

The equity impact of Universal Coverage: health care finance, catastrophic health expenditure, utilization and government subsidies in Thailand

Limwattananon S, Vongmongkol V, Prakongsai P,
Patcharanarumol W, Hanson K, Tangcharoensathien V, Mills A

June 2011

This paper is an output of the Consortium for Research on Equitable Health Systems (CREHS). The authors are part of the Health Policy Research Group International Health Policy Program, Ministry of Public Health, Thailand.

International Health Policy Program
Ministry of Public Health
Thailand

ABOUT CREHS

The Consortium for Research on Equitable Health Systems (CREHS) is a five year DFID funded Research Programme Consortium that is made up of eight organisations based in Kenya, India, Nigeria, South Africa, Tanzania, Thailand and the United Kingdom.

It aims to generate knowledge about how to strengthen health systems, policies and interventions in ways which preferentially benefit the poorest. The research is organised in four themes: health sector reform, financial risk protection, health workforce performance and scaling up.

The consortium will achieve its aim by:

- working in partnership to develop research
- strengthening the capacity of partners to undertake relevant research and of policymakers to use research effectively
- communicating findings in a timely, accessible and appropriate manner so as to influence local and global policy development

For more information about CREHS please contact:

Consortium for Research on Equitable Health Systems (CREHS)
London School of Hygiene and Tropical Medicine,
Keppel Street,
London, UK
WC1E 7HT

Email: nicola.lord@lshtm.ac.uk

Website: www.crehs.lshtm.ac.uk

ACKNOWLEDGEMENTS

We acknowledge a genuine partnership between the National Statistical Office (NSO) and MOPH built in the past decades. A constructive engagement between the two constituencies is strong foundation for evidence-based policy decision. This study is not possible without permission by the NSO to use the 2000-2006SES. This study was financially supported from WHO Long-term Fellowship Program and Consortium for Research on Equitable Health Systems (CREHS).

Table of Contents

List of Tables and Figures.....	4
List of Acronyms	5
Executive Summary	6
1. INTRODUCTION.....	8
2. METHODS	14
3. RESULTS	20
4. DISCUSSION	31
5. CONCLUSIONS.....	37
6. REFERENCES.....	39

List of Tables and Figures

Tables

Table 1 Characteristics of three public insurance schemes, 2002	13
Table 2 Unit costs (in current-year Baht) by health facility and health insurance scheme	19
Table 3 Mean monthly household income in nominal prices by income quintile, 2000 to 2006	20
Table 4 Kakwani indices of health care finance and share of health care finance in Thailand from 2000 to 2006	27
Table 5 The incidence of catastrophic health payments from 2000 to 2006	28
Table 6 Equity in health service utilization, Concentration Index by type and level of health care, 2001, 2003, 2006 and 2007	29
Table 7 Equity in government subsidies, Concentration Index by type and level of health care, 2001, 2003, 2006 and 2007	30
Table 8 Household monthly out-of-pocket expenditure on health; by income quintiles 2002, 2004 and 2006, current-year Baht	36

Figures

Figure 1 Out of pocket payment for health, as % of household income, by income deciles, 1992 to 2006	9
Figure 2 The Lorenz curve and Gini coefficient of household income from 2000 to 2006	21
Figure 3 Lorenz curves (income distribution) and Kakwani index of direct tax payments from 2000 to 2006	23
Figure 4 Lorenz curve and Kakwani index of indirect tax payments from 2000 to 2006	24
Figure 5 Lorenz curves and Kakwani indexes of household out-of-pocket payments for health from 2000 to 2006	25
Figure 6 Lorenz curve and Kakwani index of social health insurance contributions from 2000 to 2004	26
Figure 7 Summary distributions of utilization and subsidies for OP and IP by income quintiles, 2001, 2003, 2006 and 2007	31
Figure 8 Distribution of monthly wage by gender, SHI members, Thailand 2005 Source: Social Security Office 2006	33

List of Acronyms

CC	Concentration Curve
CI	Concentration Index
CREHS	Consortium for Research on Equitable Health Systems
CSMBS	Civil Servant Medical Benefit Scheme
DH	District Hospitals
DRG	Diagnostic Related Group
FIA	Financing Incidence Analysis
HC	Health Centres
HWS	Health and Welfare Surveys
IP	In Patient
MOPH	Ministry of Public Health
NHSO	National Health Security Office
NSO	National Statistical Office
OECD	Organisation for Economic Co-operation and Development
OP	Out Patient
PCU	Primary Care Unit
PH	Provincial Hospitals
PrivH	Private Hospitals
SES	Socio-economic Survey
SHI	Social Health Insurance
SSO	Social Security Office
SSS	Social Security Scheme
UC	Universal Coverage
UH	University Hospitals

Executive Summary

Objective

To assess the equity impact of achieving universal coverage (UC) on the distribution of benefits of public health service utilization, health care financing burdens (measured by financing incidence), and protection from the risk of expensive medical care costs (financial catastrophe).

Methods

Benefit and financing incidence analysis methods were used to measure the distribution of public health care subsidies and financing burdens before and after the introduction of UC. The incidence of financial catastrophe was measured using a standard threshold of 10% of household consumption expenditure. Analyses were undertaken using nationally representative household surveys conducted by the National Statistical Office, including the 2000 Socioeconomic survey and 2001 Health and Welfare Survey (prior to the introduction of UC) and Socioeconomic surveys conducted in 2002, 2004 and 2006, and Health and Welfare Surveys conducted in 2003, 2006 and 2007 (after the introduction of UC). Benefits were valued using costs derived from routine reports of expenditure and utilization

Findings

The financing of the Thai health care system was equitable before the implementation of the UC policy but became more so after the introduction of UC. A larger contribution of more progressive direct tax payments and reduction in the share of regressive household out-of-pocket payments for health were two key influences on the progressivity of overall health care financing. The Kakwani index for overall health care finance, which measures the capacity of the health financing system to correct income inequity, changed from -0.0038 (overall regressive) in 2000 to positive (progressive) values of 0.0014, 0.0342 and 0.0406 in 2002, 2004 and 2006, respectively.

The share of household out-of-pocket payments for health and the share of households facing catastrophic spending on health decreased considerably from 2000 to 2006. The 1st (poorest) quintile experienced a 77.5% reduction in the proportion of households facing catastrophic health expenditure, while there was a 41% reduction in the share of households in the 5th (least poor) quintile.

Results clearly indicate that even before the UC Policy in 2001, outpatient and inpatient services were both pro-poor due to various government interventions in extending health service infrastructure in rural districts and a variety of health insurance arrangements. After the introduction of the UC scheme, public service utilization remained pro-poor. Overall, public subsidies were found to be pro-poor for both outpatient and inpatient services. In contrast, the utilization and benefits of teaching hospitals are pro-rich as they serve the better-off members of insurance schemes. Having a private sector which the rich are able to use as an alternative for shorter queues and affordable care is a further enabling feature favouring pro-poor utilization and public subsidies.

District health provider networks, made up of health centres and district and provincial hospitals operated by the Ministry of Public Health are the major determinants of the pro-poor distribution of

service utilization and public subsidies, due to their geographical proximity which facilitates better access by the poor. A comprehensive benefit package and the provision of services that are free at the point of use contributed to the pro-poor benefit and financing incidence.

Conclusion

The Thai system has an equitable distribution of financing burdens, a low incidence of catastrophic health expenditure, and a pro-poor distribution of service utilization and public subsidies. Factors contributing to equity in financing are: the increasing share of progressive financing sources, in particular direct tax and the decreasing share of the regressive out-of-pocket payments for health. Using general taxation to finance services used by the poor and the informal sector not only helps to reach universal coverage quickly, it is the most progressive financing source. To ensure the progressivity of SHI contributions, regular review of the maximum wage for assessed contribution is required. The same system design factors contribute to both the low incidence of catastrophic health expenditure and the equitable distribution of service utilization and public subsidies. These include a comprehensive benefit package covering almost all interventions, services which are free at point of use, and accessible and well-functioning service providers at the primary care level. Strategic purchasing within the UC scheme further underpins equity in the system by contracting primary care networks at the district level — the “close to client services” which are easily accessed and used by the rural poor.

1. INTRODUCTION

Equitable financing, in which households contribute to the health system on the basis of their ability to pay, is a key objective of health systems worldwide ^[1, 2]. A sound financing system will ensure a fair distribution of the burden of paying for health services, protect households against the risks of catastrophic levels of expenditure on health services, and, together with other supply side design features, reduce barriers to health service use and promote an equitable distribution of public expenditures. The conventional categorizations of health financing sources are taxation, social health insurance contributions, private health insurance premiums, and out-of-pocket payments. The health systems of developing countries in Asia and Africa mostly rely on out-of-pocket payments ^[3, 4], which lead to inequitable health financing systems ^[5] and a higher prevalence of households facing catastrophic health spending ^[6] and resulting impoverishment. The questions of which health financing reform policies will effectively improve health system equity are rarely explored, especially in developing countries where financial and population-based survey data are very limited ^[7].

Thailand's efforts to extend financial risk protection

By early 2002, Thailand achieved universal coverage (UC) in access to health care by introducing a tax-funded health insurance scheme, the UC scheme, to approximately 47 million people or 75% of the entire population who were not previously beneficiaries of either the Civil Servant Medical Benefit Scheme (CSMBS) or the Social Security Scheme (SSS). The introduction of the UC scheme resulted in a significant change in health financing arrangements due to its financing reform strategies.

The strategies comprised: 1) changing the provider payment system from one of historical allocations to one using close-ended payments depending on the number of beneficiaries registered in the catchment area and the outputs of inpatient services; 2) promoting the use of primary care by contracting a primary care unit (PCU) to serve as the main contractor and gatekeeper; and, 3) removing financial barriers to health services through greatly increased general tax funding and introducing a nominal co-payment of 30 Baht (equivalent to US\$ 1 in 2010) per ambulatory visit or hospital admission. The 30 Baht co-payment was, however, abolished by the new government in November 2006.*

With these financing strategies, the main source of financing for healthcare in Thailand has radically shifted from individual out-of-pocket payments to public sources, due to the high level of population coverage of the UC scheme and the fact that it draws its main source of finance from general tax revenue ^[8].

