Thailand

A Technical Note to the Government:

Financing Universal Health Care in Thailand

International Labour Office:
International Financial and Actuarial Service, Social Protection Sector, Geneva
Regional Office for Asia and the Pacific, Bangkok
International Health Policy Programme (IHPP), Bangkok
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Contents

List of abbreviations

CSMBS	Civil Servants' Medical Benefit Scheme
IHPP	International Health Policy Programme
ILO	International Labour Organization or International Labour Office
IMF	International Monetary Fund
MOF	Ministry of Finance
MOH	Ministry of Health
MTEF	Medium Term Expenditure Framework
NHA	National Health Accounts
NHSO	National Health Security Office
NSO	National Statistical Office
SSO	Social Security Office
TDRI	Thailand Development Research Institute
UC scheme	The universal health care scheme (also called the "30-Baht scheme")
USD	United States dollars
VAT	Value Added Tax
WCS	Workmen's Compensation Scheme
WDR	World Development Report
WHR	World Health Report

1. Introduction

In October 2001 Thailand took a bold step towards achieving full population coverage in health care. It introduced the universal health care scheme (called the UC scheme or commonly known as the "30 Baht" scheme). The scheme offers any Thai citizen who does not belong to the Social Security Health insurance scheme (SSO scheme) or the Civil Servants' Medical Benefit Scheme (CSMBS) full access to health services provided by designated district-based networks of providers (consisting of health centers, district hospitals and co-operating provincial hospitals). Eligible persons have to register with the networks, obtain a free insurance card and pay a nominal co-payment of 30 Baht (approximately 0.75 US$) for each outpatient visit or hospital admission. Drugs on prescription are likewise free of charge. The scheme has been remarkably successful with respect to population coverage in the first two years of its existence. However, its long-term fiscal sustainability is as yet unclear. In November 2003 the Government of Thailand represented by the International Health Policy Programme (IHPP) requested the support of the ILO to

- review the present and likely future long-term financial situation of the scheme, and
- assist the Government in the determination of a long-term financial strategy for the UC scheme.

The ILO fielded a mission in March 2004 consisting of Michael Cichon, Chief of the ILO Financial, Actuarial and Statistical Services Branch of ILO Geneva and Suguru Mizunoya, Associate expert in the Sub-regional Office of the ILO in Bangkok. This report contains the findings of that mission as well as recommended follow-up. The mission benefited from extremely useful support from Dr. Viroj Tangcharoensathien and Mrs. Walaiporn Patcharanarumol and their colleagues from the IHPP team. It is a joint report of the ILO and the IHPP, and was finalised during the mission of Dr Viroj Tangcharoensathien and Mrs Walaiporn Patcharanarumol to Geneva in May 2004.

2. Basic system diagnostics

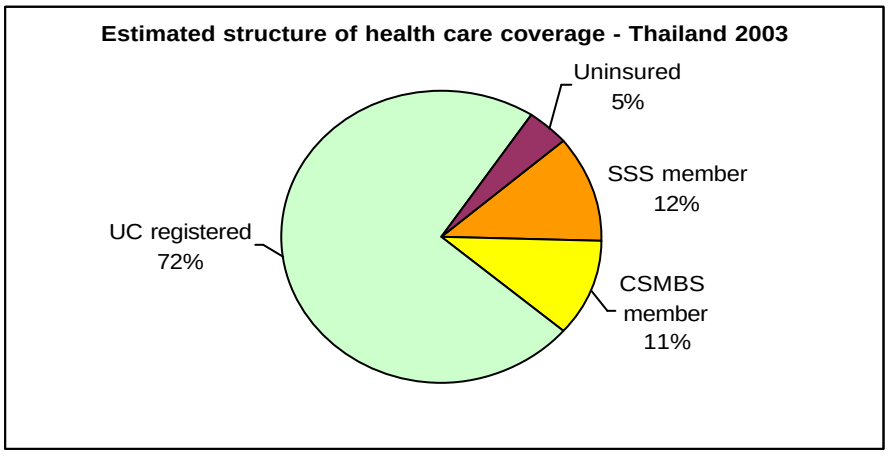
2.1 Present coverage and expenditure pattern in the Thai health care financing system

The national health care financing system of Thailand now consists of five major components:

- the SSO scheme covering presently about 7.4 million card holders who are eligible for health care benefits;
- the non-contributory Civil Servants Medical Benefit Scheme (CSMBS) covering roughly 7 million eligible people (including about 3 million civil servants themselves as well as about 4 million eligible dependents, i.e. children, spouses and parents);
- the UC scheme with a registered total membership of 46.5 million people. UC beneficiaries can be classified into two groups: 24.3 million beneficiaries who are exempted from a co-payment of 30 baht (0.7 USD[1]) per episode (or UCE) and 22.2 million beneficiaries who must make a co-payment of 30 baht at point of service (or UCP).
- a self-payer/non-covered group (i.e. people in remote areas) of about 3 million people;
- voluntary private insurance which covers about 5 million[2]; this insurance cover normally provides second-tier coverage for persons already covered by other schemes.

The following figures show the estimated composition of population coverage and composition of the national health care budget in Thailand in 2003. Population coverage with respect to access to health care in Thailand can be considered as virtually complete.

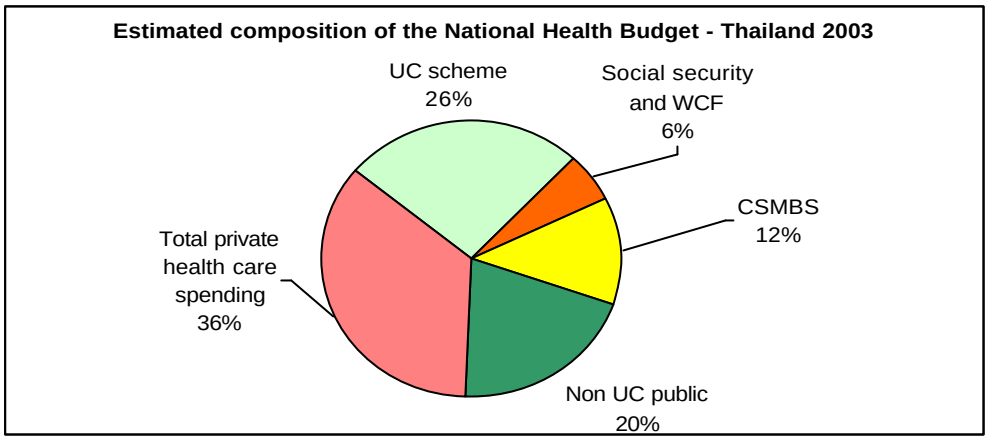
Figure 1:



Source: ILO and IHPP mission estimates, May 2004, Geneva.

[1] Exchange rate at 40 baht per 1 USD
[2] The annual report of private insurance in Thailand 2002 (Surasiangsang 2004)

Figure 2:



Source: ILO and IHPP mission estimates, May 2004, Geneva.

The UC scheme presently – in theory – gives access to health care to about 70 per cent of the population. The proportion of the population it actually caters for is likely to be smaller as not all people eligible and/or holding a UC card may actually take up the service. In fact, the Health and Welfare Survey 2003 conducted by the Thai National Statistics Office (NSO) shows that only about 57 per cent of the registered members used the outpatient services in public health centres and hospitals that are financed by the scheme, whereas 81 per cent of the registered members used the inpatient service offered by the scheme. The take-up rate varies greatly according to income groups and is significantly higher in the lower income groups. It appears that about one third of the population in higher income groups tends to use the UC scheme as a fall-back scheme.

Structural differences between the different groups remain. The following table displays some of them.

Table 1: Estimated overall and per capita expenditure for health care, Thailand 2002

Scheme	Per capita annual expenditure in Baht	Per capita annual expenditure in % of *average public health expenditure per capita*	Per capita annual expenditure in % of *average health expenditure per capita*
UC	1,232	58%	38%
CSMBS	3,401	159%	104%
SSS + WCF	1,720	81%	53%
Total public health expenditure per capita	2,132	100%	65%
Total health expenditure per capita	3,264	153%	100%

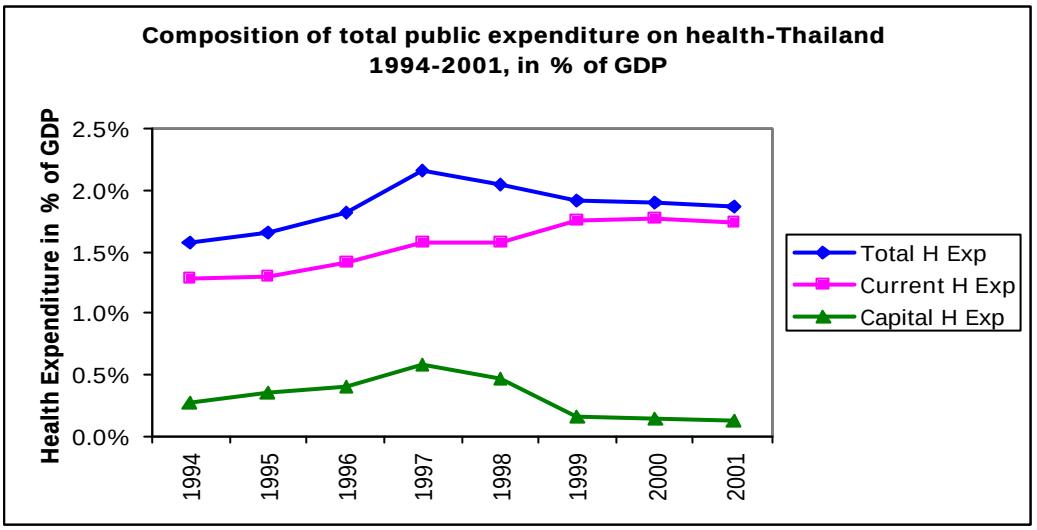
Source: Second version of National Health Budget Model for Thailand, Geneva, May 2004

It is obvious that the per capita health care cost of UC members and SSO members are considerably lower than the per capita cost in the other public schemes. It should be noted in particular that the expenditure of CSMBS members is roughly 176 per cent higher than that of UC members. People with social security coverage consume on average about 39 per cent more than the people with UC coverage. However, due to the tripartite financing of the SSO coverage the Government subsidizes the personal health

care of each social security member by about 703 Baht[3]. The public subsidy for the CSMBS members (i.e. active and retired civil servants and their dependents) is thus 4.8 times that of a SSO member and 2.7 times as high as for a UC member. The fact that in the above table neither the SSO nor the UC scheme come close to 100 per cent of average public expenditure per capita is explained by the fact that in addition to personal health care the Government finances public health services and the ministerial cost as well as still some part of the maintenance of and investment in the national health infrastructure which remains outside the accounts of the individual schemes.

The following figure 3 shows the developments of public health expenditure (in the definitional framework of the government accounts) from 1994 to 2001[4]. More details are provided in Annex table A1.

Figure 3:



Source: NHA 1994-2001

Total government expenditure as a percentage of GDP increased from a level of 17.0 per cent of GDP in 1994 to 19.7 and 18.2 per cent during the crisis years (1997 and 1998) and is now returning to pre-crisis levels. It is obvious that the Government managed to maintain – and even to increase slightly – the absolute level of current public health expenditure, only at the expense of capital expenditure that still has not recovered from the crisis shock.

It is obvious that the change to the UC system in 2001 has increased government spending on health care. The actual amount is difficult to determine as the counterfactual amount (i.e. government spending on health in the absence of the new UC scheme) is obviously unknown. But from the increase in spending levels between 2000 and 2003 one could conclude that the additional cost of the scheme might be in the order of 25 billion Baht per annum. That order of magnitude is confirmed by the IHPP estimates of

[3] The short-term benefit branch of the SSO has accumulated a substantial reserve (at the end of 2002 about 7.1 times total annual expenditure in 2002 or about 1.7 per cent of total GDP). Total contributions paid to the short-term branch as a whole exceeded expenditure in 2002 by about 22.6 per cent. That surplus has been fictitiously allocated to the different short-term branches in order to calculate the share of the government subsidy that is earmarked for health care. The total contribution income allocated to health care is thus 1720*1.226 Baht = 2108.7 Baht, of which one third is financed by the government, i.e. 702.9 Baht.

[4] Based on NHA 1994-2001

the dimension of household savings on out-of-pocket health expenditure. The amount was estimated at around 10 and 13 billion Baht for all households that were newly covered by the UC third party arrangement. Due to the differential take-up rates by income strata this is a substantial income transfer to the lower income households and confirms the MOH assessment that the reform has had substantial pro-poor effects. The difference between the 25 billion Baht expenditure increase and the size of household savings can be attributed to a real increase in utilisation and improved quality of care.

The UC scheme is not only a scheme that aims at financing access to health care for all – notably the poor – but also embodies further reform dimensions. For example, the advocacy of primary care providers, reinforcing proper referral systems, and active engagement in health promotion and prevention. The capitation contract model sends out a strong signal about the rational use of resources and hence efficiency gain. Capitation is not only a payment mechanism for providers; it is also a mechanism that allocates resources between provinces and provider facilities. After some debate on the disaggregation of the per capita amounts based on regional morbidity, urban-rural health infrastructure differences or age and sex composition of the population, the NHSO apparently prefers the application of a uniform rate given the fact that the observed and statistically known differences in overall regional utilization rates and average unit cost amounts may not be very substantial and differential rates are difficult to implement. Where such differences exist, it is not clear whether they can be attributed to morbidity differences or rather to the differential supply of health facilities.

