnostics	90% coverage	100% coverage

Which insurance
would you choose?
(Please tick one box
only)

Insurance A

☐

Insurance B

☐

Choice 2

	Insurance A	Insurance B
Contribution from monthly salary	3% of salary	2% of salary
Enrolment (families covered by the HI)	Extended family	Extended family
Exclusion (Services that will not be covered by the insurance)	Dental and dialysis care	Dental care
Provider of the services	Private	Public and private
Coverage of outpatient service	100% coverage	90% coverage
Coverage of inpatient service	100% coverage	90% coverage
Coverage of drugs	90% coverage	100% coverage
Coverage of laboratory tests and other diagnostics	90% coverage	100% coverage

Which insurance
would you choose?
(Please tick one box
only)

Insurance A

☐

Insurance B

☐

Choice 3

	Insurance A	Insurance B
Contribution from monthly salary	2% of salary	3% of salary
Enrolment (families covered by the HI)	Core family	Core family
Exclusion (Services that will not be covered by the insurance)	None	Dialysis
Provider of the services	Private and public	Public
Coverage of outpatient service	100% coverage	90% coverage
Coverage of inpatient service	100% coverage	90% coverage
Coverage of drugs	90% coverage	100% coverage
Coverage of laboratory tests and other diagnostics	90% coverage	100% coverage

Which insurance would you choose?
(Please tick one box only)

Insurance A

☐

Insurance B

☐

Choice 4

	Insurance A	Insurance B
Contribution from monthly salary	3% of salary	2% of salary
Enrolment (families covered by the HI)	Extended family	Core family
Exclusion (Services that will not be covered by the insurance)	Dialysis and dental care	Dialysis
Provider of the services	Public and private	Private
Coverage of outpatient service	90% coverage	100% coverage
Coverage of inpatient service	100% coverage	100% coverage
Coverage of drugs	90% coverage	100% coverage
Coverage of laboratory tests and other diagnostics	100% coverage	90% coverage

Which insurance would you choose?
(Please tick one box only)

Insurance A

☐

Insurance B

☐

Choice 5

	Insurance A	Insurance B
Contribution from monthly salary	5% of salary	1% of salary
Enrolment (families covered by the HI)	Extended family	Core family
Exclusion (Services that will not be covered by the insurance)	Dialysis	Dialysis and dental care
Provider of the services	Public and private	private
Coverage of outpatient service	90% coverage	100% coverage
Coverage of inpatient service	90% coverage	100% coverage
Coverage of drugs	90% coverage	100% coverage
Coverage of laboratory tests and other diagnostics	90% coverage	100% coverage

Which insurance
would you choose?
(Please tick one box
only)

Insurance A

☐

Insurance B

☐

Choice 6

	Insurance A	Insurance B
Contribution from monthly salary	1% of salary	5% of salary
Enrolment (families covered by the HI)	Core family	Extended family
Exclusion (Services that will not be covered by the insurance)	None	Dialysis and dental care
Provider of the services	Public and private	Private
Coverage of outpatient service	90% coverage	90% coverage
Coverage of inpatient service	90% coverage	90% coverage
Coverage of drugs	90% coverage	100% coverage
Coverage of laboratory tests and other diagnostics	100% coverage	90% coverage

Which insurance
would you choose?
(Please tick one box
only)

Insurance A

☐

Insurance B

☐

Choice 7

	Insurance A	Insurance B
Contribution from monthly salary	1% of salary	2% of salary
Enrolment (families covered by the HI)	Core family	Core family
Exclusion (Services that will not be covered by the insurance)	Dental care	Dialysis
Provider of the services	Public	Private
Coverage of outpatient service	100% coverage	90% coverage
Coverage of inpatient service	90% coverage	100% coverage
Coverage of drugs	90% coverage	100% coverage
Coverage of laboratory tests and other diagnostics	100% coverage	100% coverage

Which insurance would you choose?
(Please tick one box only)