* The abolition of the 30 Baht copayment was undertaken for a number of reasons. These included political factors linking the scheme to the previous government; the recognition that the cost of collecting copayments outweighed the minimal revenue generated, which amounted to less than 2% of total UC scheme annual expenditure; the effective control of moral hazard by the close-ended provider payment scheme; and concerns voiced by NGOs that even 30 Baht was a major barrier to care among the poor.

played the most important roles in the production and distribution of professional nursing and midwifery staff. A high level of capital investment was possible due to favourable macroeconomic conditions and consistent economic growth during the period from the mid-1980s to the mid-1990s.

As a result, there was extensive geographical coverage of health services up to the very periphery of the country. A typical health centre and district hospital covers 5,000 and 50,000 population, respectively. A health centre is staffed by a team of 3-5 nurses and paramedics while a 30-bed district hospital is staffed by 3-4 general physicians, approximately 30 nurses, 2-3 pharmacists, 1-2 dentists, and a range of other paramedics. There is a lean but adequate number of qualified staff at health centres and district hospitals to provide health services. These measures gradually gained the confidence of the rural population and utilization increased over time. ^[13]

While the MOPH focused on the extension of the public health infrastructure in rural areas, the private sector delivery system grew significantly in urban areas, particularly during the economic boom in the 1990s. These facilities provide high quality services mostly to the middle classes and the better-off, primarily based on fee for service payment. They play a significant role in providing services to SHI members, with more than 60% of total SHI members registered with them. Funding from SHI boosted the private hospital sector growth in the 1990s.

Since 1972, all public health and medical students have graduated from publicly funded health and medical colleges, the students being heavily subsidized by the government. In return, the new medical graduates (including nurses, dentists and pharmacists) serve a period of mandatory rural service for three years. They play a significant role in the functioning of district hospitals.

Box 1 provides details on the size of different public providers in 2007. Public hospitals make up the majority of hospital beds (76% of total) for which MOPH has a share of 48%. Non-MOPH hospitals comprise hospitals under Ministries of Defence, Interior and state enterprises.

Box 1 A snap shot of health service capacities, Thailand

Number of health facilities, 2007

	Units	Beds	Percent bed
I. Public facilities			
MOPH health centres	10,848	-	
MOPH district hospitals	736	28,366	20%
MOPH provincial hospitals	69	22,585	16%
MOPH regional hospitals	25	17,233	12%
Non-MOPH public hospitals	1,175	31,560	22%
University hospitals	15	8,792	6%
All public hospitals and beds	2,020	108,536	76%
II. Private facilities			
Drug stores	17,017	-	
Private clinics	346	-	
Private hospitals	322	33,678	24%
Total hospitals and beds	2,342	142,214	100.0%

Population to human resource ratio, 2002 to 2005

	2002	2003	2004	2005
Population to doctor	3,569	3,476	3,305	3,182
Population to dentist	17,606	17,182	15,143	14,901
Population To pharmacist	9,948	8,807	8,432	7,847
Population to professional nurse	739	687	652	613
Population to technical nurse	2,233	2,625	3,085	3,910

Source: Thailand Health Profile (2007)

Efforts on strategic purchasing

Strategic purchasing has a major impact on the equitable financing of healthcare. Historically, the benefit package was comprehensive, including outpatient and inpatient services for those who were covered by the low income scheme, the SHI, CSMBS and public subsidized voluntary health insurance scheme.

A similarly comprehensive benefit package was adopted for members covered by the UC scheme in 2002. A comprehensive package which is free at the point of service is an important determinant of the very low level of catastrophic health expenditure by households and consequent impoverishment. ^[13 14]

Historically, the CSMBS adopted a fee for service reimbursement model as its mode of provider payment. Members have a free choice of provider for ambulatory and admission services; as

enrolees are primarily urban government sector employees, they use services mostly from tertiary MOPH or teaching hospitals.

In 1991 when the SHI was implemented, it adopted a capitation contract model; competing public and private hospitals entered into an annual contractual agreement with the Social Security Office (SSO) to provide ambulatory and inpatient services to their registered SHI members, while the SSO promised to pay contractor providers based on a fixed fee per member per annum. Members are required to use services provided by their contractor providers with no payment at the point of use. Public and private hospitals receive the same capitation rate for members. It should be noted that the extensive geographical coverage of public and private tertiary care hospitals in urban areas was the foundation for the SHI contract model initiated in 1991, with both public and private contractor hospitals competing for members.

In 2002 when the UC scheme was launched, a contract model using capitation for ambulatory care and global budget and case base payment (Diagnostic Related Group –DRG) for inpatient services was adopted. The district health provider network (including health centres and the district hospital) is a typical contractor provider under the UC scheme, where members can use services easily as services are located nearby. UC members in urban areas can register either with public or private contractor networks, though unlike SHI, private contractors play a very small role in UC Scheme.

Extensive geographical coverage of health infrastructure at district level is the foundation for the contract model of the UC scheme. The district health provider network including health centres and district hospitals are the main contractor providers for UC members in the district, typically covering 50,000 people.

Table 1 Characteristics of three public insurance schemes, 2002

Insurance scheme	Population coverage		Financing source	Mode of provider payment	Access to service
Social Health Insurance (SHI)	Private sector employees, excluding dependants	16%	Tri-partite contribution, equally shared by employer, employee and the government	Inclusive capitation for outpatient and inpatient services	Registered public and private competing contractors
Civil Servant Medical Benefit Scheme (CSMBS)	Government employees plus dependants (parents, spouse and up to 2 children age <20)	9%	General tax, non-contributory scheme	Fee for service, direct disbursement to mostly public providers	Free choice of providers, no registration required
Universal Health Care Coverage (UC)	The rest of the population not covered by SHI and CSMBS	75%	General tax	Capitation for outpatients and global budget plus DRG for inpatients	Registered contractor provider, notably district health system

Given that the objectives of the UC policy are to ensure equitable access to health services and protect households from expensive medical care costs, an assessment of equity in overall health care finance prior to and after UC, updated to 2006, together with analysis of the share of households incurring catastrophic health expenditure by income quintile, are informative in demonstrating the effectiveness of the UC policy in health financing reform and improvements in financial risk protection.

There are two main objectives of this report.

First, to compare the progressivity of all types of healthcare funding sources before and after UC, applying the methods of Financing Incidence Analysis (FIA) to the most up-to-date household survey data, and to describe changes in the incidence of catastrophic health expenditure in order to draw lessons for international audiences on progressive health contributions and better protection against catastrophic spending on health.

Second, to assess the trend, between 2001 and 2007, in equity in outpatient and inpatient utilization and government subsidies, so called Benefit Incidence Analysis (BIA), across rich and poor population

subgroups, to explain how such equities were achieved, and to draw lessons for international audiences on how health delivery systems and strategic purchasing achieved health equity.

2. METHODS

Financial Incidence Analysis

Data sources for FIA

This study employed secondary data analyses of the Socio-economic Survey (SES) which is a nationally representative and cross-sectional household survey on income, expenditure, and household socio-economic status. The SES is a biennial household survey in Thailand comprising data on monthly income and expenditure, health expenditure, household debt and assets, ownership of durable and semi-durable goods, and other household living conditions. To assess changes in the progressivity of household spending on health, per capita expenditure for all types of household payments for health by income quintile prior to and after UC was analyzed. Given that the UC policy was implemented in 2001, the 2000 SES was appropriate to use as the data source for analyzing the progressivity of health care finance prior to UC, and the 2002-2006 SES were appropriate for the analyses of the situation after UC. The 2008 SES data were not used in this analysis because they contain only data on household expenditure, not household income, which makes it incomparable to the SES data from previous years.

Progressivity of health care finance

Analysis of the progressivity of health care finance comprises two stages of computation: 1) the progressivity of each type of health care financing source; and 2) the overall progressivity of the system by weighting the progressivity of the different health financing sources by their shares in total health finance^[15] as estimated from National Health Account data. In general, analyses of equity in each household's health care payments can be appraised through the concentration index and the concentration curve. This is assessed against the distribution of household ability to pay (either household per capita income or expenditure), which is usually presented as the Lorenz curve. The Lorenz curve of household income or other measures of household ability to pay serves as a graphical representation of the cumulative distribution of household wealth. It plots the cumulative percentage of households ranked by income per capita, starting from the poorest, on the x-axis, and on the y-axis the cumulative percentage of household income or expenditure corresponding to each cumulative percentage of the distribution of the living standard variable.

The concentration index, ranging from -1.0 to +1.0 captures the extent to which health payments are distributed among the economically worse-off as compared to the better-off. A zero value of CI means a perfectly equal distribution of the indicator throughout the economic gradient. A negative CI indicates a pro-poor distribution or concentration among the poor whereby the concentration curve lies above the line of equality. In contrast, a positive CI reflects a pro-rich distribution or concentration among the economically better-off whereby the concentration curve lies below the line of equality.

The progressivity of health care finance is assessed graphically through a comparison between the concentration curve of health payments and the Lorenz curve of household income representing household ability to pay. Both curves were plotted against the cumulative proportion of the sampled households ranked by household income per capita. Health care payments are proportional if the Lorenz and health payment concentration curves coincide. The concentration curve lies outside the Lorenz curve if the health payment is progressive, and vice versa for a regressive health payment.

The Kakwani index, another indicator for measuring the progressivity of health care payments, is defined as twice the area between the concentration curve of health payments and the Lorenz curve. The index can be calculated as, $\pi_K = C - G$, where C is the health payment concentration index and G is the Gini coefficient of household income or expenditure. The value of the Kakwani index (π_K) ranges from -2.0 to +1.0. A negative Kakwani index value indicates that health care payments are regressive, and the concentration curve lies inside the Lorenz curve. In contrast, a positive value indicates the progressive nature of health care payments, and its concentration curve lies outside the Lorenz curve.

Types of household payments for health

The assessment of equity in health care finance requires examination of all sources of household payments for health including 1) direct taxes; 2) indirect taxes; 3) household out-of-pocket payments for health; 4) social health insurance contributions; and, 5) private health insurance premiums. Most household health payment data are basically available in the SES, except the indirect tax payments which require computation from household spending on VAT-taxable goods and services.

It is noteworthy that household payments for SHI contributions and private insurance premiums were combined together in the 2006 SES questionnaire and could not be disaggregated. Therefore, analysis of overall progressivity of health care finance in 2006 should be computed looking at the combination of these two financing sources.