It is obvious that resource allocation operating exclusively on the basis of the number of registered persons per provider network can lead to big shifts in facility budgets. Facilities in over-supplied affluent provinces might face huge reductions (due to their small population size) of their budgets while other poorer provinces with less supplies and larger population might experience a sudden increase in their budget. If the latter cannot attract a commensurate number of new health professionals they might end up with an over-dimensioned budget while still providing sub-standard quality services. While it may be expected that these allocative mismatches disappear over time as the capacities of the health infrastructure adapt gradually, tremendous short-term budgetary problems can emerge for individual facilities. The NHSO and the MOPH have thus decided to modify the strict allocation by capitation for an initial period of three years (2002-04). The staff cost of facilities has been temporarily excluded from the capitation payments so as to avoid immediate budget deficits in major facilities.

2.2 Analysis of current public health care financing strategies

This section sets out to delineate the principal structural features of the present health care system in Thailand, its assumed overall objective, and to provide an analysis of potential strategies that the Government could pursue to achieve that objective.

2.2.1 The principal financial architecture of the health care system in Thailand

Historically, Thailand has had a pluralistic system of health care financing. This reform makes it less pluralistic, combining the Low Income Scheme, the Voluntary Public Insurance (health card) and incorporating the uninsured under the same umbrella, and providing universal access to care for all Thai residents. The major elements of the Thai financing system - the UC, the CSMBS, the SSO and voluntary additional privately financed health care - are in theory mutually compatible and complementary. The different elements react like a system of communicating valves. The bigger the "market share" of the CSMBS, SSO or privately financed health care, the smaller the share of the

UC. By its nature the UC scheme is not really a universal health care scheme but rather a residual universal health care financing scheme, i.e. a scheme that covers all people who cannot obtain coverage from the other two schemes (CSMBS, SSO).

The UC scheme is new in so far as it establishes a concrete legal entitlement for all people to access health services and it abolishes virtually all financial barriers to access as co-payments are small and the needy are even exempted from this payment. That entitlement is backed up by a new allocation mechanism for public sector health care resources, i.e. the capitation payment, which should ensure that all provider networks receive a fixed budget for each person for whom they provide care. In its present state the UC scheme is clearly not a fully fledged health insurance scheme as it is not financed by contribution income. It is rather a variant of a National Health Service type of health care financing system which combines insurance elements (through legal benefit entitlements) and public service elements (through general revenue financing). The scheme has no earmarked resources it can rely on. Its resource base has to be re-negotiated in an annual government budgeting process. From the point of view of long-term scheme sustainability it is in the interests of the UC scheme to shrink as much as possible by conceding "market share" to the other two or three schemes. At the same time it appears logical to try to establish earmarked income sources that are isolated against annual budgetary competition. The latter would help to protect the resources for health care of the economically weakest sections of the population in times of fiscal difficulties or gloomy political supports.

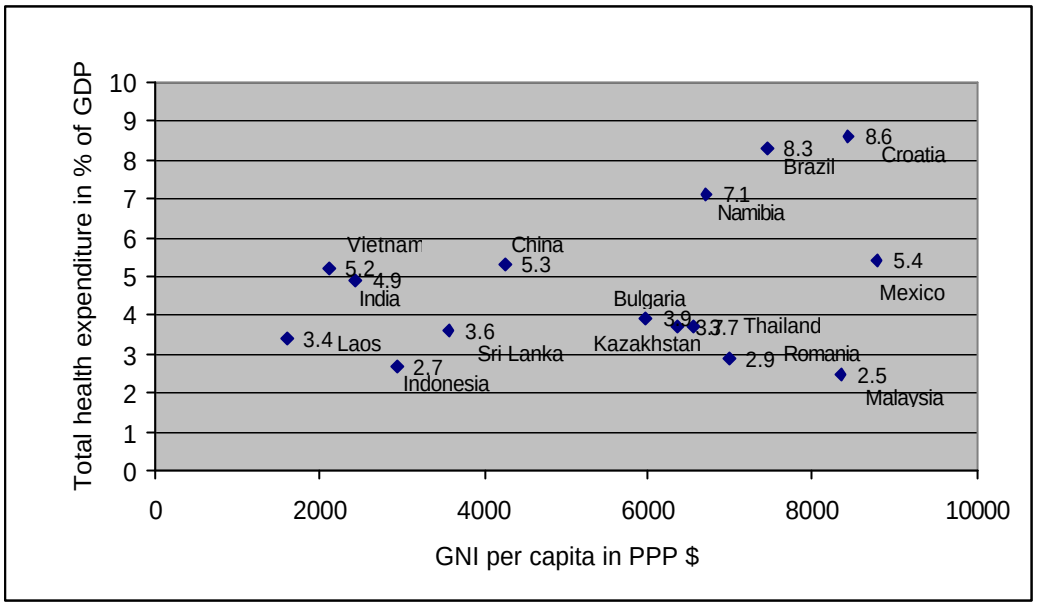
2.2.2 Overall objective of the health care financing system in Thailand

Though not spelt out in any policy statement, it is implicit that the central health policy objective in Thailand is to improve the health status of the population through the promotion of pro-health policies, the provision of effective public health services and the ensuring of access to curative health care of adequate quality for all. The corresponding objective of the health care financing system has not been clearly formulated. However, the objective can be deduced from the emerging financial architecture of the national health care financing system which in itself is a result of explicit policy decisions over the last one to one and a half decades as well as three further conditions. The first is the fact that Thailand's health care expenditure is still low by international standards (see figure 4). There are a number of developing and transition countries that – at similar levels of Gross National Income (GNI) per capita – spend a higher percentage of GDP on health than Thailand (for example, Namibia, China and Sri Lanka). The second is that Thailand's post crisis government budget is still negative. The third condition appears to be that the existence and proper operation of the UC scheme must not be jeopardized by political uncertainties.

The implicit health care financing objective of the Government as a whole appears to be

- to maximize (efficiently used) overall resources for health care, while
- minimizing the effects of public health care financing on the government's budgetary balance, and
- guaranteeing an adequate resource base for the UC scheme.

Figure 4: The relationship between Gross National Income per capita and health expenditure as a percentage of GDP, 2000/01



Source: WDR (2003) and WHR (2002).

2.2.3 Health financing strategies

The pursuance of the above (implicit) objective would logically call for a set of basic financing strategies in the health sector. The following sections identify the main strategies that can be pursued and analyze to what extent the Government is already exploring these avenues. The strategies fall largely into two categories: (1) reduction of government expenditure through leveraging resources from other financiers and (2) exploiting new sources of revenue for the publicly-financed health care sector.

Reduction of government expenditure (on UC) through the extension of SSO coverage

The active promotion of a rapid expansion of SSO coverage is one of the key policies to ensure the success of the UC scheme. Every SSO member is presently supported by a government subsidy of approximately 700 Baht per year. That per capita amount leverages an amount of about 1200 Baht per year of employer and worker contributions. A UC member costs the Government about 1308 Baht per year (in 2004). The greater the number of people that can be covered by the SSO the better it is for the Government. In this context it is surprising that the Government as a whole is not promoting the extension of SSO coverage more determinedly. SSO could cover the dependents of its members almost immediately without creating insurmountable administrative difficulties. This could bring an estimated additional 4.5 to 5 million people under the SSO umbrella and could lead to net savings of up to 6.5 billion Baht[5] per year. The concrete amount of savings depends on whether the actual contribution rate for the short-term benefits is actually sufficient to cover dependents. If so, then the full amount of the UC capitation for newly enrolled in the SSO could be saved. If not, then one third of the necessary contribution hike would have to be covered by the Government. Latest ILO calculations show that for the next decade expenditure for health care coverage for dependents could be financed from existing contribution income for short-term benefits

[5] Estimated values for 2003, 1308 Baht per capita for 5 million additional members.

(the contribution rate has just been increased to 4.5 per cent of insurable wages) and a planned gradual reduction of the – presently too high – reserve of the short term benefit branch.

Reduction of government expenditure through consolidating the cost of CSMBS membership

The Government should seek to contain the per capita health-care cost of people covered under the CSMBS scheme whose per capita expenditure exceeds that of the SSO and the UC by a very wide margin. The reason for the high per capita cost of the CSMBS is obviously failing cost containment in a fee-for-service environment. There is *a priori* little reason why society should spend more on health care for a public sector worker than on health care for a private sector SSO worker or a UC member. One might argue that free health care is a part of the remuneration package (fringe benefit) of the public sector. Even if one were to follow that argument, the per capita cost differentials between covered persons in UC, SSO and CSMBS would still be unacceptable. The Government should have a vested interest to:

- introduce stringent cost-containment measures into the CSMBS scheme which demonstrated failure after introducing co-payment for non-essential drug lists and private room and board beyond 13 days,
- or to make the prime users of the service contribute to the costs they incur,
- or to reform payment methods from fee-for-service to a close-end expenditure such as capitation for ambulatory care or global budget with DRG for inpatient services.

However, little effort has been made to date to pursue these options.

Reducing government expenditure through increasing private contributions to health care financing

As long as income differentials in the country remain big and high quality western standard medical care is available for the high income group, there will always be a group of people (presently an estimated 5 million) who will seek care from private sector providers and will finance their care either out-of-pocket or through private insurance. As long as that group has no profound influence on the overall price level of health care in the country this would have a positive (savings) effect on the UC scheme.

On the other hand this group possibly also avoids membership of the SSO which could in theory weaken the level of cross subsidization from the rich to the poor. However, in Thailand the high-income group (i.e. the 10th income decile) spends three times as much on privately financed health care as the middle income group (i.e. the sixth decile)[6] to which most likely the bulk of the SSO members belong. This might indicate that a forced inclusion of the richer (largely self-employed) into the SSO might have no or an adverse effect on the financial equilibrium of the SSO due to a potentially regressive contribution to benefit ratio. Such regressive relationships can be observed in many social health insurance schemes. Should, however, the existence of a private insurance market force up income and price levels in the health sector then it has a negative overall efficiency effect on the sector. Such an effect could occur, for example, if the public and private

[6] Data from the Socio-economic survey of last quarter 2000, National Statistical Office.

sectors compete for scarce human resources in the sector and this competition forces up the income level of health care professionals as a result.

The savings and the cost increase effect might cancel each other out or have an overall negative cost implication. The potentially negative cost effect of private health insurance can be contained through a common binding fee regulating the price of services at point of delivery for both the private and public sectors (such as, for example, the common fee schedule for outpatient and inpatient care in Germany). More detailed studies would be needed to investigate the problem. Such in-depth investigation is clearly outside the scope of this report. However, a rational overall national health care financing strategy should include an explicitly defined role for the private sector which has been determined by overall financing considerations. It seems that this has not been done so far.

Exploiting new sources of revenue for the health care system

Article 39 of the National Health Security Act 2002 (Sources of the National Health Security Fund) which established the UC scheme lists eight potential sources of income for the UC scheme:

(i) general revenues

(ii) contributions from local governments

(iii) co-payments by patients

(iv) fines from violation of the act

(v) donations

(vi) interest on assets

(vii) other cash income earned

(viii) contributions by beneficiaries

Presently the scheme is almost fully financed by general revenues except for a small amount of revenues coming from co-payments, i.e. only about 2.4 per cent of total revenue of the UC scheme (IHPP data).

The IHPP has concluded a quick study to evaluate the different options of generating more revenue for health care. Twenty key informants (KIs, health care experts) were asked to evaluate the feasibility of the most promising income sources. Income sources (iv), (v), (vi), (vii) were deemed to have only a limited financial potential. Other potential sources were ranked by preference and by weighting the assessment criteria, namely the political feasibility, social acceptance, equity, financial sustainability and programmatic (i.e. administrative) feasibility. The results are displayed in table 2.

The key informant workgroup seems to have a preference for the various tax sources, while they judge the feasibility of contributions as rather low. General taxation and "sin-taxes" on alcohol and tobacco are the front-runners. Co-payments by patients seem to figure surprisingly high on the preference list despite the fact that they presently only constitute a minor source of income for the UC scheme and an extraordinary increase by more than 100 per cent or so could clearly trigger adverse political reactions. It also ignores the fact that the price-elasticity of health care demand in the bottom decile of

income distribution appears to be quite high.[7] Hence a substantial increase of co-payment would have an over-proportionally deterrent effect on the poor.