Insurance A

☐

Insurance B

☐

Choice 8

	Insurance A	Insurance B
Contribution from monthly salary	3% of salary	1% of salary
Enrolment (families covered by the HI)	Core family	Extended family
Exclusion (Services that will not be covered by the insurance)	Dialysis	None
Provider of the services	Public and private	private
Coverage of outpatient service	100% coverage	90% coverage
Coverage of inpatient service	90% coverage	100% coverage
Coverage of drugs	100% coverage	100% coverage
Coverage of laboratory tests and other diagnostics	90% coverage	90% coverage

Which insurance would you choose?
(Please tick one box only)

Insurance A

☐

Insurance B

☐

Choice 9

	Insurance A	Insurance B
Contribution from monthly salary	2% of salary	3% of salary
Enrolment (families covered by the HI)	Extended family	Extended family
Exclusion (Services that will not be covered by the insurance)	Dialysis and dental care	Dental care
Provider of the services	Private	Public
Coverage of outpatient service	90% coverage	100% coverage
Coverage of inpatient service	90% coverage	100% coverage
Coverage of drugs	90% coverage	100% coverage
Coverage of laboratory tests and other diagnostics	100% coverage	90% coverage

Which insurance
would you choose?
(Please tick one box
only)

Insurance A

☐

Insurance B

☐

Choice 10

	Insurance A	Insurance B
Contribution from monthly salary	3% of salary	5% of salary
Enrolment (families covered by the HI)	Core family	Core family
Exclusion (Services that will not be covered by the insurance)	None	Dialysis and dental care
Provider of the services	Private	Public and private
Coverage of outpatient service	100% coverage	100% coverage
Coverage of inpatient service	90% coverage	100% coverage
Coverage of drugs	90% coverage	100% coverage
Coverage of laboratory tests and other diagnostics	90% coverage	100% coverage

Which insurance
would you choose?
(Please tick one box
only)

Insurance A

☐

Insurance B

☐

Choice 11

	Insurance A	Insurance B
Contribution from monthly salary	5% of salary	5% of salary
Enrolment (families covered by the HI)	Extended family	Core family
Exclusion (Services that will not be covered by the insurance)	Dialysis	Dialysis and dental care
Provider of the services	Public	Public and private
Coverage of outpatient service	100% coverage	90% coverage
Coverage of inpatient service	90% coverage	100% coverage
Coverage of drugs	90% coverage	100% coverage
Coverage of laboratory tests and other diagnostics	100% coverage	90% coverage

Which insurance would you choose?
(Please tick one box only)

Insurance A

☐

Insurance B

☐

Choice 12

	Insurance A	Insurance B
Contribution from monthly salary	5% of salary	3% of salary
Enrolment (families covered by the HI)	Core family	Extended family
Exclusion (Services that will not be covered by the insurance)	Dental care	None
Provider of the services	Private	Public
Coverage of outpatient service	90% coverage	90% coverage
Coverage of inpatient service	100% coverage	100% coverage
Coverage of drugs	90% coverage	100% coverage
Coverage of laboratory tests and other diagnostics	100% coverage	90% coverage

Which insurance would you choose?
(Please tick one box only)

Insurance A

☐

Insurance B

☐

Choice 13

	Insurance A	Insurance B
Contribution from monthly salary	2% of salary	3% of salary
Enrolment (families covered by the HI)	Extended family	Core family
Exclusion (Services that will not be covered by the insurance)	Dialysis	Dental care
Provider of the services	Public	Public and private
Coverage of outpatient service	100% coverage	90% coverage
Coverage of inpatient service	90% coverage	90% coverage
Coverage of drugs	90% coverage	90% coverage
Coverage of laboratory tests and other diagnostics	90% coverage	100% coverage

Which insurance
would you choose?
(Please tick one box
only)

Insurance A

☐

Insurance B

☐

Choice 14

	Insurance A	Insurance B
Contribution from monthly salary	1% of salary	5% of salary
Enrolment (families covered by the HI)	Extended family	Extended family
Exclusion (Services that will not be covered by the insurance)	Dialysis	None
Provider of the services	Public and private	Public
Coverage of outpatient service	90% coverage	100% coverage
Coverage of inpatient service	100% coverage	90% coverage
Coverage of drugs	90% coverage	100% coverage
Coverage of laboratory tests and other diagnostics	90% coverage	100% coverage