Catastrophic health spending

This paper employs the common definition of catastrophic health expenditure which is defined as a situation where household out-of-pocket payments for health are higher than 10% of household income or total household expenditure. This threshold payment has been widely used because it is accepted that households having healthcare payments above this level would have to cut food consumption, go into debt, and become impoverished [16, 17]. There is another indicator of catastrophic health expenditure using 'household capacity to pay', where household payments for basic consumption needs such as food are firstly deducted from household income or total expenditure [18], but this approach is problematic for analyzing the progressivity of health care finance¹³.

Equity stratifiers and measures

Regarding household ability to pay, this paper employed household income per capita to classify households into different income quintiles. No equivalence scale is used to adjust for household composition because the 2004 and 2006 SES data do not contain information about household members aged below 15 years nor the elderly.

Benefit Incidence Analysis

Data source

The analysis used Health and Welfare Surveys (HWS) conducted in 2001 (before the full-scale implementation of UC) and in 2003, 2006 and 2007 (after the introduction of UC). The HWS is conducted regularly by the National Statistical Office (NSO), and is a structured household interview survey on illnesses and health service utilization of approximately 70,000 individuals (except for 2001, covering over 220,000 individuals) from a nationally representative sample of households. The questionnaire allows information to be obtained from a proxy respondent who is the most knowledgeable person in the household on health and health service utilization.

A recall period of one month for ambulatory care and one year for hospitalized illnesses are used to collect information about health service utilization. Options for ambulatory or outpatient (OP) care for the last illness episode included both informal modes (self medication, herbal medicine and traditional healer) and various levels of public and private health facilities (health centre, district hospital, provincial hospital, university hospital, other government hospital, private medical clinic, and private hospital). Options for hospitalization or inpatient (IP) care exclude health centres and private clinics that do not admit patients. Direct out-of-pocket payments from household members for each ambulatory visit and hospital admission were quantified in monetary terms (up to Baht 9,998 and 99,998 for OP and IP respectively).

Data analysis

The analysis approach follows a standard method for the large scale household surveys ^[19]. The distribution of service utilization (ambulatory visits and hospital admissions) and public subsidy (in Baht) for each type of health care facilities over a gradient of the economic status of individuals was summarized into a concentration index (CI) and presented by a concentration curve (CC).

The CI, ranging from -1.0 to +1.0, captures the extent to which health utilization volume and amount of public subsidy are concentrated among different population subgroups (in this case, the rich vs. the poor). A CI of zero means an equal distribution of the services and subsidy throughout the economic gradient. A negative CI indicates a concentration among those who are poorer (i.e., the CC lies above the equality line of 45 degrees), and a positive CI reflects a concentration among those who are richer (i.e. the CC lies below the equality line).

a) Equity stratifier

To determine the economic gradient of individuals, the analysis used total (both monetary and in-kind) income per adult equivalent. Two choices are available for calculation of the adult equivalents:

one proposed by Deaton^{[20]†} and the other by the OECD. We used OECD-modified equivalence scale, which has been proposed previously by Haagenars et al^[21] as follows:

$$e_h = 1 + 0.5(A_h - 1) + 0.3K_h$$

Basically, the above formula takes into account household economies of scale (with respect to the household size and demographic mix of household members), whereby the household members can share the total consumption. For a household with only one adult member ($A_h=1$), the number of equivalent adult (e_h) is equal to one. Each additional adult (A_h-1) is weighted by one-half and every child (K_h) receives a weight of 0.3.

To calculate the income of each individual member of a given household, the sum of individual (monetary and in-kind) income over all household members is divided by the number of adult equivalents in the household. As such, every member of the same household (regardless of his/her own income) is assigned the same amount of the average household income (per adult equivalent).

b) Health service utilization

The health care of interest in the analysis is limited to certain types of health facilities providing institutional care (excluding traditional medicines, private pharmacies) that are covered by the three main insurance schemes, including UC, SHI and CSMBS, and hence potentially subsidized by the government budget. These include health centres (HC) for ambulatory services, district hospitals (DH), provincial hospitals (PH), university hospitals (UH)[†], and private hospitals (PrivH). Other government hospitals, private medical clinics (for ambulatory service) and polyclinics (for hospitalization service) as well as informal care (self medication and herbal medicine/traditional healers) were excluded from the analysis since they are not the typical providers for the three schemes.

The volume of ambulatory visits (H) can be obtained by linking directly to the frequency of reported non-hospitalized illnesses (I) over a reference period (up to 8 episodes in the previous month). Since health care choices (up to three choices per individual) for the non-hospitalized illnesses cover both the health facilities of interest (x) and other providers (y) including the informal care, the total number of self reported illness episodes needs to be averaged proportionally to the total number (Σf) of each type of health care choice. The annualized (12-month) ambulatory visits per facility type were calculated according to the below formula:

$$H = (12I)/(\Sigma f_x + \Sigma f_y)$$

The number of hospital admissions per capita per year for each health facility was determined similarly, except there is no need to multiply by 12 since the reference period is one year already.

c) Public subsidy

Unit costs per ambulatory visit and per hospital admission were obtained for each of the three major health insurance schemes from various data sources. The 2001 and 2003 data were abstracted directly from those used in Prakongsai^{[22]§}. For 2006 and 2007, the unit cost data were based on the quick method of unit cost estimation.

[†] Deaton (1997)'s adult equivalents: $e_h = (A_h + 0.5K_h)^{0.75}$

[‡] HWS in 2001 did not differentiate the utilization of provincial hospital from other types of public hospitals including the university hospital

[§] In 2001, the unit cost data were for SHI, CSMBS, and rest of the population

The quick method of unit cost estimate is based on the following formulae:

$$\text{Unit cost per OP visit} = \frac{\text{Total cost of the whole hospital}}{\text{Number of OP visits} + (\text{number of IP cases} \times \text{cost weight})}$$

$$\text{Cost weight} = \text{unit cost per admission} / \text{unit cost per OP visit.}$$

In estimating the cost weight, we used data on unit costs of outpatient and inpatient services derived from the application of simultaneous equations to arrive at a cost allocation in a sample of hospitals. The total direct cost for the whole hospital and number of OP visits and admissions were retrieved from the routine hospital reports.

^d imputed from (1) the SS capitation rate (adjusted for the OP-IP ratio of 65:35) and (2) average per capita ambulatory visits and hospital admissions of the total SS beneficiaries registered with contracted private providers (SSO, 2002)

^e imputed from (1) total CS expenditures for ambulatory service and public-private hospitalization (CGD, 2004), averaged over total ambulatory visits and hospital admissions by CS beneficiaries (HWS); (2) the unit cost ratios for all population's ambulatory service between HC:DH:PH (1.0:4.2:6.1) and for hospitalization between DH:PH (1.00:1.86) (Tangcharoensathien *et al.*, 2001)

The amount of public subsidy per facility type used for each individual was calculated by subtracting any direct payment by the individual from the total service cost, which is equal to the frequency of ambulatory visits or hospital admissions multiplied by the unit cost for each insurance scheme. It should be noted that unit cost varies across scheme. For example, CSMBS, applying fee for services, has much higher unit cost than SHI and UC Schemes due to greater use of medicines in the non-essential list, and use of brand name products and diagnostics.^{**} The result is the net public subsidy to each individual. This is then disaggregated by income quintile.

3. RESULTS

Financing Incidence Analysis

Household income profile 2000 to 2006

Analysis of household income per capita from the SES prior to and after UC shows an inequitable household income distribution across households over the period 2000 to 2006. The ratio of monthly household income between Q5 and Q1 was 9.21 times in 2000, and increased to 11.99 in 2006 (Table 3). The Lorenz curves of household income lie below the 45 degree line, while the Gini coefficient decreased marginally over this period from 0.4980 in 2000 to 0.4904 in 2006 (Figure 2).

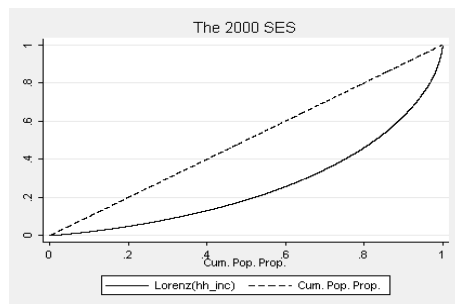
Table 3 Mean monthly household income in nominal prices by income quintile, 2000 to 2006

	Mean monthly household income, nominal price (Baht per month)			
Income quintile	2000	2002	2004	2006
Q1 (poorest)	3,667	4,047	4,469	3,700
Q2	6,282	6,778	7,213	7,680
Q3	9,521	10,041	10,507	11,659
Q4	15,082	15,190	15,579	18,199
Q5 (least poor)	33,780	35,976	36,123	44,372
Total	11,988	13,415	14,778	17,122
Q5:Q1	9.21	8.89	8.08	11.99
Gini coefficient	0.4980	0.4892	0.4707	0.4904

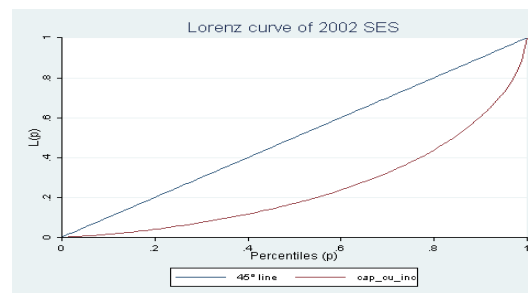
Source: analysis from National Statistical Office SES 2000 to 2006

^{**} HWS 2001 did not contain data on the direct payment for ambulatory services

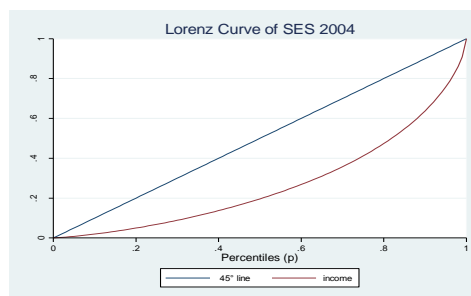
Figure 2 The Lorenz curve and Gini coefficient of household income from 2000 to 2006



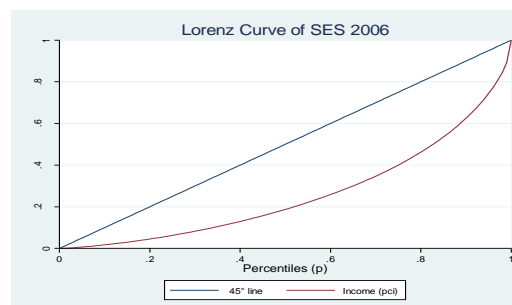
Gini coefficient = 0.4980



Gini coefficient = 0.4892



Gini coefficient = 0.4707



Gini coefficient = 0.4904

Note: Gini coefficient ranges from 0 to 1, the higher (lower) the figure, the more inequitable (equitable) income distribution in a society.