Table 2: Assessment by a national working group of the feasibility of creating additional income sources (weighting and preference factors), score 1-5

	(A)	(B)	(C)	(D)	(E)	
Average weighted score of 20 answers	**Political**	**Social acceptance**	**Equity**	**Financial sustainability**	**Programmatic feasibility**	**Total**
Clause 1: General tax	1.26	0.47	0.70	0.76	0.73	**3.92**
Clause 1: Personal health tax	0.39	0.20	0.56	0.62	0.49	**2.26**
Clause 1: VAT	0.31	0.20	0.41	0.61	0.65	**2.19**
Clause 1: Sin tax	**0.71**	**0.41**	0.60	**0.68**	**0.69**	**3.09**
Clause 2: Contributions by local Government	0.68	0.31	**0.63**	0.61	0.57	**2.81**
Clause 3: Co-payment by patient	0.65	0.33	0.47	**0.68**	0.59	**2.73**
Clause 8: Contribution	0.37	0.17	0.48	0.46	0.20	**1.68**
Total	**4.37**	**2.09**	**3.86**	**4.43**	**3.93**	**18.67**

Source: IHPP, March 2004

Contributions by beneficiaries appear to be judged as administratively infeasible. The feasibility of a personal health tax is also not rated very high. Increases in VAT are deemed politically infeasible. The background is that the Government has just turned down a recommendation by the International Monetary Fund (IMF) to increase VAT (currently at 7 per cent). It is obviously widely perceived as an inequitable tax. On the contrary "sin taxes" appear to be widely accepted as a possible and feasible option. The Ministry of Finance (MOF) confirmed that the collection of additional excise tax is administratively simple. Contributions from local government are considered by the KIs to have rather positive potential. The MOF would assess this rather skeptically unless the Government were to try to recover some of the envisaged revenue transfers to the local authorities (provincial, municipality and sub-district administrations) in the context of the decentralization of tax expenditure (which should be effective by 2007 according to the Decentralization Act). There seem to remain doubts among public finance experts whether local government can effectively raise sizeable amounts of new original revenue.

The issue of collecting contributions or a personal health tax deserves further discussion. There seems to be widespread unanimity that contribution collection would pose – at least in the short run – insurmountable administrative obstacles. A general personal

[7] This is indicated by the fact that for outpatient and inpatient care the percentage of people covered under the UC scheme that are actually using UC financed services is higher for the subgroup of people who are exempted from the 30 Baht payment than for those who are not exempted. Data source: Health and welfare survey 2003, as provided by IHPP.

health tax is also not considered to be administratively easy but receives a surprisingly high vote on equity. Personal health tax and contributions are close relatives; both can only be collected from people who have assessable income that would allow them to contribute. Personal income tax is collected as of 2003 only from taxable income over 80,000 Baht. In a typical four person household (two adults, two children) this income would amount to less than 2 US$ a day per adult equivalent (weighting children's consumption requirements as half that of adults). On the other hand, it is only slightly lower than the average contributory wage in the SSO. However, on average there may be more than one earner in the household with at least one SSO member. The potential to collect contributions or additional taxes from the group with a personal income of less than 80,000 Baht who are not contributing to the SSO and thus should belong to the (difficult to tax) informal sector might not be high. The higher-income group should to a large extent belong to the SSO and thus would not be subject to new contributions. Taxing all higher income earners regardless of whether they already contribute to the SSO raises equity issues affiliated with double taxation. Personal health tax or contributions could thus, in principle, only be raised from those who have higher income and are not members of SSO.

However, even with a lower tax-free income of 50,000 Baht per annum in 2002 only about 11.3 percent of all government revenues stemmed from personal income tax (a volume of 108.4 billion Baht)[8]. That means the potential volume of additional resources that could be collected through additional health taxes would probably not be very high. A general five percent increase of direct personal taxes would only generate about 5.5 billion Baht in new tax revenues. There is also no reason to believe that a contribution (either an absolute flat amount per capita or a uniform percentage rate of taxable earnings) would fare much better.

However, there is a systematic reason why an effort should be made to collect contributions or health taxes from persons not covered under the SSO or the CSMBS (provided they will contribute to their health care cost in future). The relatively small potential direct revenue generated from contributions or personal health taxes should not eclipse the fact that the indirect cost of non-collection might be substantial. While there may be reasons why the Government is not pushing hard for a rapid explicit extension of SSO coverage there is no reason for it to maintain a structural situation in the health financing schemes where the UC implicitly poses a disincentive for the extension of the SSO. As long as people face relatively little health care cost under the UC scheme for benefits comparable to the SSO their incentive to join or pushing for inclusion under SSO coverage remains weak. The existing financing structure of the system as a whole thus works intrinsically against the long-term systemic consolidation of UC finances.

Concluding observations

The analysis of the above health financing strategies shows that the health financing policy – even if we assume that it attempts to achieve the implicit objective of income maximization for the health sector – does suffer from a lack of concrete targets. It is not clear, for example,

- what percentage of the overall national health expenditure should be financed from public or private sources, or

[8] Data provided by Dr. Arunanondchai of the Fiscal Policy Research Institute of Thailand, MOF; March 2004.

- what percentage of public health expenditure is considered a general societal responsibility and should thus be financed from general taxation as opposed to the part of overall public health expenditure to be financed by those who consume the respective services or those who cause the morbidity underlying the demand for health services, or

- whether there is an explicit policy objective to generate from the potential sources of income listed in the National Health Insurance Act sufficient revenue to put the UC into (scheme specific) financial equilibrium.

The last point is of particular relevance for this report which seeks to develop a long-term resource strategy for the UC scheme.

The experience of the last decade, notably during and after the crisis, shows that under the present health care financing system, the annual amount that the public sector devotes to health care is vulnerable to budgetary pressures. In times of economic downturn the competition for resources in the public sector gets fiercer and health care can easily be among the prime losers (as was capital health expenditure during and in the aftermath of the financial crisis). Public systems that have no earmarked income resources (such as, for example; national health service systems) are more vulnerable than schemes which have earmarked income (such as Social Health Insurance Schemes). Historically the latter case can easily be demonstrated by comparing the resource mobilization capacity of the National Health Service (NHS) in the UK with that of national social health insurance systems, for example, in Austria, Belgium, France and Germany. It may well be that in the case of these countries not all resources have been spent efficiently but as long as health expenditure – measured as a percentage of GDP in Thailand – has not even reached two thirds of the respective figure in the UK this may not be a prime concern.

Based on the preceding analysis and conclusions the following section proposes a long-term health care financing strategy for the UC scheme.

3. A proposed financing strategy: A UC fund for the UC scheme

Earmarking funds for the UC scheme would clearly help to isolate the finances of the scheme against budgetary competition in times where public resources are scarce or are deemed scarce. As the above-mentioned Western European examples show, earmarking financial resources for personal health care services through contribution financing is clearly a successful strategy. Cost containment in funds with earmarked resources – on the other hand - poses a challenge which has to be addressed in particular through an efficient and rigorous provider payment mechanism. It is worth noting in this context, that the UC scheme has adopted capitation as its provider payment mechanism and hence a mechanism with one of the greatest possible potential for cost containment[9]. On the other hand, earmarking funds for health care also has a disciplinary budgetary effect on the health care delivery system itself. Cost containment can only be successful if budgets have credible limits. Credible limits can clearly be set by earmarking resources.

The proposal here is to introduce a UC Fund for the UC scheme with earmarked sources of income. The explicit financial objective of the Fund should be to achieve long-term financial equilibrium between earmarked revenues and the expenditure of the Fund. The NHSO is the logical administrator of the Fund.

The preferential source of income for the Fund would be contributions. However, they are extremely difficult to collect from the UC beneficiaries, and collection and enforcement costs could easily be prohibitive and inefficient. Increased reliance on user fees would actually deter the utilization of those who the scheme primarily tries to protect, i.e. the poor and the seriously ill.

An earmarking strategy is suggested, combining the basic solidarity idea behind contribution financing with a philosophy that seeks to place the burden of health care financing on those who cause a substantial part of curative health expenditure and societal harm, i.e. people who smoke and consume alcohol.

The earmarked sources of income of the UC scheme could be:

- a personal health tax, to be collected as a surcharge to income tax for those who do not contribute to the SSO and who are not members of the CSMBS[10]; the average amount of that tax per tax-payer should be equal to the capitation of the UC scheme (this does not mean that all tax-payers have to pay a flat amount; it could also be a flat rate surcharge to income tax yielding the same average amount);

- a two-third share of the revenue from tax on tobacco; and

- a fifty percent share of revenue from tax on alcohol and beer.

[9] See Normand and Weber (1994), p. 77.

[10] CSMBS is currently a non-contributory scheme; members of the CSMBS would in the future contribute to the CSMBS Fund.

In order to compensate the Government for its loss of financial manoeuvrability due to the earmarking of a part of its income for health care, it is suggested to gradually increase the level of the "sin tax" on tobacco by up to 100 per cent and the "sin tax" on beer and alcohol by 50 per cent (implicitly accepting that the harm caused by tobacco is greater than that caused by alcohol). However, this would not simply raise more revenue; it is obvious that an increase of this order in excise tax might well (from a health policy point of view) have a deterrent effect on consumption. With the result that, due to the price elasticity of consumption the full effect of the tax increase of respectively two-thirds and 50 percent will not be realized. The assumed net effect has been modelled for this analysis (see Chapter 4).

Two additional measures are suggested to reduce the government burden for health care:

- to introduce a contribution for civil servants to their health care costs. The contribution should – in parallel to the financial regulations of the SSO - amount to one third of the health care costs of the CSMBS. The other two-thirds would be shouldered by the government and public employers.

- the SSO should cover dependents (i.e. children under 18 and non-working spouses) as soon as possible. Latest ILO calculations show that this can be done without increasing the contribution rate of the short-term benefit branch.

4. Tentative analysis of the financial implications of a UC fund

The financial implications of the above proposal can only be estimated through a national health budgeting exercise which also analyses the potential effects on the government budget. The mission thus had to construct a first version of a national health budget (called an abridged national health budget) model during the mission in BKK, 8-12 March 2004. The model definitely requires further refinement by the IHPP and the ILO, and agreement was reached to further develop the methodology during 15-20 May 2004 at ILO GVA. Three main objectives of the second mission were as follows:

- update data in the projection and produce a second version of the projection
- capacity strengthening for IHPP staff on health care expenditure and revenue projection, enabling IHPP staff to subsequently handle the projection by their own staff.
- revise A Technical Note to the Government on Financing Universal Health Care Coverage in Thailand according to the second version of the projection.

The second version of a national health budget was developed based on the first version. It is robust enough to draw tentative conclusions on the likely future financial development of the health sector under status quo as well as under the above financing proposals. The model is designed to become a permanent tool for the macro management of health sector finances in the country. The IHPP aims to further develop the methodology, such as disaggregating the utilization rate by gender and age specifics, verifying many of the assumptions used in the projection with experts or specialists in the field, e.g. an economist of NESDB involved in macro-economic growth and labour market, soliciting opinions from all stakeholders and conducting some ground work research in order to come up with concrete and feasible financial options in the final version of the projection by early 2005, at which stage it will again report to ILO.

A national health budget consists of two elements. The first is a compilation of all statistically observed national health expenditure items and all resource items of the health sector in the country for one or several observation years. The second part is a projection model for expenditure and revenue for a short- to medium term future period. The whole national health budget is a governance tool for the health sector and for public finance management. In its routine managerial application, the projection model serves as an early warning system, indicating if and when the Government should react to emerging financial problems in the health sector. In addition, national health budget analyses also permit the simulation of financial effects of reforms in the health sector and thus are an instrument that can support health financing policy formulation. The latter is generally done by comparing a scenario of the legal and administrative status quo with a scenario that simulates the effects of potential legal modifications of the delivery or financing system under an identical set of demographic, economic and labour market assumptions.

4.1 Methodology

The basic structure of the model is mapped out in the following figure 5. The basic modelling philosophy follows the pragmatic modelling philosophy of the ILO's social

budgeting models[11]. Instead of building a complete national social budget encompassing all social transfers schemes in Thailand, the non-health parts of a social budget were excluded and the budgetary analysis was limited to the health sector and its impact on the government budget.

The model provides classical and pragmatic "if–then" projections, i.e. it depends on exogenous demographic and economic assumptions and then simulates their impact on health expenditure and revenues and the government budget. Observation years are 2002 and 2003 and projection years are 2004 to 2020.

The model consist of four deterministic sub-models that are driven by a set of exogenous assumptions that have to be compatible with the assumptions and results of the government's macro-economic projections as well as the demographic projections of the NESDB.

- This first sub-model is a demographic model that projects the population and the labour force on the basis of assumptions on future developments of fertility, mortality and labour force participation rates.

- The second sub-model is an economic model that derives employment and wage data from exogenous assumptions on growth, labour productivity and the wage share at GDP.

- The third sub-model is a health budget model which projects health expenditure of the four major financing schemes (UC, SSO, CSMBS and privately-funded health care) and health resources (contributions to SSO and WCS, out-of-pocket and other private outlays, and general taxation). The two central result variables are overall national health expenditure and the resource requirement from general revenues.

- The last sub-model, the government model, links public health expenditure and the general revenue resource requirement to government budget projections. The central result variable is the government annual budget deficit.

This (abridged) health budget model thus allows the tracing of the effects of changes in the health delivery and financing system to overall national health expenditure and the government's budgetary balance, i.e. to one global health system performance indicator and a public finance performance indicator. The first version was supplied to the IHPP, so that all further details on the modelling methodology can be derived directly from the model.

The first version of the model is based on prior work done by a group of students of the ILO/Maastricht University Masters Programme in Social Protection Financing (led by Walaiporn Patcharanarumol) and the projections of the IHPP in the framework of the national medium term expenditure framework (MTEF) (led by Viroj Tangcharoensathien et al). The accounting frame for the observation year is built on the national health account (NHA) (led by Chitpranee Vasavid et al) that has been developed by the IHPP for 1994-2001.