Which insurance
would you choose?
(Please tick one box
only)

Insurance A

☐

Insurance B

☐

Choice 15

	Insurance A	Insurance B
Contribution from monthly salary	3% of salary	1% of salary
Enrolment (families covered by the HI)	Extended family	Core family
Exclusion (Services that will not be covered by the insurance)	Dental care	Dialysis and dental care
Provider of the services	Private	Public
Coverage of outpatient service	90% coverage	90% coverage
Coverage of inpatient service	100% coverage	90% coverage
Coverage of drugs	100% coverage	100% coverage
Coverage of laboratory tests and other diagnostics	100% coverage	90% coverage

Which insurance would you choose?
(Please tick one box only)

Insurance A

☐

Insurance B

☐

Choice 16

	Insurance A	Insurance B
Contribution from monthly salary	2% of salary	1% of salary
Enrolment (families covered by the HI)	Extended family	Extended family
Exclusion (Services that will not be covered by the insurance)	Dialysis and dental	Dialysis
Provider of the services	Public	Private
Coverage of outpatient service	100% coverage	100% coverage
Coverage of inpatient service	90% coverage	100% coverage
Coverage of drugs	90% coverage	90% coverage
Coverage of laboratory tests and other diagnostics	90% coverage	100% coverage

Which insurance would you choose?
(Please tick one box only)

Insurance A

☐

Insurance B

☐

Choice 17

	Insurance A	Insurance B
Contribution from monthly salary	5% of salary	2% of salary
Enrolment (families covered by the HI)	Core family	Extended family
Exclusion (Services that will not be covered by the insurance)	Dental	Dental
Provider of the services	Public	Public and private
Coverage of outpatient service	100% coverage	100% coverage
Coverage of inpatient service	100% coverage	90% coverage
Coverage of drugs	90% coverage	100% coverage
Coverage of laboratory tests and other diagnostics	100% coverage	90% coverage

Which insurance
would you choose?
(Please tick one box
only)

Insurance A

☐

Insurance B

☐

Choice 18

	Insurance A	Insurance B
Contribution from monthly salary	2% of salary	5% of salary
Enrolment (families covered by the HI)	Core family	Extended family
Exclusion (Services that will not be covered by the insurance)	None	None
Provider of the services	Public	Private
Coverage of outpatient service	90% coverage	90% coverage
Coverage of inpatient service	100% coverage	90% coverage
Coverage of drugs	90% coverage	100% coverage
Coverage of laboratory tests and other diagnostics	100% coverage	90% coverage

Which insurance
would you choose?
(Please tick one box
only)

Insurance A

☐

Insurance B

☐

Section III Socio-demographic characteristics

Please answer the following questions about yourself. Although some of these questions are rather personal, the information you give is confidential and will be used only for the analysis of this study.

1.

How old are you?

2.

What is your gender?

Male

Female

3.

What is your relationship status

Never married

Married

Divorced/separated

Widow widowed

4.

Do you have children?

Yes

No

5.

How many people live in your household?

6.

What is the relationship of the household members to you?

7.

8.

What is your profession?

9.

How many years of work experience do you have?

Section IV. Attitude on health insurance

1. How much do you agree with the following statement?

"I am too healthy and I do not need health Insurance"

Strongly agree 1

Agree 2

Neutral 3

Disagree 4

Strongly disagree 5

2. How much do you agree with the following statement?

“Even though health insurance is necessary, I do not have trust on the system and I prefer to pay out of pocket”

- Strongly agree 1
- Agree 2
- Neutral 3
- Disagree 4
- Strongly disagree 5

3. How much do you agree with the following statement?

“I do not want to make contribution to health insurance because health care services are not effective”

- Strongly agree 1
- Agree 2
- Neutral 3
- Disagree 4
- Strongly disagree 5

4. How much do you agree with the following statement?

“ It is good to share health care costs between the poor and rich”