Progressivity of direct tax payments

Analyses of household direct tax payments using the 2000-2006 SES show that Thai households paid a small amount of income tax. The personal income tax system is progressive, with a maximum rate of 37% of taxable income and exemption for the low income earners [see Box 2].

Box 2 Summary tax structure in Thailand, 2010

Personal income in Thailand is very progressive, though the tax base is limited. Less than 3 million individuals out of a labour force of 39 million are personal income tax payers. The personal income tax rate was designed to exempt low income earners of less than 150,000 Baht per annum. The bands are 10%, 20%, 30% with the maximum ceiling of 37% of taxable income.

A major source of indirect tax, 7% Value Added Tax replaced the business tax. However, operators earning less than 600,000 baht a year are waived from VAT, but continue to pay business tax. A number of VAT exemptions were introduced to ensure adequate consumption, for example sale or import of agricultural products, livestock, and agricultural inputs, such as fertilizer and animal feed, published materials and books, cultural and religious services, and educational services.

Corporate tax is fixed at 30% of net profits, and payable by all corporations registered with the Ministry of Commerce.

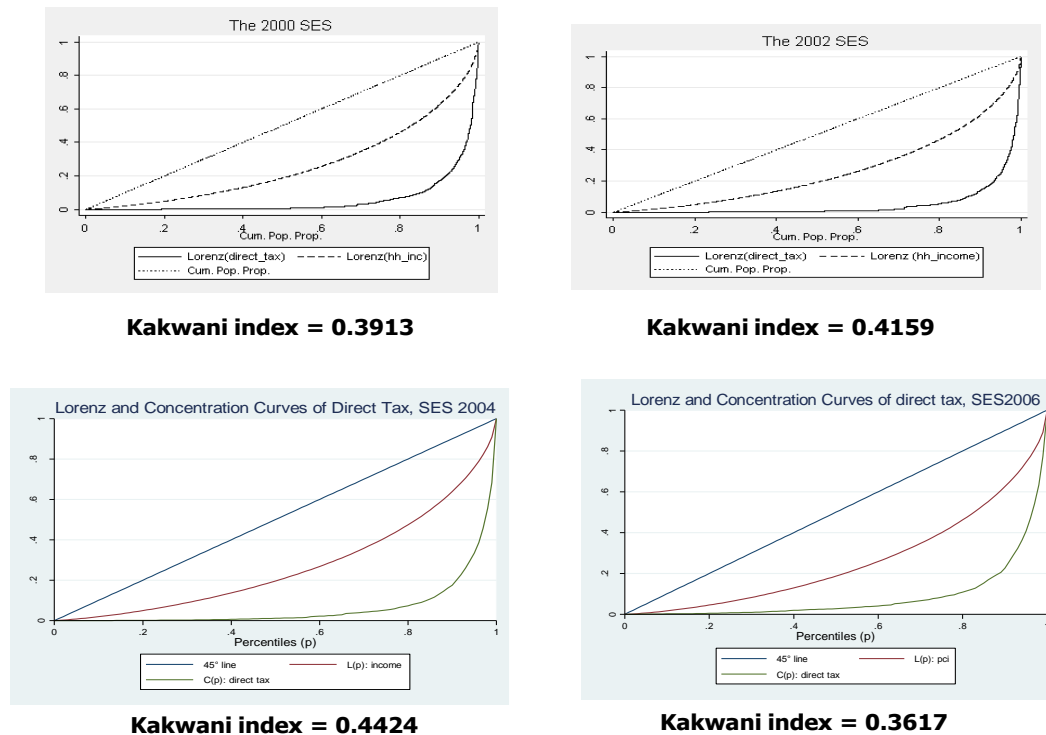
The Ministry of Finance Revenue Department is making major efforts to expand the tax base (by increasing the number of taxpayers), and improve collection and enforcement of direct tax payment, through electronic submission of tax returns.

Taxable Income bands, baht	Taxable income, Baht	Tax Rate (%)
0 - 150,000	150,000	Exempt
150,001 - 500,000	350,000	10
500,001 - 1,000,000	500,000	20
1,000,001 - 4,000,000	3,000,000	30
4,000,001 and over		37

Source: <http://www.rd.go.th/publish/6045.0.html> [access 15 March 2010]

In all years of analysis, the first quintile paid the lowest amount of direct taxes, while the fifth quintile paid the highest. Households in all income quintiles except the fifth on average paid less than 1% of their household income on direct tax. The concentration curves of direct tax payments were outside the Lorenz curves (income distribution curve) in all years reflecting progressive direct tax payments by households from 2000 to 2006. This is confirmed by positive values of the Kakwani index in all years (Figure 3).

Figure 3 Lorenz curves (income distribution) and Kakwani index of direct tax payments from 2000 to 2006

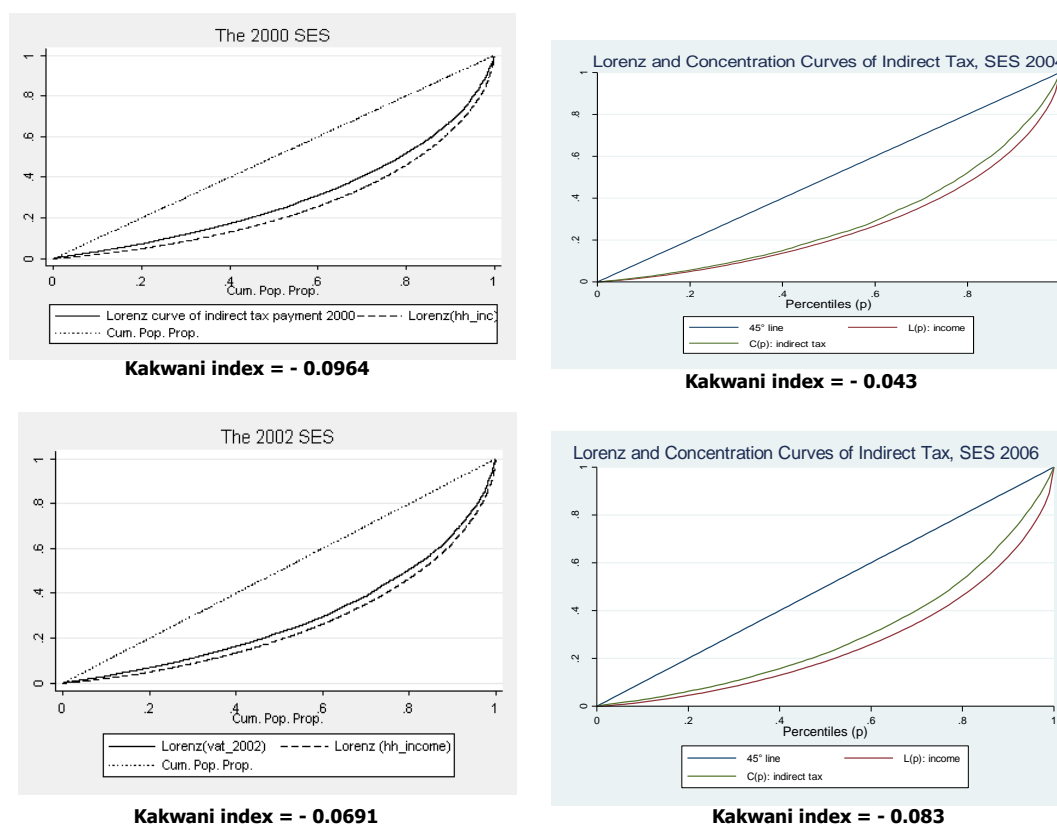


The higher positive value of the Kakwani index in 2004 indicates that household direct tax payment in 2004 was more progressive than the other years. Given the policy on personal income tax exemption for the poor, the progressive direct tax payment was likely caused by an increase in taxable income and hence direct tax payments among the better-off quintiles.

Progressivity of indirect tax payments

Analysis of VAT-taxable consumption expenditures in the 2000-2006 SES shows a regressive pattern of household indirect tax payments (Figure 4). Though the first quintile paid the least amount of indirect tax, they paid the highest share of income in indirect tax in all four years. In contrast, the fifth quintile made the highest payment of indirect tax but the lowest percentage share of income. Throughout the four years of analysis, the curves of indirect tax payment lie inside the Lorenz Curve of income distribution. The Kakwani indexes, therefore, have negative values.

Figure 4 Lorenz curve and Kakwani index of indirect tax payments from 2000 to 2006