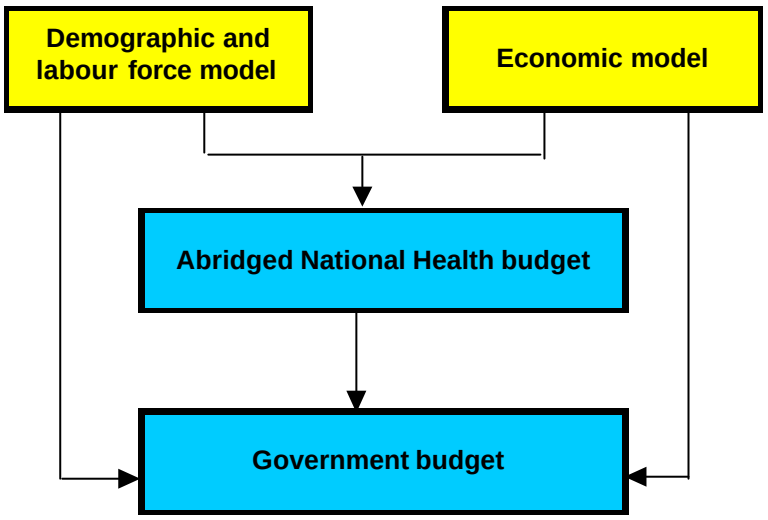
The second version was produced during the mission to ILO Geneva by Walaiporn Patcharanarumol (IHPP staff) under the close supervision of Michael Cichon, 15-20 May 2004. This developed version is based on the first version. Fundamental data is updated to

[11] As described in Scholz et al. (2000)

the extent that data were available. The demographic model was improved by using formal population projections produced by NESDB. Computation was based on single age and disaggregated by gender. The labour force participation rate was updated with Labour Force Survey data, 2003, conducted by NSO. Some assumptions in the Economic Model were adjusted. The Abridged National Health Budget was based on updated NHA 1994-2001 and MTEF. The Result model was linked between the Abridged National Health Budget and the Government Budget. Moreover, all models were combined together in one Excel workbook in order to avoid the technical errors of updating linkages among workbooks. Each model was classified by different tab colours.

Two model scenarios were developed. The first (status-quo scenario or variant) reflects the legal status quo. The second scenario (reform or UC scenario or variant) uses identical demographic and economic assumptions and differs only in the health budget sub-model which simulates the introduction of the UC Fund and the implementation of the two major cost reducing measures in the perspective of NHSO (extension of SSO coverage and CSMBS contributions) after 2005.

Figure 5: Structure of the first version of the National Health Budget Model for Thailand



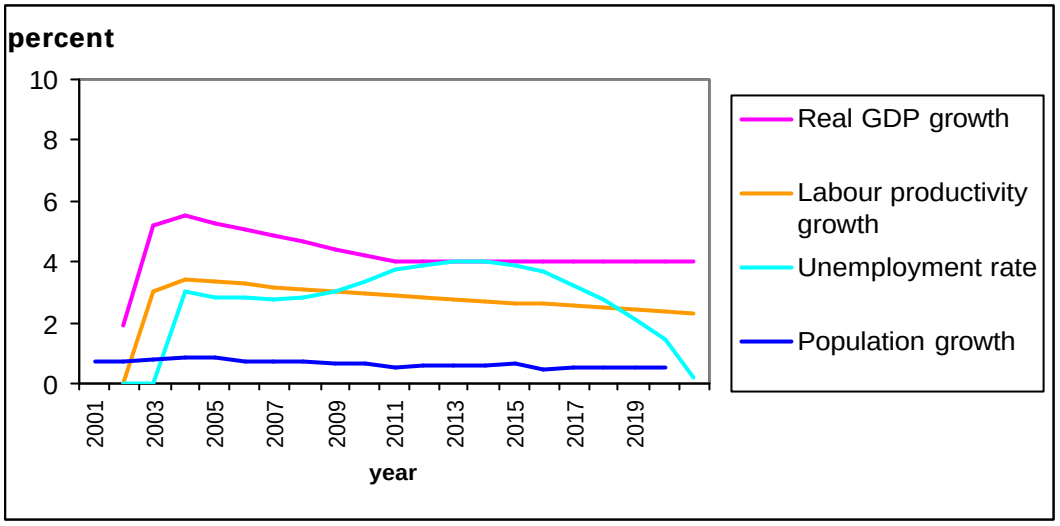
4.2 Main assumptions

The key demographic and economic assumptions are listed in Annex table A2. The most important assumptions are economic growth and labour productivity. Together with the labour force participation rate they determine the level of employment and the average wage increase. The following figure 6 shows that the country's growth rates may in future be limited by demographic development which limits the size of the labour force. Even at - by international standards very high – long-term average productivity increases (of more than 3 per cent per annum) as well as increased labour force participation, the model shows a very fast convergence towards full employment and future expansion of the economy will probably be hampered by labour shortage. That can possibly be avoided at a later stage if low productivity informal sector labour can be transformed into higher productivity formal sector labour at a much faster rate than observed hitherto.

The model assumptions would need further discussions with experts from economic research institutes to review the productivity, labour force participation and migration assumptions in the model. IHPP is mandated to work with partners to review these indicators. For the time being it is assumed here that the economy will approach a more modest growth path of about 4 per cent in real terms by 2010 and stay constant up to the

end of the next decade. In the Thai circumstances, this can be considered a rather prudent assumption.

Figure 6: The assumed development of key economic variables for Thailand, 2002-2020



Further assumptions had to be made with respect to the projection of health care costs. Projections are anchored to the statistically observed values of 2002. The model then applies change variables (also called "drivers") to the initial values and all later projection years (2004-2020). The main assumptions for these drivers are:

- It is assumed that the capitation fees in the UC scheme increase in line with a unit cost indicator which is a composite of medical inflation (estimated at a 1 per cent-point higher than the Consumer Price Index-CPI and average wage increase), and a utilization indicator which is a composite of an age-related utilization factor and a general trend increase of an assumed 2 per cent for the first few years and then one per cent per annum for 2005-2020 (to take account *inter alia* of expected HIV/AIDS related utilization rates);

- CSMBS expenditure increases in line with CPI plus an additional real increase of 5 per cent per annum (which is lower than the statistically observed residual increase of 8 per cent between 1992 and 2002),

- SSO expenditure increases according to the same principle as the UC expenditure but an age-specific utilization indicator has been constructed,

- contributions to the SSO increase in line with the increase of the projected number of private sector employees and the average wage in the economy,

- Out-of-pocket payments by households and co-payments - after a decrease in 2002 (as predicted by IHPP's MTEF calculations) due to the introduction of the UC scheme, increase in line with nominal GDP growth. This component is unstable, and changes can occur in both directions (i.e. increases or reductions). It is arguable that revenue generated by out-of-pocket payments and co-payments may decrease due to a higher uptake of UC benefits and an increase in public health spending, or may increase due to the luxury goods of the health service being sought by the better-off. IHPP will closely monitor by using SES 2004 data which will be produced next year by NSO.

The projections for the government budget use the growth rate of nominal GDP as the main driver for all income and revenue items of the central government accounts that are not driven by wages (such as income tax) and are not imported from the abridged health budget sub-model. Further assumptions are documented in the model itself.

For the reform scenario which simulates the introduction of the UC Fund the following structural assumptions have been made:

- the 100 per cent hike in tobacco tax will lead to a 20 per cent decrease in consumption, meaning that overall tobacco tax revenue will increase by only 60 per cent[12];
- the 50 per cent increase of alcohol and beer tax will also lead to a reduction of consumption by 20 per cent, again meaning that the net increase of alcohol and beer tax will only amount to around 20 per cent (implying that the consumption of alcohol is more elastic to price than the consumption of tobacco)[12];
- the model simulates a gradual increase of the tax hikes over four years starting 2005; in the first year only 25 per cent of the additional taxes will be collected, in the second year 50 per cent, in the third year 75 per cent and in the fourth year 100 per cent of the potential full new revenue will be collected;
- the new personal health tax and the new contributions for CSMBS members are phased in at the same pace;
- the inclusion of dependents into SSO coverage (an estimated number of 6 million people) is simulated to fully take place in 2005 without a phase-in period.

All the above assumptions should be reviewed at the same time as the second model version is reviewed and refined by IHPP. The feasibility of the assumptions will be verified with experts such as specialists from SSO, MOF.

4.3 Results

As has been pointed out earlier, the results of the model are only indicative as this is only a very crude version of what is to be developed into a full national health budget model by IHPP under the technical support of ILO. However the assumptions made are sufficiently prudent, so the present results of the model can be considered sufficiently robust to draw a first set of conclusions about the financing strategy that has been proposed in this report.

The central results of the projections are summarized in the following figures. More details are contained in Annex tables A3 – A8. The model estimates show that the overall health care expenditure in the country –measured as a percentage of GDP – will rise by about 0.3 per cent of GDP over the next half decade starting from an initial present level of around 3.5 per cent of GDP. This is largely an effect of two factors: the assumed substantial real GDP growth rates over the next decade and the fact that the cost development of the major share of public health expenditure is contained through the use of the capitation mechanism which is exercising an overall cost-containment effect on the health financing

[12] This is an implicit elasticity of -0.2 for tobacco and -0.4 for alcoholic beverages. The latter figure is probably close to the mean weighted average for all alcoholic beverages. The elasticity for tobacco is assumed.

system as a whole. Total national expenditure is expected to slowly increase back to the original level up until 2020 as GDP growth rates decline.

For the "status quo", the general revenue share in financing total health expenditure stagnates throughout the period at a level of 1.98 to 2.17 per cent of GDP. This would not pose a major problem, if the overall budgetary balance were projected to remain positive throughout the projection period. However, the model (prudently) suggests that the government budget remains negative throughout the projection period, to a minimum deficit level of 1.2 per cent of GDP in 2020. The Ministry of Finance - more optimistically - assumes that the budget will turn positive over the years but that it will reach a minimum deficit at the end of the considered period in this model. It could well be that this health budget model is too pessimistic. In any case, it can be safely assumed that the trend towards tighter budgetary situations will recommence at the end of the decade if all our assumptions – cum *granu salis* – hold true. In that situation the health sector might come under renewed fiscal pressure. It would clearly be preferable if the UC Fund had been introduced by that time.

The first scenario simulates the effects of the suggested revenue increases and cost reductions for the Government and the introduction of the UC Fund. The effects (see Annex tables A4 and A6) are that the general revenue share of overall health care financing declines over the next two decades to a level of 1.5 per cent of GDP in 2020 and the overall government deficit decreases, remaining at a slightly negative level till the end of the projection period at 0.55 per cent of GDP.

The second scenario was produced based on the assumption that SSO expand coverage to non-work spouse and dependents (estimated at 6 million beneficiaries) in 2005. When SSO expand their coverage without any increase in contribution and government does not introduce any additional taxes, the effects are a reduction in the Government health care budget subsidy from 2.17 per cent to 1.99 per cent of GDP by the end of the projection.

The first and second scenarios were combined together into the third scenario. The Government decreases its budget for health care financing from 2.17 per cent to 1.35 per cent of GDP by the end of the projection period when SSO expands its coverage to spouse and dependents and introduces additional taxes.

Figure 7:

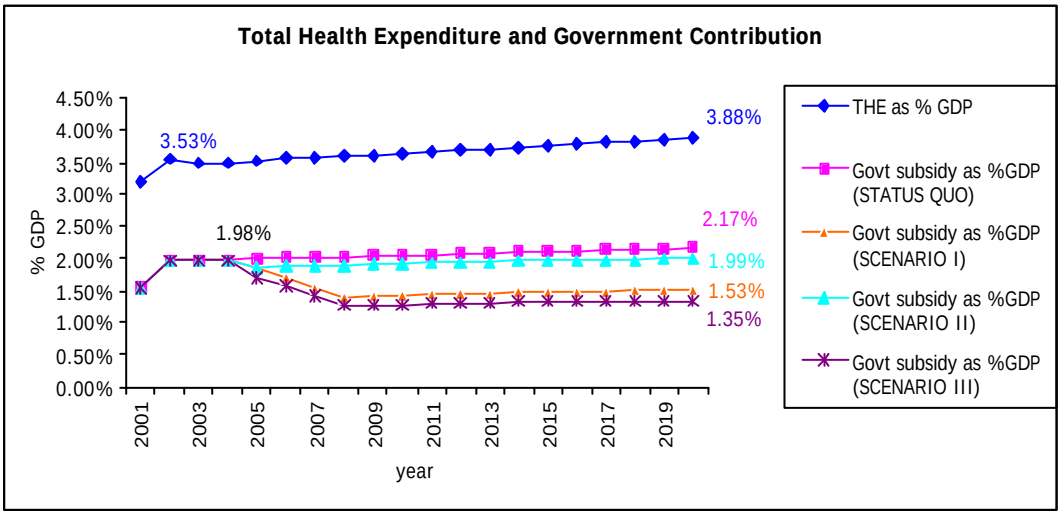
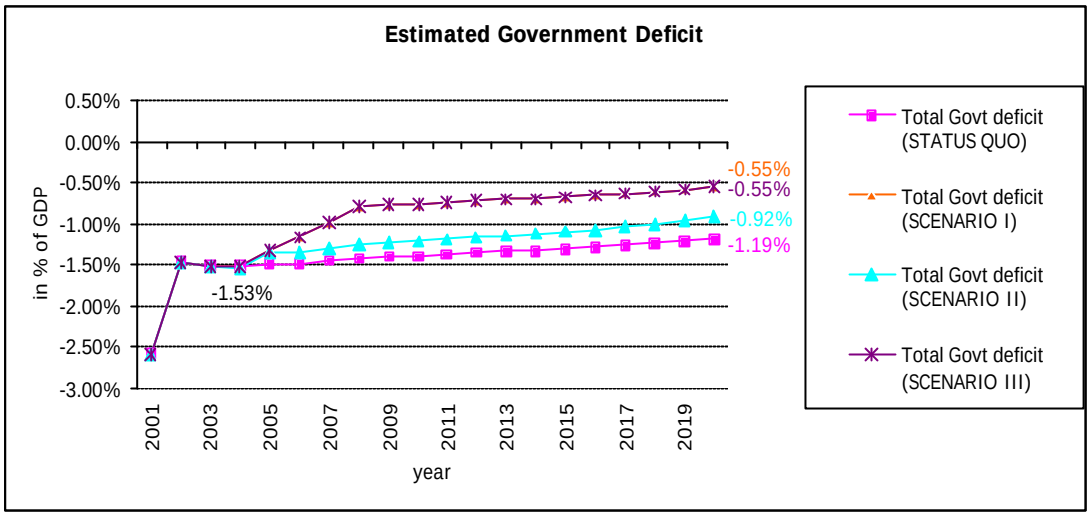


Figure 8:



The following figures show the development of the new UC Fund with a simulated phasing in of the new revenues as of 2005.