- Strongly disagree 1
- Disagree 2
- Neutral 3
- Agree 4
- Strongly agree 5

5. How much do you agree with the following statement?

“ It is the duty of the government to provide health care so I do not have to make contributions to health insurance”

- Strongly agree 1
- Agree 2
- Neutral 3
- Disagree 4
- Strongly disagree 5

6. How much do you agree with the following statement?

“Health insurance is necessary but I have many expenses and I do not want to make contributions”

- Strongly agree 1
- Agree 2
- Neutral 3
- Disagree 4
- Strongly disagree

7. How much do you agree with the following statement?

“I do not need health insurance because I can pay for my health care any time out of pocket”

- Strongly agree 1
- Agree 2
- Neutral 3
- Disagree 4
- Strongly disagree 5

8. How much do you agree with the following statement?

“ Once I make contribution to health insurance, I am not sure if the money goes to health system”

- Strongly agree 1
- Agree 2
- Neutral 3
- Disagree 4
- Strongly disagree 5

9. How much do you agree with the following statement?

“I do not want to be enrolled to health insurance if it is not compulsory because it cannot work”

- Strongly agree 1
- Agree 2
- Neutral 3
- Disagree 4
- Strongly disagree 5

10. How much do you agree with the following statement?

“Health insurance is good because I do not worry about getting sick or not once I am insured”

- Strongly disagree 1
- Disagree 2
- Neutral 3
- Agree 4
- Strongly agree 5

Section III. Household assets

1. What is the ownership of your house?
 - Private 1
 - Rented from individual 2
 - Rented from government 3
 - Other 4

2. How many rooms does your house have? _____

3. Do any of your household members have transportation means? Yes 1
No..... 2
4. Which of the following transportation means does your family own (circle all available) Bicycle 1
Motorcycle 2
Car 3
Other 4
5. What kind of toilet facility do you and your families mainly use? Flush toilet 1
Pit toilet 2
6. What is the ownership of the toilet? Private 1
Shared 2
7. On average how many people use the toilet? _____
8. Which of the following assets do your family own (circle all available assets)
- | | |
|----------------------------|----|
| Radio | 1 |
| Television | 2 |
| Telephone (landline) | 3 |
| Mobile phone | 4 |
| Computer (desk top) | 5 |
| Laptop | 6 |
| Refrigerator | 7 |
| Washing machine | 8 |
| Electric stove/oven | 9 |
| Microwave | 10 |
9. Which of the following energy do you mainly use for household cooking?
- | | |
|-----------------------------|---|
| Electricity | 1 |
| Cylinder | 2 |
| Kerosene | 3 |
| Charcoal | 4 |
| Wood | 5 |
| Other, please specify _____ | |
10. How much is your monthly income? Salary _____
Other income _____

Thank you for taking the time to complete this questionnaire.

Appendix VII: List of Civil Service Organizations in Addis Ababa, 2012

R. No.	Name of Organizations	R. No.	Name of Organizations
1	Secretary of House of Representatives	65	Federal Prisons Administration
2	Federal Supreme Court	66	Ministry of Justice
3	Federal High Court	67	Justice and Legal System Research Institute
4	Federal First Instance Court	68	Document Certification and Registration Office
5	The National Electoral Board	69	Charities and Societies Agency
6	House of Federation	70	Justice Organs Professional Training Centre
7	Institute of Ombudsman	71	Ministry of Health
8	Ethiopian Human Right Commission	72	HIV/AIDS Prevention and Control Office
9	Office of the President	73	All Africa Leprosy Rehabilitation and Training Centre
10	Ministry of Ethiopian Information Communication	74	St. Peter's TB Specialized Hospital
11	Office of the Prime Minister	75	St. Paul's Hospital and Millennium Medical College
12	Palace Administration	76	Emanuel Mental Specialized Hospital
13	Environmental Protection Authority	77	Ethiopian food, Drug, and Health Care Administration Authority
14	Ethiopian Development Research Institute	78	Ethiopian Health and Nutrition Research Institute
15	Federal Ethics and Anti Corruption Commission	79	Pharmaceuticals Fund and Drug Supply Agency
16	Public Finance Enterprise Agency	80	Ministry of Culture and Tourism
17	Ethiopian Broadcast Authority	81	Authority for Research and Conservation of Cultural Heritage
18	Finance Security Agency	82	National Archives and Library Agency
19	Ministry of Civil Service	83	Ethiopian National Cultural Centre
20	Ethiopian Civil Service college	84	Ethiopian National Theatre
21	Ministry of Industry	85	Catering and Tourism Training Centre
22	Ethiopian Investment Agency		Ethiopian Wild Life Conservation Authority
23	Ethiopian Privatization and Supervision Agency of Public Enterprises	86	Ministry of National Defence
24	Metals industry	87	Ministry of Foreign Affairs