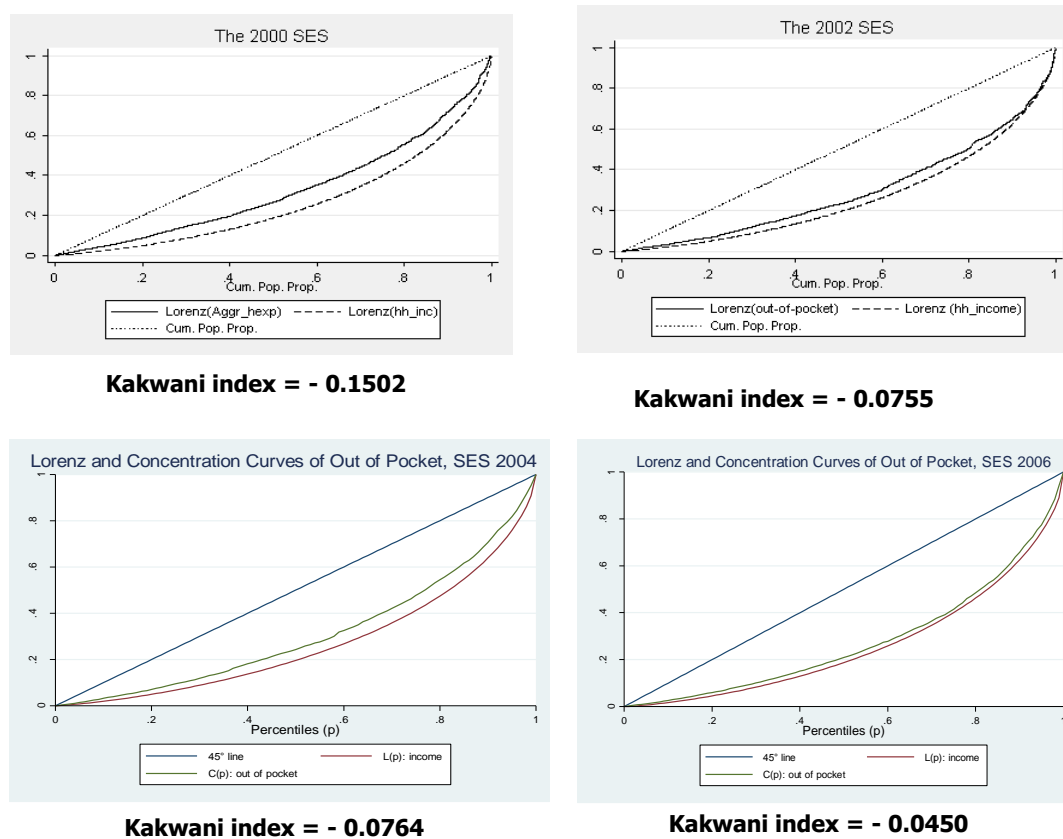


Progressivity of household out-of-pocket payments

Results from the analyses of the 2000-2006 SES data show a decrease in household out-of-pocket payments for health in all income quintiles, except the fifth quintiles. The first quintile had the highest reduction in out-of-pocket payments, followed by the second and third quintiles. However, the first quintile still had the highest percentage share of out-of-pocket payments in household income, which meant that household out-of-pocket payments for health were regressive in all years.

In all four years, the concentration curves lay inside the Lorenz curves of income distribution, and the Kakwani indexes have negative values (Figure 5). However, the gap between the concentration index and the Lorenz curves in 2006 is smaller than other years, therefore producing the lowest Kakwani index value. This means household out-of-pocket payments for health after UC were less regressive compared to previous years.

Figure 5 Lorenz curves and Kakwani indexes of household out-of-pocket payments for health from 2000 to 2006

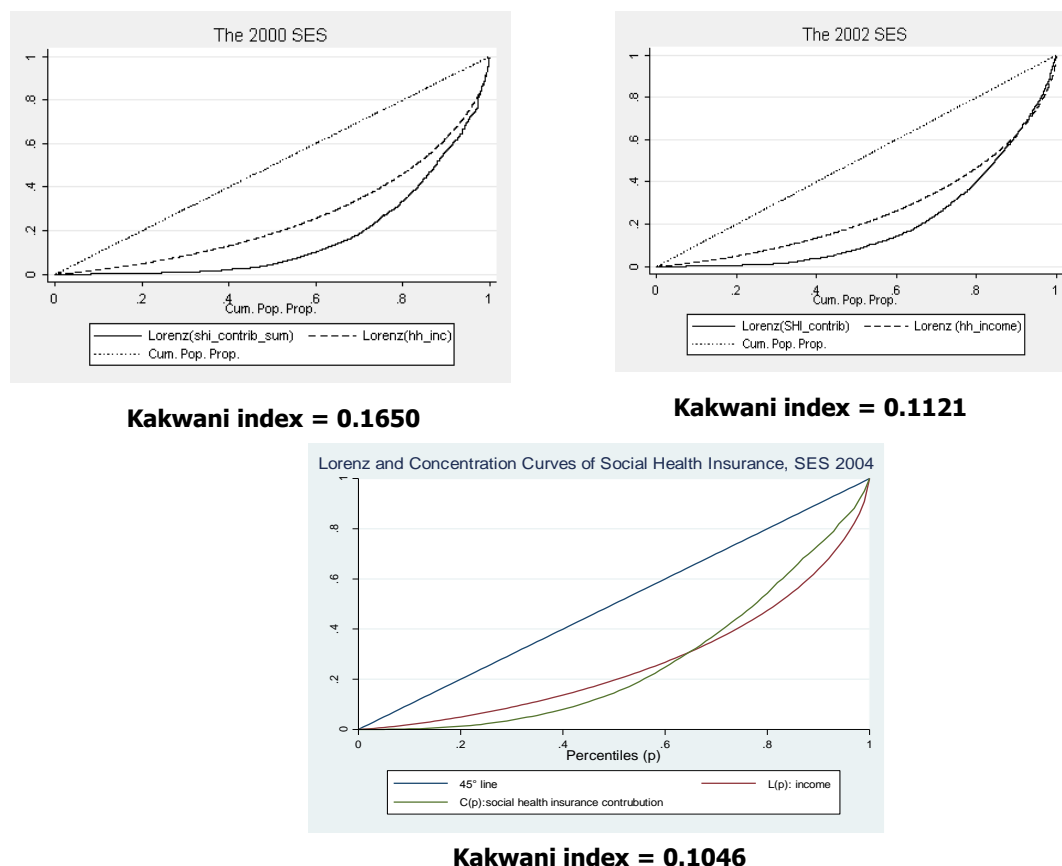


Progressivity of social health insurance contribution

Unfortunately, the data for social health insurance contributions and private health insurance premium contributions were combined in the 2006 SES. Therefore analyses of social health insurance contributions were available only for the 2000-2004 SES. In all years, the fifth quintile paid the highest amount of social health insurance contributions, while the first quintile paid the least. The SHI members are liable to pay a fixed percent of the wages with a maximum ceiling of 15,000 Baht (equivalent to US\$ 500 in 2010) per month for the assessed contribution, and this has not changed since the inception of the scheme in 1991.

For all years the concentration curves and Kakwani indices were progressive, with the richer SHI members paying more and the poor paying less (Figure 6). The concentration curves clearly lie outside the Lorenz curves in 2000 and 2002, but cross in 2004. However, Kakwani index values were positive in all three years, with the highest positive value in 2000. This indicates that household social health insurance payments were progressive from 2000 to 2004, but tended to become less progressive over time.

Figure 6 Lorenz curve and Kakwani index of social health insurance contributions from 2000 to 2004



Progressivity of private health insurance premiums

Results from the analysis of the 2000-2004 SES show that mean household payment for private health insurance premiums did not vary greatly across the three years of analyses. Expenditure for private health insurance premiums as a percentage of household income was highest in the first income quintile, while it was lowest in the fifth quintile. The concentration curves and Kakwani indices from 2000 to 2004 confirm that household payments for private health insurance premiums were regressive in all three years. The concentration curves lie inside the Lorenz curves with negative Kakwani index values both prior to and after UC.

Equity in overall health care finance prior to and after UC

The progressivity of overall health financing is measured by a weighted average of the Kakwani indexes for difference sources of health finance, where weights are equal to the proportion of total payments accounted for by each financing source ^[16]. The share of each health financing source was computed from two data sources: the General Government Revenue of Thailand 1999-2008 ^[23] and the National Health Accounts of Thailand 2002-2008 ^[9].

Therefore, equity in overall health care finance depends on the progressivity of the different sources of finance and the proportion of revenue collected from each financing sources.

Results from the analysis of the progressivity of overall health care finance indicate that the Kakwani index value for overall health care finance changed from being mildly regressive in 2000 (with a value of -0.0038) to being progressive with positive values of 0.0014, 0.0342 and 0.0406 in 2002, 2004 and 2006 respectively (Table 4).

The progressive nature of financing health after UC can be explained by the fact that the proportion of progressive sources of funding increased, for example, direct tax increased from 18% in 2000 to 24.5% in 2006 and SHI contribution increased from 5.3% in 2000 to 8.9% in 2004. At the same time, the regressive source of finance was reduced. For example, the share of out of pocket payments decreased from 33.7% in 2000 to 23.2% in 2006. These dynamics resulted in a progressive health financing system in Thailand after UC.

Table 4 Kakwani indices of health care finance and share of health care finance in Thailand from 2000 to 2006

Type of health payments	Kakwani index				Share of healthcare finance *			
	2000	2002	2004	2006	2000	2002	2004	2006
Out of pocket payments	-0.150	-0.076	-0.076	-0.045	33.7%	27.9%	26.4%	23.2%
Direct tax	0.391	0.416	0.442	0.362	18.0%	18.8%	20.8%	24.5%
Indirect tax	-0.096	-0.069	-0.043	-0.083	33.4%	38.2%	37.1%	35.2%
Private insurance premium	-0.362	-0.391	-0.323	NA	9.6%	9.2%	8.9%	NA
SHI contribution	0.165	0.112	0.105	NA	5.3%	5.9%	6.8%	NA
Private insurance premium & SHI contribution	NA	NA	NA	-0.049	NA	NA	NA	17.1%
Overall Kakwani index	-0.0038	0.0014	0.0342	0.0406	100.0%	100.0%	100.0%	100.0%

Note: * Data from General Government Revenue in Thailand 1999-2008 (National Economic and Social Development Board – NESDB) and National Health Accounts of Thailand 2002-2008 (IHPP-Thailand)

Incidence of catastrophic health expenditure

Defining out of pocket payments for health exceeding 10% of household income as catastrophe, the incidence of catastrophic health payment reduced in all income quintiles over the period 2000 to 2006, but especially the poorest quintile. On average, the incidence of catastrophic spending decreased by 63% from 2000 to 2006; see Table 5.

The poorest quintile had the highest rate of reduction, 77.5% while the richest quintile had a 41% reduction over the six year period. Despite the favourable benefit package introduced by the UC scheme, some 2% of the population continued to face financial catastrophe, however, this was significantly lower among the poorest quintiles (0.9%) compared to the richest quintiles (3.3%). We can therefore assess the UC scheme as performing well in providing financial risk protection in particular to the poor.

Table 5 The incidence of catastrophic health payments from 2000 to 2006

Income quintiles	2000	2002	2004	2006
Q1 (poorest)	4.0%	1.7%	1.6%	0.9%
Q5 (least poor)	5.6%	5.0%	4.3%	3.3%
All quintiles	5.4%	3.3%	2.8%	2.0%

Note: Catastrophic health payment refers to household out-of-pocket payments for health exceeding 10% of total household income

Benefit Incidence Analysis

We first present the evidence on equity in service utilization for the period prior to UC in 2001 and post-UC in 2003, 2006 and 2007. This is followed by the evidence on the distribution of government subsidies during the same period. Health systems determinants of equity in the utilization and subsidies are then discussed and lessons drawn.