Figure 9:

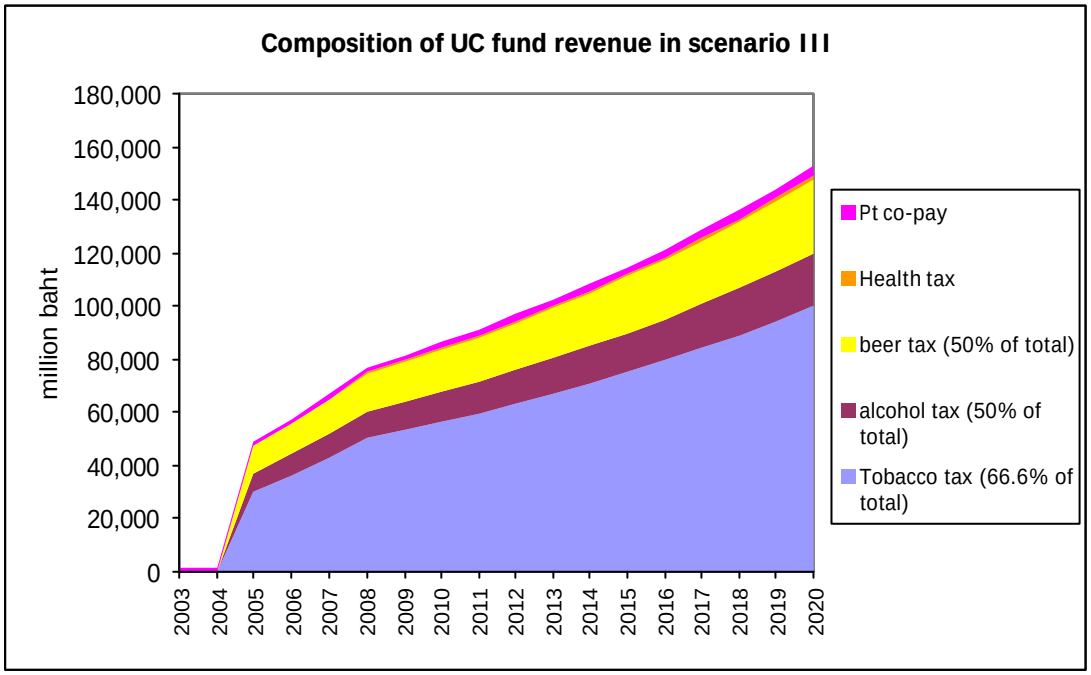
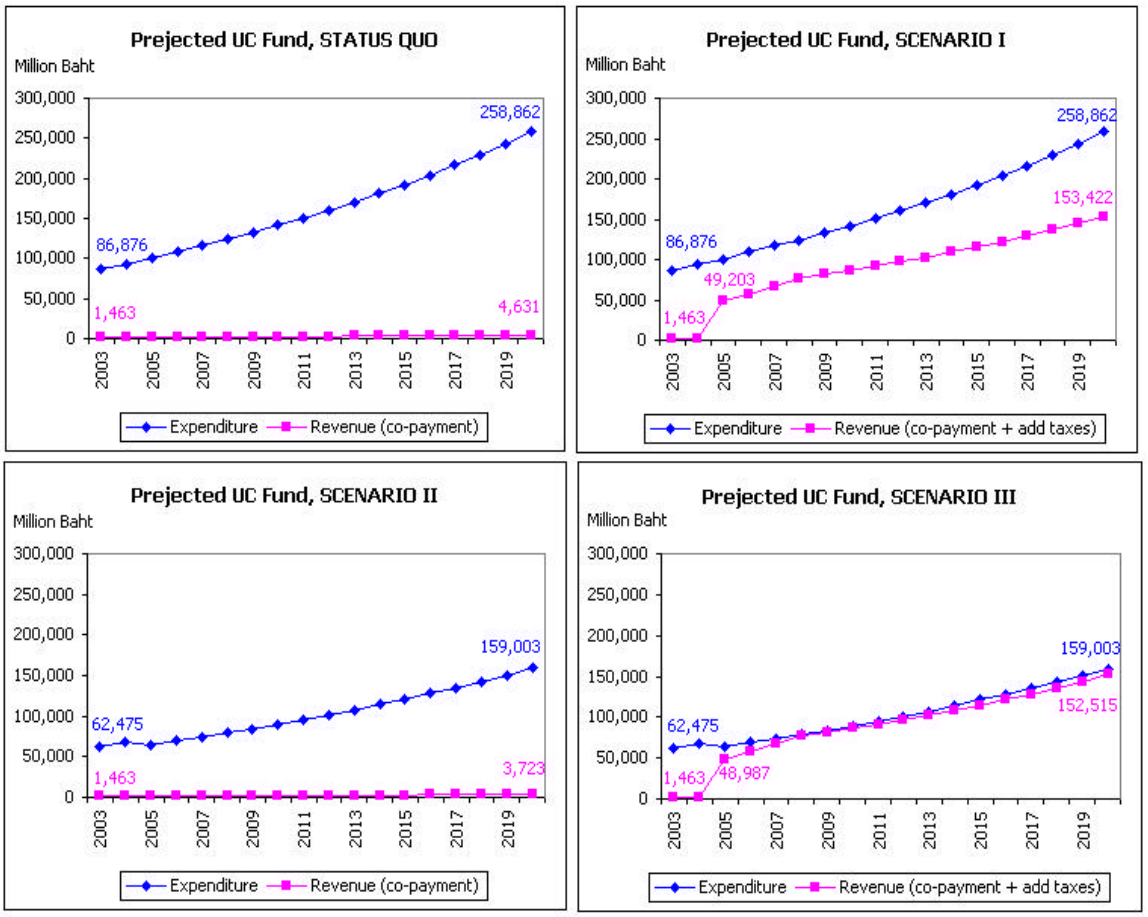


Figure 10:



Note: Scenario I = introduce additional taxes

Scenario II = SSO expand coverage to dependents

Scenario III = introduce additional taxes and expand SSS coverage to dependents

It is obvious that the tobacco tax would most likely constitute the bulk of the Fund's revenues. At the chosen pace of the phasing-in process it is expected that the Fund's balance will minimize negative balance and close to zero balance about four years after its introduction in scenario III. The simulated start year (2005) was chosen here only for illustrative purposes and is – obviously - not very realistic and the introduction might be much later. According to the composite revenue earned from the suggested revenue items, government subsidy is significantly minimized compared to the status quo. It is reasonable to assume that a small amount of government subsidy plus additional taxes or other earned revenues (for example, through a modification of the reimbursement of the UC scheme to medical expenses caused by road accidents) are sufficient to put the Fund into structural financial equilibrium.

5. Conclusions and next steps

The UC scheme has been a success. It is rapidly covering an increasing number of people who previously had de facto (either due to financial barriers or barriers of availability of services) only limited access to health services. It has increased the overall level of national health care cost by about 20-25 billion Baht on an annual basis. However, it has - at the same time - adopted capitation as a simultaneous provider payment mechanism and as a resource allocation mechanism. This approach has all the hallmarks of an effective long-term cost containment strategy which should simultaneously force the system into a higher degree of allocative efficiency. The advocacy of more extensive use of the primary care provider network should result in increased overall system efficiency.

This report argues that as long as the UC scheme depends entirely on general revenue financing it will remain vulnerable to budgetary competition and political manipulation rather than evidence on utilization and cost of services– even if it has effective inbuilt cost containment mechanisms. The way for the country to better isolate the resources for personal health care against budgetary pressures and competition is to create a UC Fund which is fuelled by earmarked resources. The indicative health budget analyses that were undertaken showed that the Fund would probably be self-sustainable if two thirds of the tobacco tax revenues in the country, and 50 per cent of the excise tax on alcohol and beer together with a personal health tax for all people that are not members of the CSMBS and the SSO were earmarked for the Fund.

It is argued here that an increase of the tobacco tax by up to 100 per cent and on beer and alcohol taxes by 50 per cent, as well as cost savings due to CSMBS contributions and an expansion of SSO membership would probably more than compensate the Government for the income it would otherwise "pay" to the UC Fund. The discussion with experts of the MOF during the mission showed that this way of financing would seem to have the least negative economic and fiscal externalities.

A working group of the IHPP and the ILO has consequently developed the following further timetable for the promotion of the idea of the UC Fund and its possible introduction. The group reckoned that the UC Fund could become operational in FY 2009, i.e. in about five years time.

Table 3: A tentative timetable for the implementation of the UC Fund

	Period	In charge
1. ILO technical reports and the first version of modelling to the IHPP	End March 2004	ILO and IHPP
2. Circulation of the ILO report among stakeholders in Thailand, comments and feedback	By mid April 2004	IHPP
3. Peer review with technical people in the ILO and develop the second version of modelling by IHPP staff	15-20 May 2004	IHPP and ILO
4. IHPP technical report to ILO	June 2004	IHPP
5. Verification with key partners on baseline assumptions and models, MOF and series of workshops on alternative sources of UC fund with major technical partners, NHSO, SSO, CSMBS, NESDB	The whole month of July and August 2004 consensus on assumption used in modelling	IHPP
6. Final version of modelling with improvement as recommended by ILO	The end of October 2004	IHPP
7. Publication in journals	November 2004	IHPP and ILO
8. Feasibility study of each scenario quoted in model	November-December 2004	IHPP
9. Ground work on sub-study such as co-payment analysis, Traffic Accident Protection Reform, price elasticity of tobacco, beer and alcohol	January-March 2005	IHPP
10. Analysis and synthesis for Long Term Financing of UC	April 2005	IHPP
11. Develop strategy and implementation plan for Long Term Financing Reform (requiring technical support from ILO)	May-August 2005	IHPP
12. Media advocacies	After each series of workshops	NHSO
13. Cabinet informed on goals, strategies to achieve UC Fund	When public forms their consensus on UC Fund	NHSO
14. Draft Royal Decree according to the Excise Act, CSMBS and draft amendment of Revenue Act	By 2007	NHSO
15. Legislative procedures in the House and Senate	1 year from cabinet proposal to the House	NHSO
16. Enactment of the Decree and Law	FY 2009	NHSO

Principle investigators from IHPP are Mrs Walaiporn and Dr.Viroj.

6. List of sources and references

Cichon, M. et al. 1999. *Modelling in health care finance – A compendium of quantitative techniques for health care financing*, (ILO/ISSA, Geneva).

Fiscal Policy Research Institute. 2003. *Thailand's competitiveness, Draft report, October 2003* (excerpts provided to the mission in March 2004).

IHPP. 2003. "*Financing Universal Coverage in Thailand*", Presentation at HSRI Biennial Conference, 2004.

_. 2003. *Projections for the medium term exp framework, spreadsheet model*, provided to the mission, March 2003.

_. 2003. *Briefing note on 30 Baht scheme*, mimeo provided to ILO-FACTS, November 2003.

_. 2003. *Thailand National Health Account* 1994-2001, Nonthaburi

ILO (FACTS). 2002. *Thailand: Technical note on the financing of the universal health coverage scheme*, (Geneva and Bangkok).

Normand, C.; Weber, A. 1994. *Social health Insurance: A guidebook for planning*, (WHO/ILO, Geneva).

Patcharanarumol, W. 2004. *Financial feasibility for introducing contribution to universal health care coverage scheme in Thailand*, Draft Thesis, Bangkok and Maastricht.

Scholz, W. et al. 2000. *Social Budgeting*, (ILO/ISSA, Geneva).

World Bank. 2003. *Sustainable Development in a Dynamic World, Transforming Institutions, Growth and Quality of Life*, World Development Report 2003, (Washington DC).

World Health Organisation. 2003. *World Health Report 2003*, (Geneva).