	Development Institute		
25	Leather Industry Development Institute	88	Government Communication Affairs Office
26	Textiles Industry Development Institute	89	Ethiopian Press Agency
27	Ethiopian Caison Institute	90	Ethiopian Radio and Television Agency
28	Ethiopian Sugar Development Agency	91	Ministry of Science and Technology
29	Ministry of Trade	92	Ethiopian Scientific Equipment Centre
30	Ethiopian Commodity Exchange Authority	93	Ethiopian National radiation Prohibition Authority
31	Ethiopian Cooperatives Agency	94	Ethiopian Intellectual Property Office
32	Trade Practice Consumer Protection Authority	95	Ethiopian National Accreditation Office
33	Ministry of Agriculture	96	Standards Authority of Ethiopia
34	Emergency Food Security Reserve Administration	97	National Meteorology Institute
35	National Disaster Prevention and Preparedness Fund Administration	98	Tsetse Fly and Trypanosomosis Control and Eradication Project
36	Ethiopian Agricultural Research Institute	99	Ministry of Water and Energy
37	Biodiversity Conservation and Research Institute	100	National Meteorological service Agency
38	Ethiopian Meat and Dairy Technology Institute	101	Ethiopian Electricity Agency
39	Ethiopian Horticulture Development Agency	102	National Petroleum Reserve Depots Administration
40	National Artificial Insemination Centre	103	Awash Basin Authority
41	National Animal Health Diagnostics and Investigation Centre	104	Abbay Basin Authority
42	Coffee Quality Inspection Centre	105	Water Development Fund Office
43	National Soil Investigation Centre	106	Ministry of Mines
44	Ministry of Transport	107	Ethiopian Geological Survey
45	Transport Authority	108	Ministry of Labour and Social Affairs
46	Maritime Affairs Authority	109	Social Security Agency
47	Ethiopian Civil Aviation Authority	110	Private Organization Employee Social Security Agency
48	Ethiopian Telecommunication Agency	111	Ministry of Women's, Children and Youth Affairs
49	Insurance Fund Office	112	Ethiopian Women Development

			Fund
50	Ethiopian Road Authority	113	Sport Commission
51	Ministry of Urban Development and Construction	114	Athlete Tirunesh Dibaba Athletics Training Centre
52	Federal Micro and Small Business Development Agency	115	Ministry of Education
53	Governmental Houses Agency	116	Higher Education Relevance and Quality Agency
54	Office of Road Fund	117	Higher Education Strategy Centre
55	Urban Land and Land Related Property and Information Agency	118	National Educational Assessment and Examination Agency
56	Ministry of Finance and Economic Development	119	Addis Ababa University
57	Central Statistical Agency	120	Tikur Anbassa Specialized Hospital
58	Ethiopian Mapping Agency	121	Addis Ababa School of Commerce
59	Board of Trustee for Public Enterprises	122	Addis Ababa Science and Technology Institute
60	Public Procurement and Property Administration Agency	123	Ministry of Revenue
61	Governmental Procurement Agency	124	National Lottery Administration
62	Ministry of Federal Affairs	125	Office of the Federal Auditor General
63	Ethiopian Mine Action Office	126	Audit Services Corporation
64	Federal Police Commission		