Equity in service utilization

a) Outpatient services

Prior to UC in 2001, use of ambulatory care was already pro-poor, as reflected by the CI of -0.167. In all periods after UC, the pro-poor utilization was maintained ([Table 6](#)).

Providers at the district level including sub-district health centres and district hospitals achieved pro-poor OP service utilization, as reflected by the higher value of negative CI value. Note that health centres, which are used most by the poor due to geographical proximity, had a consistently higher negative value of the CI than district hospitals.

The provincial hospital OP visits were almost equally distributed, though a slightly pro-rich distribution was observed in the later phase. The CI was -0.051, 0.085 and 0.007 in 2003, 2006 and 2007 respectively.

Outpatient services provided by teaching hospitals were clearly pro-rich, with a large positive value of CI, though less pro-rich than outpatient services provided in private hospitals.

The 2001 HWS did not distinguish the choice of a teaching hospital from a MOPH provincial hospital for both ambulatory care and hospitalization.

b) Inpatient services

Prior to UC in 2001, hospital admissions were slightly more concentrated among the poor than the rich, as reflected by a negative CI, -0.080; the pro-poor distribution of hospitalization was maintained after UC was launched (Table 6).

The MOPH district and provincial hospitals provided a higher level of pro-poor IP services, due to their better geographical accessibility for the poor. The distribution of hospitalization services provided by teaching hospitals was clearly pro-rich, serving mostly the rich CSMBS members. Similarly, a pro-rich distribution of inpatient services provided by private hospitals, which were mostly provided to the better-off SHI members, was observed.

Table 6 Equity in health service utilization, Concentration Index by type and level of health care, 2001, 2003, 2006 and 2007

	2001	2003	2006	2007
Ambulatory care	-0.167	-0.219	-0.148	-0.119
Health centre	-0.303	-0.351	-0.285	-0.292
District hospital	-0.291	-0.304	-0.258	-0.258
Provincial hospital	-0.045 ^a	-0.051	-0.085	-0.007
University hospital		0.295	0.437	0.364
Private hospital	0.419	0.395	0.482	0.525
Hospitalization	-0.080	-0.138	-0.068	-0.090
District hospital	-0.315	-0.288	-0.232	-0.284
Provincial hospital	-0.070 ^a	-0.123	-0.090	-0.129
University hospital		0.040	0.204	0.394
Private hospital	0.325	0.321	0.407	0.470

Source: Analysis of Health and Welfare Survey (various years)

^a Provincial and university hospitals not differentiated

Equity in government subsidies

a) Outpatient services

Table 7 shows the distribution of net government subsidies using a Concentration Index. Overall subsidies for OP services benefited the poor more; the CI after UC was -0.247, -0.204 and -0.177 in 2003, 2006 and 2007 respectively, though data did not permit an estimate for 2001.

Subsidies to the three levels of care provided by the MOPH -- health centres, district and provincial hospitals -- were consistently pro-poor as the services here were used heavily by the poor due to better access and geographical proximity. However, the subsidy to outpatient services provided at provincial hospitals is less pro-poor than those provided at district hospitals and health centres.

OP service subsidies in teaching hospitals were distributed in favour of the better off patients, benefiting mostly CSMBS and SHI members living in urban areas close to the high-level care

hospitals. Subsidies to the teaching hospitals were pro-rich but with a smaller magnitude than those to the private hospitals serving better-off SHI members.

b) Inpatient services

Similar findings confirm that subsidies to IP services at MOPH district and provincial hospitals were in favour of the poor, as reflected by a negative CI value, and that subsidies to hospitalization in district hospitals were more pro-poor than in provincial hospitals.

Findings also confirmed that subsidies to the IP services provided by teaching and private hospitals were in favour of the economically well off.

c) Overall outpatient and inpatient services

Despite the pro-rich subsidies for OP and IP services provided by teaching and private hospitals, the overall subsidy was pro-poor, with CIs of -0.226, -0.186 and -0.180, in 2003, 2006 and 2007 respectively. This is because of the dominant proportion of service volume provided by health centres, district and provincial hospitals.

Table 7 Equity in government subsidies, Concentration Index by type and level of health care, 2001, 2003, 2006 and 2007

	2001	2003	2006	2007
Ambulatory care		-0.247	-0.204	-0.177
Health centre	NA	-0.358	-0.301	-0.306
District hospital	NA	-0.295	-0.262	-0.269
Provincial hospital	NA	-0.042	-0.089	-0.003
University hospital	NA	0.339	0.300	0.411
Private hospital	NA	0.440	0.385	0.459
Hospitalization	-0.038	-0.181	-0.159	-0.184
District hospital	-0.248	-0.285	-0.245	-0.301
Provincial hospital	0.007 ^a	-0.126	-0.127	-0.164
University hospital		-0.051	0.165	0.405
Private hospital	0.373	0.519	0.281	0.390
Ambulatory care and hospitalization		-0.226	-0.186	-0.180

Source: Analysis of Health and Welfare Survey (various years) and unit cost data

^a Provincial and university hospitals not differentiated

Equity in service utilization and subsidies

Figure 7 summarises the distributions of OP and IP services and subsidies across five income quintiles from 2001 prior to UC and 2003, 2006 and 2007 after UC using a graphical presentation.

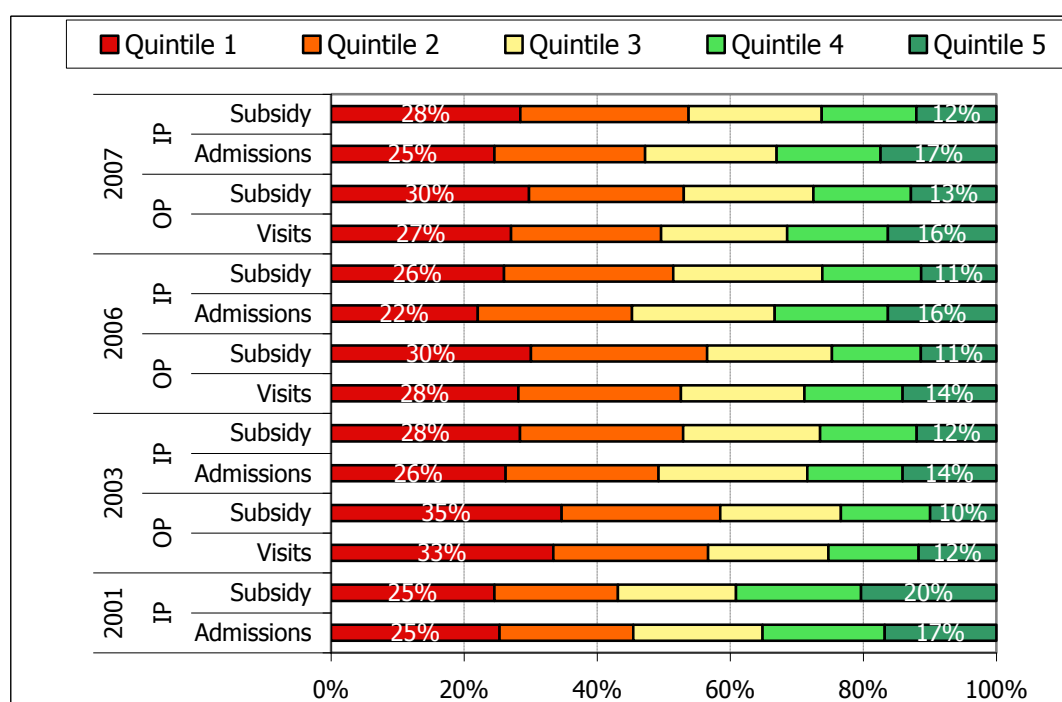
Clearly the poorer quintiles received a higher share of OP visits and admissions and higher share of government subsidies for both OP and IP services than other four income quintiles throughout the four years of observation.

In 2007 the poorest quintile received 27% of national OP visits, 30% of total ambulatory care subsidies, 25% of national IP admissions and 28% of total hospitalization subsidies.

In contrast, in 2007 the richest quintile received less than their share in the population, at 16% and 17% of total OP visits and IP admissions; 13% and 12% of total subsidies on ambulatory care and hospitalization.

It should be noted that the benefit incidence for the poorest quintile was higher than the utilization incidence. This is because the out of pocket payment among the poorest quintiles was zero or at a very minimum level. The benefit incidence is the total government subsidies net of out of pocket payment; the lower the out of pocket payment, the higher the benefit incidence

Figure 7 Summary distributions of utilization and subsidies for OP and IP by income quintiles, 2001, 2003, 2006 and 2007



4. DISCUSSION

Financing Incidence Analysis

What contributes to the progressivity of financing healthcare?

The overall health care financing system was more progressive after the UC policy was implemented. Three determinants of the progressivity of overall health financing can be identified. First, the increased proportion of funding sources from progressive direct taxation; second, the reduction in

the magnitude of regressivity of out-of-pocket payments while at the same time a decrease in their share of total financing; and third, the reduction in the magnitude of regressivity of indirect tax and slight increase in the proportion of indirect tax, though movements in both of these parameters were somewhat erratic over the time period. Though private health insurance contributions were regressive and SHI contributions were less progressive after 2000, these two sources played a minor role in financing the Thai health system.

From these findings, it can be concluded that increasing the proportion of progressive sources (such as direct tax) and vice versa reducing the proportion of regressive sources of health financing (such as out of pocket payment) can result in progressive financing incidence, in which the rich pay a higher share of their income towards the costs of healthcare.

This result confirms findings from other countries such as Sri Lanka, the Philippines, Bangladesh ^[5] and Malaysia ^[24] that general tax and SHI contributions were progressive, and that indirect tax and out-of-pocket payments are regressive. The 7% VAT is levied equally on all households resulting in regressive indirect tax payments.

Most importantly, the decrease in regressivity of household out-of-pocket payments, the contribution of which declined from approximately one-third of overall health care finance in 2000 to less than a quarter in 2006, was a significant contribution to progressivity of overall health care finance.

SHI contribution can be more progressive

SHI contribution can be a significant progressive source of financing, but the scheme has failed to raise the ceiling for assessed contribution of 15,000 Baht per month since its inception in 1991. This may have arisen because of a lack of awareness among technical level staff, or for the political reason that employers and higher earner white collar employees are reluctant to increase their contributions.