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8. Annex

Table A1: Public expenditure on health, Thailand 1994-2001

Year	1994	1995	1996	1997	1998	1999	2000	2001
In million baht								
Current health expenditure	46,704	54,528	65,123	74,217	72,623	81,326	86,772	88,988
Capital health expenditure	10,180	14,879	18,399	27,720	22,033	7,615	7,003	6,791
Total health expenditu re	56,885	69,407	83,522	101,937	94,656	88,941	93,774	95,779
Total government expenditure	618,719	642,724	819,083	931,705	842,861	833,064	853,193	908,613
GDP	3,629,341	4,186,212	4,611,041	4,732,610	4,626,447	4,637,079	4,923,263	5,133,836
Expenditure in % of GDP								
Total government expenditure	17.0%	15.4%	17.8%	19.7%	18.2%	18.0%	17.3%	17.7%
Total health expenditure	1.6%	1.7%	1.8%	2.2%	2.0%	1.9%	1.9%	1.9%
Current health expenditure	1.3%	1.3%	1.4%	1.6%	1.6%	1.8%	1.8%	1.7%
Capital health expenditure	0.3%	0.4%	0.4%	0.6%	0.5%	0.2%	0.1%	0.1%
Expenditure in % of total Government Expenditure								
Total health expenditure	9.2%	10.8%	10.2%	10.9%	11.2%	10.7%	11.0%	10.5%
Current health expenditure	7.5%	8.5%	8.0%	8.0%	8.6%	9.8%	10.2%	9.8%
Capital health expenditure	1.6%	2.3%	2.2%	3.0%	2.6%	0.9%	0.8%	0.7%

Source: NHA 1994-2001

Table A2: Summary of basic demographic and economic assumptions and results

Total Population	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2016	2017	2018	2019	2020
Population (000)	62,668	63,142	63,656	64,197	64,765	65,233	65,693	66,148	66,598	67,042	69,056	69,396	69,746	70,097	70,457	70,821
Population +15	47,474	48,063	48,661	49,270	49,897	50,441	51,015	51,611	52,208	52,797	55,136	55,549	55,987	56,438	56,901	57,366
Labour Force	34,195	34,626	35,057	35,662	36,275	36,841	37,416	37,998	38,578	39,152	41,626	42,036	42,435	42,822	43,204	43,366
Labour force parcipation rate	72.0%	72.0%	72.0%	72.4%	72.7%	73.0%	73.3%	73.6%	73.9%	74.2%	75.5%	75.7%	75.8%	75.9%	75.9%	75.6%

FEMALE	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2016	2017	2018	2019	2020
Population (000)	31,809	32,067	32,349	32,640	32,946	33,204	33,455	33,699	33,940	34,176	35,253	35,440	35,628	35,813	36,004	36,188
Population +15	24,406	24,719	25,037	25,356	25,683	25,973	26,277	26,590	26,902	27,208	28,436	28,661	28,896	29,134	29,381	29,621
Labour force	15,600	15,795	15,988	16,334	16,686	17,021	17,361	17,705	18,049	18,390	19,930	20,204	20,471	20,729	20,988	21,048
Labour force parcipation rate	64%	64%	64%	64%	65%	66%	66%	67%	67%	68%	70%	70%	71%	71%	71%	71%

MALE	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2016	2017	2018	2019	2020
Population (000)	30,859	31,075	31,307	31,557	31,819	32,029	32,238	32,449	32,658	32,866	33,803	33,956	34,118	34,284	34,453	34,633
Population +15	23,068	23,344	23,624	23,914	24,214	24,468	24,738	25,021	25,306	25,589	26,700	26,888	27,091	27,304	27,520	27,745
Labour force	18,595	18,831	19,068	19,328	19,589	19,820	20,055	20,293	20,529	20,762	21,696	21,832	21,964	22,093	22,216	22,318
Labour force parcipation rate	81%	81%	81%	81%	81%	81%	81%	81%	81%	81%	81%	81%	81%	81%	81%	80%

Total Employment	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2016	2017	2018	2019	2020
Employment (000)	32,104	33,060	34,004	34,648	35,256	35,827	36,359	36,848	37,292	37,691	40,099	40,670	41,273	41,909	42,581	43,289
Labour productivity increase	0.0%	3.0%	3.4%	3.3%	3.3%	3.2%	3.1%	3.0%	3.0%	2.9%	2.6%	2.5%	2.5%	2.4%	2.4%	2.3%
Unemployment	0	0	1,069	1,015	1,019	1,014	1,057	1,150	1,286	1,461	1,527	1,366	1,162	912	623	78
Unemployment rate	0.0%	0.0%	3.0%	2.8%	2.8%	2.8%	2.8%	3.0%	3.3%	3.7%	3.7%	3.2%	2.7%	2.1%	1.4%	0.2%

Employment structure	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2016	2017	2018	2019	2020
Government employees	2,808	2,673	2,657	2,657	2,657	2,657	2,657	2,657	2,657	2,657	2,657	2,657	2,657	2,657	2,657	2,657
Formal Private employees	11,008	11,265	12,078	12,404	12,720	13,027	13,322	13,604	13,873	14,127	15,590	15,926	16,278	16,646	17,032	17,315
self-employed, own account wk	11,116	11,578	11,862	12,058	12,238	12,401	12,546	12,673	12,782	12,871	13,452	13,597	13,751	13,916	14,092	14,354
unpaid fam wk	7,173	7,544	7,407	7,529	7,642	7,743	7,834	7,913	7,981	8,037	8,400	8,490	8,587	8,690	8,800	8,963

Economy	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2016	2017	2018	2019	2020
Nominal GDP (bln baht)	5,123	5,325	5,719	6,130	6,556	6,999	7,455	7,926	8,408	8,902	11,841	12,537	13,273	14,052	14,877	15,751
GDP deflator, %	100.0	100.7	102.5	104.4	106.2	108.1	110.1	112.1	114.1	116.1	127.0	129.3	131.6	134.0	136.4	138.8
Real GDP (bln baht)	5,123	5,288	5,579	5,874	6,172	6,471	6,772	7,072	7,370	7,665	9,325	9,698	10,086	10,489	10,909	11,345
Real GDP growth, %		3.2%	5.5%	5.3%	5.1%	4.9%	4.6%	4.4%	4.2%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Inflation (CPI)	100.0	100.7	102.5	104.6	106.7	108.8	111.0	113.2	115.4	117.8	130.0	132.6	135.3	138.0	140.7	143.5
GDP per capita per yr	81,755	84,334	89,842	95,482	101,235	107,287	113,489	119,818	126,256	132,785	171,475	180,654	190,302	200,468	211,155	222,405
Growth of GDP per capita		3%	7%	6%	6%	6%	6%	6%	5%	5%	5%	5%	5%	5%	5%	5%

Wages	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2016	2017	2018	2019	2020
Total wages (bln baht)	1,617	1,690	1,826	1,968	2,117	2,272	2,434	2,602	2,776	2,955	4,037	4,297	4,573	4,867	5,180	5,513
Wages as % of GDP	31.6%	31.7%	31.9%	32.1%	32.3%	32.5%	32.6%	32.8%	33.0%	33.2%	34.1%	34.3%	34.5%	34.6%	34.8%	35.0%
Average wage (baht/year)	117,054	121,283	123,913	130,674	137,666	144,887	152,338	160,017	167,924	176,054	221,263	231,241	241,539	252,157	263,097	276,025
Average wage (baht/mo)	9,754	10,107	10,326	10,890	11,472	12,074	12,695	13,335	13,994	14,671	18,439	19,270	20,128	21,013	21,925	23,002

Table A3: Abridged National Health Budget (STATUS QUO)

Mill.Baht unless otherwise indicated

	Year																			
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Public Expenditure																				
The 30 Baht Scheme - benefits	56,006	55,310	60,951	65,735	71,352	78,084	83,557	89,414	95,682	102,395	109,202	116,503	124,330	132,670	141,552	150,524	160,040	170,091	180,730	192,942
Admin.cost	1,400	1,383	1,524	1,643	1,784	1,952	2,089	2,235	2,392	2,560	2,730	2,913	3,108	3,317	3,539	3,763	4,001	4,252	4,518	4,824
CSMBS + State Enterprise	21,708	23,053	25,263	27,057	28,978	31,036	33,239	35,599	38,127	40,834	43,733	46,838	50,163	53,725	57,539	61,625	66,000	70,686	75,705	81,080
Admin.cost	543	576	632	676	724	776	831	890	953	1,021	1,093	1,171	1,254	1,343	1,438	1,541	1,650	1,767	1,893	2,027
SSS+WCS	11,274	11,480	12,424	14,049	15,856	18,639	20,613	22,744	25,038	27,501	30,199	33,159	36,406	39,965	43,866	48,138	52,819	57,952	63,580	69,481
Non UC component	0	24,821	24,401	25,995	27,627	29,291	31,043	32,837	34,668	36,531	38,420	40,461	42,593	44,823	47,161	49,615	52,271	55,062	58,004	61,096
Total H spending from public agencies	**90,930**	**116,624**	**125,195**	**135,156**	**146,321**	**159,778**	**171,372**	**183,720**	**196,860**	**210,841**	**225,377**	**241,044**	**257,855**	**275,843**	**295,096**	**315,205**	**336,781**	**359,811**	**384,429**	**411,450**
Private Expenditure																				
Private health insurance+TAP	10,123	10,396	10,631	11,394	12,203	13,070	13,998	14,992	16,056	17,196	18,417	19,725	21,125	22,625	24,231	25,952	27,794	29,768	31,881	34,145
Employer benefit	6,969	6,307	6,094	6,094	6,094	6,094	6,094	6,094	6,094	6,094	6,094	6,094	6,094	6,094	6,094	6,094	6,094	6,094	6,094	6,094
Household out of pocket	54,977	54,077	57,065	61,163	65,421	69,834	74,391	79,084	83,901	88,827	94,043	99,565	105,412	111,602	118,155	125,093	132,438	140,215	148,449	157,165
NPI + ROW	695	695	695	745	796	850	906	963	1,021	1,081	1,145	1,212	1,283	1,359	1,438	1,523	1,612	1,707	1,807	1,913
Total H spending from private agencies	**72,765**	**71,476**	**74,484**	**79,395**	**84,515**	**89,847**	**95,388**	**101,132**	**107,072**	**113,198**	**119,698**	**126,596**	**133,914**	**141,679**	**149,918**	**158,661**	**167,938**	**177,783**	**188,230**	**199,317**
Total Health spending	**163,695**	**188,100**	**199,679**	**214,551**	**230,836**	**249,625**	**266,760**	**284,852**	**303,931**	**324,039**	**345,075**	**367,639**	**391,769**	**417,522**	**445,014**	**473,866**	**504,719**	**537,594**	**572,659**	**610,767**
Growth rate of H expenditure		**14.9%**	**6.2%**	**7.4%**	**7.6%**	**8.1%**	**6.9%**	**6.8%**	**6.7%**	**6.6%**	**6.5%**	**6.5%**	**6.6%**	**6.6%**	**6.6%**	**6.5%**	**6.5%**	**6.5%**	**6.5%**	**6.7%**
Growth rate of Nominal GDP		**3.9%**	**7.4%**	**7.2%**	**7.0%**	**6.7%**	**6.5%**	**6.3%**	**6.1%**	**5.9%**	**5.9%**	**5.9%**	**5.9%**	**5.9%**	**5.9%**	**5.9%**	**5.9%**	**5.9%**	**5.9%**	**5.9%**
in% of GDP	**3.20%**	**3.53%**	**3.49%**	**3.50%**	**3.52%**	**3.57%**	**3.58%**	**3.59%**	**3.61%**	**3.64%**	**3.66%**	**3.68%**	**3.71%**	**3.73%**	**3.76%**	**3.78%**	**3.80%**	**3.83%**	**3.85%**	**3.88%**
Health Sector Revenues (STATUS QUO)																				
Private HI +TAP	10,123	10,396	10,631	11,394	12,203	13,070	13,998	14,992	16,056	17,196	18,417	19,725	21,125	22,625	24,231	25,952	27,794	29,768	31,881	34,145
Employer benefit	6,969	6,307	6,094	6,094	6,094	6,094	6,094	6,094	6,094	6,094	6,094	6,094	6,094	6,094	6,094	6,094	6,094	6,094	6,094	6,094
SSS+WCS contributions (Health share of SSO con's)	11,274	11,480	12,424	14,049	15,856	18,639	20,613	22,744	25,038	27,501	30,199	33,159	36,406	39,965	43,866	48,138	52,819	57,952	63,580	69,481
Decrease of reserves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Copayments by households	54,977	54,077	57,065	61,163	65,421	69,834	74,391	79,084	83,901	88,827	94,043	99,565	105,412	111,602	118,155	125,093	132,438	140,215	148,449	157,165
NPI + ROW	695	695	695	745	796	850	906	963	1,021	1,081	1,145	1,212	1,283	1,359	1,438	1,523	1,612	1,707	1,807	1,913
Contribution from general revenue without additional taxes	79,657	105,143	112,771	121,107	130,465	141,139	150,759	160,976	171,822	183,341	195,178	207,885	221,449	235,878	251,230	267,067	283,962	301,859	320,849	341,969
% cont from Gen Govt rev without additional taxes	**1.6%**	**2.0%**	**2.0%**	**2.0%**	**2.0%**	**2.0%**	**2.0%**	**2.0%**	**2.0%**	**2.1%**	**2.1%**	**2.1%**	**2.1%**	**2.1%**	**2.1%**	**2.1%**	**2.1%**	**2.1%**	**2.2%**	**2.2%**

Table A4: Summary of Health Expenditure and Revenue (Abridged National Health Budget)

Health (STATUS QUO)	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020
Expenditure												
CSMBS	22,251	23,630	25,895	27,734	29,703	31,812	34,070	36,489	39,080	41,855	58,978	83,107
SSS	11,274	11,480	12,424	14,049	15,856	18,639	20,613	22,744	25,038	27,501	43,866	69,481
UC Fund	57,406	81,514	86,876	93,373	100,763	109,328	116,689	124,487	132,742	141,486	192,252	258,862
Public Agencies	*90,930*	*116,624*	*125,195*	*135,156*	*146,321*	*159,778*	*171,372*	*183,720*	*196,860*	*210,841*	*295,096*	*411,450*
Household	54,977	54,077	57,065	61,163	65,421	69,834	74,391	79,084	83,901	88,827	118,155	157,165
Other private agencies	17,787	17,399	17,419	18,233	19,093	20,014	20,997	22,048	23,171	24,371	31,763	42,152
Private Agencies	*72,765*	*71,476*	*74,484*	*79,395*	*84,515*	*89,847*	*95,388*	*101,132*	*107,072*	*113,198*	*149,918*	*199,317*
Total Health Expenditure	*163,695*	*188,100*	*199,679*	*214,551*	*230,836*	*249,625*	*266,760*	*284,852*	*303,931*	*324,039*	*445,014*	*610,767*
THE as % GDP	3.20%	3.53%	3.49%	3.50%	3.52%	3.57%	3.58%	3.59%	3.61%	3.64%	3.76%	3.88%
% Public Agencies	56%	62%	63%	63%	63%	64%	64%	64%	65%	65%	66%	67%
% Private Agencies	44%	38%	37%	37%	37%	36%	36%	36%	35%	35%	34%	33%
Revenue												
Private Sources+SSS	84,038	82,956	86,908	93,445	100,371	108,486	116,001	123,876	132,110	140,699	193,784	268,798
Govt subsidy from Gen rev	79,657	105,143	112,771	121,107	130,465	141,139	150,759	160,976	171,822	183,341	251,230	341,969
% Govt subsidy from Gen rev as %GDP	1.55%	1.97%	1.97%	1.98%	1.99%	2.02%	2.02%	2.03%	2.04%	2.06%	2.12%	2.17%
Govt deficit in %GDP	-2.59%	-1.48%	-1.52%	-1.53%	-1.49%	-1.49%	-1.45%	-1.42%	-1.40%	-1.39%	-1.31%	-1.19%
Revenue of UC Fund (copay)	0	1,327	1,463	1,578	1,712	1,874	2,005	2,146	2,296	2,457	3,397	4,631
UC Fund Balance	0	-80,186	-85,413	-91,796	-99,050	-107,454	-114,683	-122,341	-130,446	-139,029	-188,854	-254,231

Health (Scenarion I)	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020
Scenario I: Additional taxes												
Expenditure												
UC Fund	57,406	81,514	86,876	93,373	100,763	109,328	116,689	124,487	132,742	141,486	192,252	258,862
THE	163,695	188,100	199,679	214,551	230,836	249,625	266,760	284,852	303,931	324,039	445,014	610,767
THE as % GDP	3.20%	3.53%	3.49%	3.50%	3.52%	3.57%	3.58%	3.59%	3.61%	3.64%	3.76%	3.88%
Revenue												
Private Sources+SSS	84,038	82,956	86,908	93,445	100,371	108,486	116,001	123,876	132,110	140,699	193,784	268,798
Additional taxes	0	0	0	0	10,153	21,649	34,633	49,172	52,279	55,498	74,829	100,903
Govt subsidy from Gen rev	79,657	105,143	112,771	121,107	120,313	119,490	116,126	111,804	119,543	127,842	176,400	241,066
% Govt subsidy from Gen rev as %GDP	1.55%	1.97%	1.97%	1.98%	1.84%	1.71%	1.56%	1.41%	1.42%	1.44%	1.49%	1.53%
Govt deficit in %GDP	-2.59%	-1.48%	-1.52%	-1.53%	-1.34%	-1.18%	-0.99%	-0.80%	-0.78%	-0.77%	-0.68%	-0.55%
Revenue of UC Fund (copay+add taxes)	0	1,327	1,463	1,578	49,203	57,749	67,063	77,190	81,901	86,726	115,394	153,422
UC Fund Balance	0	-55,366	-61,012	-65,801	-23,933	-22,288	-18,583	-14,460	-16,173	-18,229	-29,697	-44,344

Health (Scenarion II)	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020
Scenario II: Expansion SSS coverage to spouse and children, no additional taxes												
Expenditure												
CSMBS	22,251	23,630	25,895	27,734	29,703	31,812	34,070	36,489	39,080	41,855	58,978	83,107
SSS	11,274	11,480	12,424	14,049	27,448	31,547	34,964	38,676	42,701	47,055	72,605	115,002
UC Fund	57,406	56,693	62,475	67,378	63,926	69,765	74,199	78,902	83,888	89,179	121,358	159,003
THE	163,695	188,100	199,679	214,767	233,727	253,094	270,837	289,614	309,464	330,433	456,122	628,047
Difference of THE scenario II and I	0	0	0	216	2,891	3,469	4,077	4,762	5,533	6,394	11,108	17,280
Revenue												
Private Sources+SSS	84,038	82,956	86,908	93,445	111,963	121,394	130,352	139,809	149,772	160,253	222,523	314,319
Govt subsidy from Gen rev	79,657	105,143	112,771	121,323	121,764	131,700	140,484	149,805	159,692	170,180	233,598	313,728
Govt subsidy from Gen rev as %GDP	1.55%	1.97%	1.97%	1.98%	1.86%	1.88%	1.88%	1.89%	1.90%	1.91%	1.97%	1.99%
Govt deficit in %GDP	-2.59%	-1.48%	-1.52%	-1.53%	-1.36%	-1.35%	-1.30%	-1.27%	-1.24%	-1.21%	-1.10%	-0.92%
Revenue of UC Fund (copay)	0	1,327	1,463	1,578	1,497	1,634	1,737	1,847	1,964	2,088	2,842	3,723
UC Fund Balance	0	-55,366	-61,012	-65,801	-62,429	-68,131	-72,461	-77,054	-81,923	-87,091	-118,517	-155,280

Health (Scenarion III)	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020
Scenario III: Expansion SSS coverage to spouse and children plus additional taxes												
Expenditure as same as scenario II												
CSMBS	22,251	23,630	25,895	27,734	29,703	31,812	34,070	36,489	39,080	41,855	58,978	83,107
SSS	11,274	11,480	12,424	14,049	27,448	31,547	34,964	38,676	42,701	47,055	72,605	115,002
UC Fund	57,406	56,693	62,475	67,378	63,926	69,765	74,199	78,902	83,888	89,179	121,358	159,003
THE	163,695	188,100	199,679	214,767	233,727	253,094	270,837	289,614	309,464	330,433	456,122	628,047
Revenue												
Private Sources+SSS	84,038	82,956	86,908	93,445	111,963	121,394	130,352	139,809	149,772	160,253	222,523	314,319
Additional taxes	0	0	0	0	10,153	21,649	34,633	49,172	52,279	55,498	74,829	100,903
Govt subsidy from Gen rev	79,657	105,143	112,771	121,323	111,612	110,051	105,851	100,634	107,412	114,682	158,769	212,825
Govt subsidy from Gen rev as %GDP	1.55%	1.97%	1.97%	1.98%	1.70%	1.57%	1.42%	1.27%	1.28%	1.29%	1.34%	1.35%
Govt deficit in %GDP	-2.59%	-1.48%	-1.52%	-1.53%	-1.34%	-1.18%	-0.99%	-0.80%	-0.78%	-0.77%	-0.68%	-0.55%
Revenue of UC Fund (copay+add taxes)	0	1,327	1,463	1,578	48,987	57,508	66,795	76,891	81,569	86,356	114,839	152,515
UC Fund Balance	0	-55,366	-61,012	-65,801	-14,939	-12,257	-7,403	-2,011	-2,319	-2,823	-6,520	-6,488

Table A5: Consolidated Public Budget, mill.baht (Status Quo)

BASE LINE	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020
Revenues												
Taxes on income and profits :	**254,089**	**286,019**	**304,752**	**326,937**	**349,983**	**373,849**	**398,485**	**423,833**	**449,827**	**476,389**	**634,875**	**848,336**
Personal	97,033	104,912	110,246	118,463	126,994	135,820	144,922	154,274	163,851	173,621	232,143	312,637
Corporate	140,098	162,415	174,432	186,958	199,976	213,463	227,395	241,739	256,461	271,521	361,168	480,413
Petroleum income tax	16,957	18,691	20,074	21,515	23,013	24,566	26,169	27,820	29,514	31,247	41,564	55,287
Taxes on consumption	**327,802**	**379,716**	**407,811**	**437,095**	**467,529**	**499,062**	**531,633**	**565,170**	**599,589**	**634,797**	**844,385**	**1,123,172**
Business tax	133	101	109	116	124	133	141	150	160	169	225	299
VAT	126,804	147,228	158,122	169,476	181,276	193,503	206,132	219,135	232,481	246,132	327,396	435,491
Specific business tax	13,143	12,960	13,919	14,919	15,957	17,034	18,145	19,290	20,465	21,666	28,820	38,335
Excise taxes	187,722	219,426	235,662	252,584	270,171	288,393	307,214	326,594	346,484	366,830	487,945	649,047
Taxes on international trade	**91,496**	**98,291**	**105,563**	**113,144**	**121,021**	**129,184**	**137,615**	**146,296**	**155,206**	**164,319**	**218,572**	**290,737**
Import duties	91,403	98,116	105,375	112,942	120,806	128,954	137,370	146,036	154,929	164,027	218,183	290,219
Export duties	93	175	188	201	216	230	245	261	276	293	389	518
Other Taxes	**21,075**	**21,549**	**23,144**	**24,806**	**26,533**	**28,322**	**30,171**	**32,074**	**34,027**	**36,025**	**47,920**	**63,741**
Total tax revenues	**694,462**	**785,574**	**841,270**	**901,981**	**965,066**	**1,030,417**	**1,097,903**	**1,167,373**	**1,238,649**	**1,311,531**	**1,745,751**	**2,325,985**
Nontax revenue	**81,340**	**91,327**	**98,084**	**105,127**	**112,447**	**120,031**	**127,865**	**135,931**	**144,209**	**152,677**	**203,086**	**270,138**
State Enterprises 1/	52,061	55,571	59,682	63,968	68,422	73,037	77,803	82,711	87,749	92,901	123,574	164,374
Other (SS contribution???)	29,279	35,756	38,402	41,159	44,025	46,994	50,061	53,219	56,461	59,776	79,512	105,764
Total Revenues	***775802***	***876,901***	***939,354***	***1,007,108***	***1,077,513***	***1,150,448***	***1,225,768***	***1,303,304***	***1,382,858***	***1,464,208***	***1,948,837***	***2,596,123***
Expenditure												
Current	**717,577**	**751,768**	**807,374**	**866,153**	**924,455**	**986,837**	**1,048,754**	**1,112,878**	**1,179,148**	**1,247,502**	**1,650,740**	**2,181,336**
General public services **CSMBS???**	40,157	49,722	51,932	53,845	55,829	57,886	60,018	62,229	64,522	66,899	80,164	96,059
Defense	73,681	75,092	80,648	86,439	92,458	98,694	105,135	111,767	118,574	125,536	166,984	222,117
Public order and safety	51,585	55,128	59,207	63,458	67,877	72,455	77,184	82,053	87,050	92,161	122,590	163,065
Education	206,748	211,380	227,020	243,322	260,264	277,817	295,949	314,618	333,779	353,379	470,052	625,247
Health	57,406	81,514	86,876	93,373	100,763	109,328	116,689	124,487	132,742	141,486	192,252	258,862
Social security (without pensions)	12,971	14,382	16,239	18,143	20,224	23,475	25,627	27,904	30,304	32,826	48,814	72,183
welfare	44,071	49,708	51,199	54,452	57,873	61,348	64,958	68,705	72,591	76,613	99,178	126,887
Housing and community amanities	9,254	7,645	8,211	8,800	9,413	10,048	10,704	11,379	12,072	12,781	17,000	22,613
Recreation cultural and religious	5,338	5,874	6,309	6,762	7,232	7,720	8,224	8,743	9,275	9,820	13,062	17,375
Economic services	75,656	85,429	91,750	98,338	105,185	112,280	119,607	127,153	134,896	142,818	189,971	252,693
Interest payments	64,588	68,328	76,897	84,465	88,770	93,270	98,063	103,043	108,234	113,664	144,899	183,540
Other	76,122	47,566	51,086	54,754	58,566	62,517	66,597	70,798	75,109	79,520	105,775	140,698
Capital	**191,036**	**203,737**	**218,812**	**234,524**	**250,853**	**267,772**	**285,248**	**303,242**	**321,710**	**340,601**	**453,056**	**602,639**
Transfer to SS reserve???												
Total Expenditure	**908613**	**955,505**	**1,026,185**	**1,100,677**	**1,175,308**	**1,254,609**	**1,334,003**	**1,416,121**	**1,500,859**	**1,588,103**	**2,103,796**	**2,783,975**
Current deficit	-132811	-78,604	-86,832	-93,569	-97,795	-104,162	-108,234	-112,817	-118,001	-123,895	-154,959	-187,852
In % of GDP	-2.6%	-1.5%	-1.5%	-1.5%	-1.5%	-1.5%	-1.5%	-1.4%	-1.4%	-1.4%	-1.3%	-1.2%
Estimated Public debt, end of period	1,708,129	1,788,305	1,877,003	1,972,677	2,072,673	2,179,178	2,289,848	2,405,203	2,525,859	2,652,542	3,378,414	4,270,735
In % of GDP	33.3%	33.6%	32.8%	32.2%	31.6%	31.1%	30.7%	30.3%	30.0%	29.8%	28.5%	27.1%