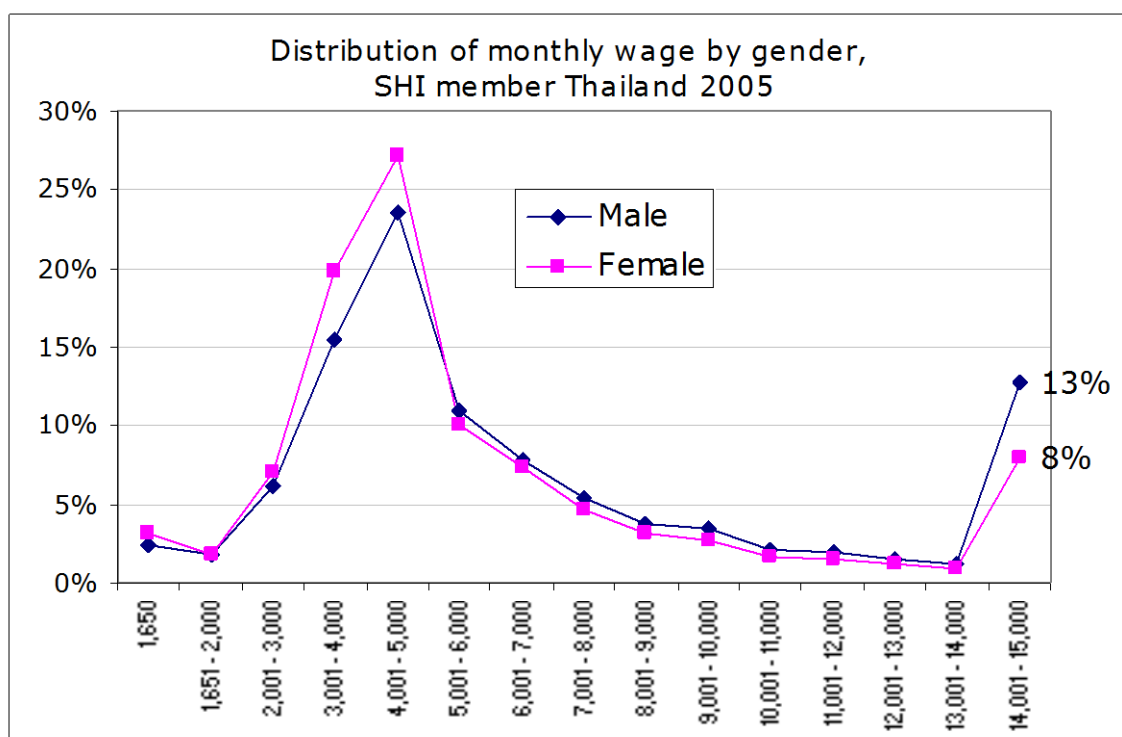
The Philippines Health Corporation also applies a maximum wage for assessed contributions, but the ceiling is revised regularly. In 2007 the maximum and minimum wage band was 30,000 and 4,000 peso per month for the assessed contribution ^[25]. The highest earners contribute 7.5 times more than the lowest earners.

In Thailand, the 2010 minimum wage was 4,392 Baht per month (183 Baht per day for 24 days). The ratio of maximum to minimum contributions was 3.4, far below that of the Philippines. If the ceiling were to be lifted to 30,000 Baht per month, the maximum - minimum gap would be more progressive at 6.8.

In [figure 8](#), among 7 million SHI members in 2005, most of them earned 4,000 to 5,000 Baht per month. At the far right end of the distribution, 13% of men and 8% of women earned 14,000 to 50,000 Baht per month or more.

Figure 8 Distribution of monthly wage by gender, SHI members, Thailand 2005

Source: Social Security Office 2006



What reduces the incidence of catastrophic health expenditure?

The reduction in the incidence of catastrophic health expenditure from 2002 to 2006, especially among the poorest quintiles, reflected the effectiveness of the UC policy in protecting households from medical care costs. Thailand has outperformed other countries in term of low incidence of catastrophic health spending. ^[26],

A number of factors contribute to the low incidence of catastrophic health spending. First, the benefit package is comprehensive, covering outpatient and inpatient care, accident and emergency, and all medicines; disease prevention and health promotion; and other high cost care such as chemotherapy, heart surgery, antiretroviral medicines and, from 2008, covering renal replacement therapy such as haemodialysis, peritoneal dialysis and kidney transplantation. Extensive coverage results in minimum household spending on services outside the benefit package. Second, UC members have demonstrated a high degree of compliance with the scheme, taking up their entitlements and using relatively few out-of-plan services ^[27]. This results in a low level of direct out of pocket payment for health services. Third, the scheme did not rely on strong demand-side controls on utilization, with a nominal copayment (30 Baht or US\$ 1 per visit or per admission (2010 exchange rate) which was terminated in 2007 for political reasons. Historically, there was no unofficial payment by patients even prior to the UC era.

The UC scheme applied a capitation model of payment for primary care, operationalized through registration with a close-to-client provider network. This means that UC members have a restricted choice of provider, as they can only receive free services at their nominated provider networks. UC

members are liable to full payment for service rendered by providers outside their network. Typically, UC members register with a district health provider network which includes health centres and district hospitals. It is interesting to explore why the majority of UC members use services at the sub-district and district health providers. On the supply side, the district health system is well equipped and fully staffed by a cadre of qualified professionals such as physicians, nurses, pharmacist, dentists and other allied health professionals. Patients can be referred to provincial and regional hospitals when they need care which is beyond the capacity of the district health system. On the demand side, the population trusts and has confidence in the quality of care provided at the district level. All these factors help to explain the low incidence of catastrophic health expenditure.

Benefit Incidence Analysis

Will the rich UC members benefit more?

When UC was being launched, a serious dispute arose between the “real-life health systems reformists” and the “ivory-tower-academics” about why the government should subsidize everyone other than SHI and CSMBS members. The opponents’ views were that the rich can and should pay their own medical bills and the poor should be subsidized by the government. The proponents argued it is the citizen’s Constitutional right to health and healthcare, and that Thailand should move away from targeting the poor by providing healthcare to all and ensuring all citizens’ rights to healthcare. Also, both the rich and the poor are contributing to public revenue by paying indirect tax (7% Value Added Tax imposed on all consumer items). In addition, the rich pay direct personal income tax and corporate tax.

This paper provides evidence to counter the view that once the rich are entitled to free care, they would squeeze out use by the poor because the rich have a greater ability (by virtue of their larger social networks, greater negotiating skills, etc) to access free public health services. These concerns might be valid if strategic purchasing by the NHSO did not use the primary care contractor network as the main mode of service provision where the poor can effectively exercise their UC entitlement.

If the UC Scheme were to contract larger provincial, teaching and private hospitals in urban areas the equity outcome as reported by this study would be reversed. The primary care network could deteriorate and possibly cease its operations due to lack of funding. It might lead to the imposition of out of pocket payments to fund its services which would increase catastrophic health spending and impoverishment. Such poor design would contradict the social goals of health equity.

Why do the poor use more services?

This paper does not control for differences in health need between the rich and poor, as there are no data to assess health need. However, if the poor are exposed to more health risks and injuries, leading to a higher illness rate, they should have higher health needs. Therefore, we cannot assess with the present data whether the existing level of utilization sufficiently compensates for higher health needs among the poor.

Clearly, the poor have better access to district health providers, at health centres and district hospitals. Geographical and socio-cultural barriers are lower as most health staff speak the same dialect while the travel costs to district health providers are lower.

However, effective use of “close to client services” is not possible without functioning of multiple systems. In particular, the mandatory rural service by young medical, nursing, dental and pharmacist graduates is an important determinant of the functional primary healthcare system at district level.

Why do the rich not use more public services?

Evidence is limited on whether the rich have lower demand for healthcare than the poor and therefore use fewer health services.

The rich face an ample supply of private sector care providers which provide quality services with shorter queues and more customer oriented hospitality. The rich are therefore able to simply not take up their entitlement to free care in public sector; however, they also cannot opt out of the UC scheme, as it is financed by general revenues, to which the rich contribute more direct and indirect tax than the poor. The high quality of private hospital care can be seen from the evidence that Thailand has now surpassed Singapore as the major medical hub in Asia ^[28]. Though the rich find this affordable and are willing to pay for shorter queue, small-ticket ambulatory services, the UC scheme serves as a “fall back choice” when they cannot afford to pay for high cost hospitalizations, and other high cost conditions such as cancer and chemotherapy. It seems UC scheme also serves as a safety net for the rich in catastrophic health events.

Availability of good quality private hospital services is an enabling feature supporting pro-poor equity in service utilization. Without these, the rich and the poor would be competing for the same limited public sector resources and supply of medical services, as they do for services in teaching hospitals.

The pro-rich nature of care provided in teaching hospitals was observed for both service utilization and public subsidies. The consequence of allowing members to have free choice of any provider without a registration requirement, as in the case of CSMBS, is a huge consumption of outpatient and inpatient services.

Determinants of equity in utilization

District health systems including health centres and district hospitals have consistently performed well in terms of pro-poor utilization for both inpatient and outpatient services. This is due to their geographical proximity to rural populations who are mostly poor and vulnerable.

There is consistent pro-poor service utilization at district health systems over the period between 2001 and 2007. This is explained by the consistency in the number of providers at different level, in the technical capacities and service mix they provide and in the health seeking behaviour of the population.

The pro-poor nature of this system was achieved prior to UC, as a result of continued extension of the health delivery infrastructure. After the introduction of UC, its pro-poor utilization was maintained.

The pro-rich nature of services provided by teaching hospitals is explained by the fact that the rich CSMBS and SHI members are regular customers, occupying most of the ambulatory and admission spaces.

The overall pro-poor distribution of utilization, in spite of the pro-rich distribution of teaching hospital use, is a result of the dominance of health centres, district and provincial hospitals in total utilization.

Why equity in subsidies?

The formula for estimating benefit incidence is the utilization of health services for outpatient and inpatient services by different quintiles multiplied by relevant unit cost of services; it deducts the individual payment for services to arrive at the net subsidy from the government budget.

The pro-poor benefit incidence is the outcome of pro-poor utilization both for outpatient and hospitalization services; and the very small payment by UC members, 30 Baht per visit or per admission, (US\$ 0.9) from which the poor are exempted. In 2008 the copayment was terminated. The average household spending on health was extremely low, e.g. among the poorest quintiles, 47 Thai Baht (US\$ 1.5) per month in 2006, and this was mostly for private pharmacies and clinics not covered by any health insurance scheme, see [Table 8](#).

Table 8 Household monthly out-of-pocket expenditure on health; by income quintiles 2002, 2004 and 2006, current-year Baht

Income quintiles	2002	2004	2006
First (20% poorest)	47	50	47
Second	55	52	60
Third	70	70	93
Fourth	100	110	120
Fifth (20% richest)	200	250	205
Households, million	10.9	11.3	11.0

Source: Socio-Economic Survey (various years)

Those who bypass and use outpatient services in non-registered providers without proper referral are subject to full payment; this results in lower net subsidies to the richer members.

5. CONCLUSIONS

Financial Incidence Analysis

This paper draws several lessons from Thailand's experiences. First, general tax finance was applied to the residual population who were not CSMBS and SHI members. This was a pragmatic solution, as collection of premia in a contributory scheme for the informal sector is extremely difficult to enforce, difficult to implement and expensive to manage, as has been shown in the Philippines ^[29]

Second, using general tax to fund the new UC scheme not only helped to achieve universal coverage in a short period of time, it is also the most progressive source of financing healthcare. It allows the Revenue Department of the Finance Ministry, having the proper expertise and mechanisms, to perform its task in collecting, and enforcing the payment of, tax. Insurance funds have more limited mechanisms to manage revenue generation except in the case of an employment based formal private sector SHI scheme in which employers are required by law to deduct the employee contribution, add their own contribution and wire transfer the money to the SHI Fund.

Third, although a SHI premium contribution can be designed to be more progressive, in Thailand, for political reasons a wage ceiling for assessed contributions was introduced to prevent the system from being "too progressive" and to ensure its political feasibility and compliance by employers and high income white collar employees. However, the ceiling needs to be raised regularly to reflect average wages. The regular increase in the minimum wage leads to a less progressive SHI contribution if the ceiling is not adjusted. The gradual reduction in the progressivity of SHI contributions is the result of failing to raise the ceiling. If this is not corrected, the overall financing will become less progressive or even regressive if in the long term SHI becomes a major source of financing healthcare.

Fourth, to achieve progressivity in health finance, key policy strategies are required: the share of regressive financing sources, particularly out-of-pocket payments, needs to be reduced or replaced by introducing a prepayment scheme; the share of progressive source of health finance need to be increased, in particular using direct taxation to pay for the poor and the informal sector by increasing the tax base and maintaining progressive income tax bands; and ensure that SHI contribution is progressive by adjusting the maximum wage for assessed contribution on a regular basis.

Fifth, the low incidence of catastrophic health expenditure after UC is a result of various contributing factors: comprehensive benefit package, free care at the point of service, a functioning primary health care system easily accessed by the rural poor population, and compliance to the entitlement by UC members. The Thai experience clearly demonstrates how the UC scheme has been able to protect its members against catastrophic out of pocket payments for health.

Benefit Incidence Analysis

A number of factors contribute to the success story in the distribution of health services and public subsidies in favour of the poor population in Thailand.

The promotion of the use of primary care by contracting district health provider networks which are close to clients is an enabling factor for better access to and use of services when needed by the rural poor population. The services provided by a district network are reliable due to continued replenishment of a qualified cadre of staff including doctors, nurses, pharmacists, dentists and other allied professionals in the health team.

The functional and extensive geographical coverage of primary healthcare providers in the district health systems enables the UC scheme contract model.

Introducing a comprehensive benefit package which covers out-patient services, hospitalization, operations and expensive medical care provides a depth of coverage which minimizes out of pocket payment by households. Services are free at the point of provision, and no “under-table” payment is observed.

Designing and implementing a pro-poor health care system in Thailand has taken more than thirty years. The review of experience presented here demonstrates the importance and value of comprehensive reforms which address both demand-side and supply side factors to construct a system which is equitable both in its financing, in its delivery and use of health services and public subsidies in favour of the poor.

6. REFERENCES

- 1 van Doorslaer E, Wagstaff A, and Rutten F. Equity in the Finance and Delivery of Health Care: An International Perspective. New York: Oxford Medical Publications;1993.
- 2 World Health Organization. WHA Resolution 58.3: Sustainable health financing, universal coverage and social health insurance. Available from: http://apps.who.int/gb/ebwha/pdf_files/WHA58/WHA58_33-en.pdf
- 3 WHO Regional Office for Western Pacific Region. Health Financing Strategy for the Asia Pacific Region (2010-2015). Manila: 2009. Available from: <http://www.wpro.who.int/NR/rdonlyres/074ABF06-0DE5-4107-BC29-E82409F66079/0/HCFstrategy20102015.pdf>
- 4 WHO Regional Office for Africa. Health financing: a strategy for the African region. Report of the Regional Director for the Fifty-sixth session of Regional Committee Meeting in Addis Ababa, Ethiopia, 28 August-1 September 2006.
- 5 O'Donnell O, van Doorslaer E, Rannan-Eliya R, Somanathan A., Adhikari S, Akkazieva B. et al. Who pays for health care in Asia? Journal of Health Economics 2008; 2:460-75.
- 6 Xu K, Evans D, Carrin G, Aguilar-Rivera A, Musgrove P, Evans T. Protecting households from catastrophic health spending. Health Affairs 2007; 26:972-83.
- 7 Palmer N, Mueller D, Gilson L, Mills A, Haines A. Health financing to promote access in low income settings - how much do we know? The Lancet 2004; 364:1365-70.
- 8 The NHA 2006-2008 Working Group. National Health Accounts of Thailand 2002-2008. Nonthaburi; International Health Policy Program (IHPP), Ministry of Public Health, Thailand. Available from: <http://ihppthaigov.net/publication/attachresearch/189/chapter1.pdf>
- 9 Vasavid C, Tisayatikom K, Patcharanarumol W, Tangcharoensathien V. Impact of universal health care coverage on the Thai households. In Tangcharoensathien V and Jongudomsuk P (eds) From Policy to Implementation: Historical Events During 2001-2004 of Universal Coverage in Thailand. Nonthaburi; National Health Security Office (NHSO): 2004. pp129-49.
- 10 Limwattananon S, Tangcharoensathien V, Prakongsai P. Equity in financing health care: Impact of universal access to health care in Thailand. EQUITAP Project: Working Paper # 16, June 2005, EQUITAP. Available from: <http://www.equitap.org/publications/wps.htm>.
- 11 Limwattananon S, Tangcharoensathien V, and Prakongsai P. Catastrophic and poverty impacts of health payments: results from national household surveys in Thailand. Bulletin of the World Health Organization 2007;85:600-6.
- 12 Wibulpolprasert S Ed (2005). Thailand Health Profile 2001-2004. Nonthaburi, Ministry of Public Health, Thai Health Promotion Foundation.
- 13 Limwattananon S., Tangcharoensathien V., and Prakongsai P. Catastrophic and poverty impacts of health payments: results from national household surveys in Thailand. Bulletin of the World Health Organization 2007; 85: 600–606.
- 14 Prakongsai P., Limwattananon S., and Tangcharoensathien V. The Equity impact of the universal coverage policy : lessons from Thailand. In Dov Chernichovsky, and Kara Hanson, eds. Innovations

in health system finance in developing and transitional economies, 57-81. London : Emerald Group Publishing Limited, 2009.

15 O'Donnell O, van Doorslaer E, Wagstaff A, Lindelow M. Who pays for health care? Progressivity of health finance. In: O'Donnell O, van Doorslaer E, Wagstaff A and Lindelow M (eds) *Analyzing Health Equity Using Household Survey Data: A Guide to Techniques and Their Implementation*. Washington DC: The World Bank; 2008. pp. 187-96.

16 Prescott N. Coping with catastrophic health shocks. Paper presented at a Conference on Social Protection and Poverty, Washington, DC: Inter American Development Bank; 1999.

17 Ranson MK. Reduction of catastrophic health care expenditures by a community-based health insurance scheme in Gujarat, India: current experiences and challenges. *Bulletin of the World Health Organization* 2002;80 (8): 613-21.

18 World Health Organization. *The World Health Report 2000 - Health Systems: Improving Performance*, Geneva: World Health Organization; 2000.

19 O'Donnell O, van Doorslaer E, Wagstaff A. *Analyzing health equity using household survey data: a guide to techniques and their implementation*. Washington, DC: The World Bank Institute, 2008.

20 Deaton A. *The Analysis of Household Surveys: A Microeconometric Approach to Development Policy*. Baltimore, MD, Johns Hopkins University Press, 1997

21 Hagenaars A, de Vos K, Zaidi MA. *Poverty Statistics in the Late 1980s: Research Based on Micro-data*. Luxembourg, Office for Official Publications of the European Communities, 1994.

22 Prakongsai P. *The Impact of the Universal Coverage Policy on Equity of the Thai Health Care System*. Unpublished Doctoral dissertation, University of London, London School of Hygiene and Tropical Medicines, 2008

23 National Economic and Social Development Board Office. *National Income of Thailand 1993-2008*. Available from: <http://www.nesdb.go.th/Default.aspx?tabid=94>

24 Yu PC, Whynes D, Sach T. Equity in health care financing: The case of Malaysia. *International Journal for Equity in Health* 2008;7:15. doi:10.1186/1475-9276-7-15

25 Philippines Health Corporation, the contribution rate shared by the employee. http://www.philhealth.gov.ph/forms/others/employed_contripremium.pdf access 15 March 2010

26 Xu K, Evans D, Kawabata K, Zeramdini R, Klavus J, Murray CJL. Household catastrophic health expenditure: a multi-country analysis. *Lancet* 2003; 362: 111-17

27 Vasavid C, Tangcharoensathien V, Tisayaticom K, Patcharanarumol W, Opanapun N. Health and Welfare of Thai Population after Universal Health Care Coverage -Part I : Illness, Utilization Compliance of Health Care Services of UC Members. *Journal of Health Science* 2004; 13:428-39.

28 Smith RD., Chanda R., Tangcharoensathien V. Trade in health-related services. *The Lancet* 2009; 373: 593-601.

29 The Philippines case study. Joint Learning Workshop: Moving Toward Universal Health Coverage. A conference proceeding. Delhi, India; February 3-5, 2010.