Table A6: Consolidated Public Budget, mill.baht (Scenario I: introduce additional taxes)

BASE LINE	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020
Revenues												
Taxes on income and profits :	**254,089**	**286,019**	**304,752**	**326,937**	**349,983**	**373,849**	**398,485**	**423,833**	**449,827**	**476,389**	**634,875**	**848,336**
Personal	97,033	104,912	110,246	118,463	126,994	135,820	144,922	154,274	163,851	173,621	232,143	312,637
Corporate	140,098	162,415	174,432	186,958	199,976	213,463	227,395	241,739	256,461	271,521	361,168	480,413
Petroleum income tax	16,957	18,691	20,074	21,515	23,013	24,566	26,169	27,820	29,514	31,247	41,564	55,287
Taxes on consumption	**327,802**	**379,716**	**407,811**	**437,095**	**467,529**	**499,062**	**531,633**	**565,170**	**599,589**	**634,797**	**844,385**	**1,123,172**
Business tax	133	101	109	116	124	133	141	150	160	169	225	299
VAT	126,804	147,228	158,122	169,476	181,276	193,503	206,132	219,135	232,481	246,132	327,396	435,491
Specific business tax	13,143	12,960	13,919	14,919	15,957	17,034	18,145	19,290	20,465	21,666	28,820	38,335
Excise taxes	187,722	219,426	235,662	252,584	270,171	288,393	307,214	326,594	346,484	366,830	487,945	649,047
Taxes on international trade	**91,496**	**98,291**	**105,563**	**113,144**	**121,021**	**129,184**	**137,615**	**146,296**	**155,206**	**164,319**	**218,572**	**290,737**
Import duties	91,403	98,116	105,375	112,942	120,806	128,954	137,370	146,036	154,929	164,027	218,183	290,219
Export duties	93	175	188	201	216	230	245	261	276	293	389	518
Other Taxes	**21,075**	**21,549**	**23,144**	**24,806**	**26,533**	**28,322**	**30,171**	**32,074**	**34,027**	**36,025**	**47,920**	**63,741**
Total tax revenues	**694,462**	**785,574**	**841,270**	**901,981**	**965,066**	**1,030,417**	**1,097,903**	**1,167,373**	**1,238,649**	**1,311,531**	**1,745,751**	**2,325,985**
New tax revenues (ass. additional)					**10,153**	**21,649**	**34,633**	**49,172**	**52,279**	**55,498**	**74,829**	**100,903**
sin taxes					7,514	16,043	25,634	36,335	38,548	40,812	54,286	72,210
savings due to CSMBS cons.					2,473	5,297	8,509	12,151	13,014	13,938	19,640	27,675
health taxes					165	310	490	686	718	749	903	1,019
Nontax revenue	**81,340**	**91,327**	**98,084**	**105,127**	**112,447**	**120,031**	**127,865**	**135,931**	**144,209**	**152,677**	**203,086**	**270,138**
State Enterprises 1/	52,061	55,571	59,682	63,968	68,422	73,037	77,803	82,711	87,749	92,901	123,574	164,374
Other (SS contribution???)	29,279	35,756	38,402	41,159	44,025	46,994	50,061	53,219	56,461	59,776	79,512	105,764
Total Revenues	***775,802***	***876,901***	***939,354***	***1,007,108***	***1,087,665***	***1,172,097***	***1,260,401***	***1,352,476***	***1,435,137***	***1,519,707***	***2,023,666***	***2,697,026***
Expenditure												
Current	**717,577**	**751,768**	**807,374**	**866,153**	**924,455**	**986,837**	**1,048,754**	**1,112,878**	**1,179,148**	**1,247,502**	**1,650,740**	**2,181,336**
General public services CSMBS???	40,157	49,722	51,932	53,845	55,829	57,886	60,018	62,229	64,522	66,899	80,164	96,059
Defense	73,681	75,092	80,648	86,439	92,458	98,694	105,135	111,767	118,574	125,536	166,984	222,117
Public order and safety	51,585	55,128	59,207	63,458	67,877	72,455	77,184	82,053	87,050	92,161	122,590	163,065
Education	206,748	211,380	227,020	243,322	260,264	277,817	295,949	314,618	333,779	353,379	470,052	625,247
Health	57,406	81,514	86,876	93,373	100,763	109,328	116,689	124,487	132,742	141,486	192,252	258,862
Social security (without pensions)	12,971	14,382	16,239	18,143	20,224	23,475	25,627	27,904	30,304	32,826	48,814	72,183
welfare	44,071	49,708	51,199	54,452	57,873	61,348	64,958	68,705	72,591	76,613	99,178	126,887
Housing and community amanities	9,254	7,645	8,211	8,800	9,413	10,048	10,704	11,379	12,072	12,781	17,000	22,613
Recreation cultural and religious	5,338	5,874	6,309	6,762	7,232	7,720	8,224	8,743	9,275	9,820	13,062	17,375
Economic services	75,656	85,429	91,750	98,338	105,185	112,280	119,607	127,153	134,896	142,818	189,971	252,693
Interest payments	64,588	68,328	76,897	84,465	88,770	93,270	98,063	103,043	108,234	113,664	144,899	183,540
Other	76,122	47,566	51,086	54,754	58,566	62,517	66,597	70,798	75,109	79,520	105,775	140,698
Capital	**191,036**	**203,737**	**218,812**	**234,524**	**250,853**	**267,772**	**285,248**	**303,242**	**321,710**	**340,601**	**453,056**	**602,639**
Total Expenditure	**908,613**	**955,505**	**1,026,185**	**1,100,677**	**1,175,308**	**1,254,609**	**1,334,003**	**1,416,121**	**1,500,859**	**1,588,103**	**2,103,796**	**2,783,975**
Current deficit	-132,811	-78,604	-86,832	-93,569	-87,643	-82,513	-73,601	-63,645	-65,721	-68,397	-80,129	-86,949
In % of GDP	-2.6%	-1.5%	-1.5%	-1.5%	-1.3%	-1.2%	-1.0%	-0.8%	-0.8%	-0.8%	-0.7%	-0.6%
Estimated Public debt, end of period	1,708,129	1,788,305	1,877,003	1,972,677	2,072,673	2,179,178	2,289,848	2,405,203	2,525,859	2,652,542	3,378,414	4,270,735
In % of GDP	33.3%	33.6%	32.8%	32.2%	31.6%	31.1%	30.7%	30.3%	30.0%	29.8%	28.5%	27.1%

Table A7: Consolidated Public Budget, mill.baht (Scenario II: SSO expand coverage to dependents)

BASE LINE	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020
Revenues												
Taxes on income and profits :	**254,089**	**286,019**	**304,752**	**326,937**	**349,983**	**373,849**	**398,485**	**423,833**	**449,827**	**476,389**	**634,875**	**848,336**
Personal	97,033	104,912	110,246	118,463	126,994	135,820	144,922	154,274	163,851	173,621	232,143	312,637
Corporate	140,098	162,415	174,432	186,958	199,976	213,463	227,395	241,739	256,461	271,521	361,168	480,413
Petroleum income tax	16,957	18,691	20,074	21,515	23,013	24,566	26,169	27,820	29,514	31,247	41,564	55,287
Taxes on consumption	**327,802**	**379,716**	**407,811**	**437,095**	**467,529**	**499,062**	**531,633**	**565,170**	**599,589**	**634,797**	**844,385**	**1,123,172**
Business tax	133	101	109	116	124	133	141	150	160	169	225	299
VAT	126,804	147,228	158,122	169,476	181,276	193,503	206,132	219,135	232,481	246,132	327,396	435,491
Specific business tax	13,143	12,960	13,919	14,919	15,957	17,034	18,145	19,290	20,465	21,666	28,820	38,335
Excise taxes	187,722	219,426	235,662	252,584	270,171	288,393	307,214	326,594	346,484	366,830	487,945	649,047
Taxes on international trade	**91,496**	**98,291**	**105,563**	**113,144**	**121,021**	**129,184**	**137,615**	**146,296**	**155,206**	**164,319**	**218,572**	**290,737**
Import duties	91,403	98,116	105,375	112,942	120,806	128,954	137,370	146,036	154,929	164,027	218,183	290,219
Export duties	93	175	188	201	216	230	245	261	276	293	389	518
Other Taxes	**21,075**	**21,549**	**23,144**	**24,806**	**26,533**	**28,322**	**30,171**	**32,074**	**34,027**	**36,025**	**47,920**	**63,741**
Total tax revenues	**694,462**	**785,574**	**841,270**	**901,981**	**965,066**	**1,030,417**	**1,097,903**	**1,167,373**	**1,238,649**	**1,311,531**	**1,745,751**	**2,325,985**
Nontax revenue	**81,340**	**91,327**	**98,084**	**105,127**	**112,447**	**120,031**	**127,865**	**135,931**	**144,209**	**152,677**	**203,086**	**270,138**
State Enterprises 1/	52,061	55,571	59,682	63,968	68,422	73,037	77,803	82,711	87,749	92,901	123,574	164,374
Other (SS contribution???)	29,279	35,756	38,402	41,159	44,025	46,994	50,061	53,219	56,461	59,776	79,512	105,764
Total Revenues	***775802***	***876,901***	***939,354***	***1,007,108***	***1,077,513***	***1,150,448***	***1,225,768***	***1,303,304***	***1,382,858***	***1,464,208***	***1,948,837***	***2,596,123***
Expenditure												
Current	**717,577**	**751,768**	**807,374**	**866,369**	**915,764**	**977,008**	**1,037,638**	**1,100,354**	**1,165,088**	**1,231,764**	**1,626,160**	**2,139,012**
General public services **CSMBS???**	40,157	49,722	51,932	53,845	55,829	57,886	60,018	62,229	64,522	66,899	80,164	96,059
Defense	73,681	75,092	80,648	86,439	92,458	98,694	105,135	111,767	118,574	125,536	166,984	222,117
Public order and safety	51,585	55,128	59,207	63,458	67,877	72,455	77,184	82,053	87,050	92,161	122,590	163,065
Education	206,748	211,380	227,020	243,322	260,264	277,817	295,949	314,618	333,779	353,379	470,052	625,247
Health (Expansion coverage SSS to d	57,406	81,514	86,876	93,589	92,062	99,889	106,414	113,316	120,612	128,326	174,620	230,621
Social security (without pensions)	12,971	14,382	16,239	18,143	20,224	23,475	25,627	27,904	30,304	32,826	48,814	72,183
welfare	44,071	49,708	51,199	54,452	57,873	61,348	64,958	68,705	72,591	76,613	99,178	126,887
Housing and community amanities	9,254	7,645	8,211	8,800	9,413	10,048	10,704	11,379	12,072	12,781	17,000	22,613
Recreation cultural and religious	5,338	5,874	6,309	6,762	7,232	7,720	8,224	8,743	9,275	9,820	13,062	17,375
Economic services	75,656	85,429	91,750	98,338	105,185	112,280	119,607	127,153	134,896	142,818	189,971	252,693
Interest payments	64,588	68,328	76,897	84,465	88,780	92,880	97,221	101,689	106,304	111,087	137,950	169,456
Other	76,122	47,566	51,086	54,754	58,566	62,517	66,597	70,798	75,109	79,520	105,775	140,698
Capital	**191,036**	**203,737**	**218,812**	**234,524**	**250,853**	**267,772**	**285,248**	**303,242**	**321,710**	**340,601**	**453,056**	**602,639**
Transfer to SS reserve???												
Total Expenditure	**908613**	**955,505**	**1,026,185**	**1,100,893**	**1,166,617**	**1,244,781**	**1,322,886**	**1,403,597**	**1,486,799**	**1,572,366**	**2,079,216**	**2,741,651**
Current deficit	-132811	-78,604	-86,832	-93,785	-89,104	-94,333	-97,118	-100,293	-103,941	-108,158	-130,379	-145,528
In % of GDP	-2.6%	-1.5%	-1.5%	-1.5%	-1.4%	-1.3%	-1.3%	-1.3%	-1.2%	-1.2%	-1.1%	-0.9%
Estimated Public debt, end of period	1,708,129	1,788,305	1,877,003	1,972,898	2,064,007	2,160,462	2,259,765	2,362,315	2,468,594	2,579,185	3,198,871	3,914,480
In % of GDP	33.3%	33.6%	32.8%	32.2%	31.5%	30.9%	30.3%	29.8%	29.4%	29.0%	27.0%	24.9%

Table A8: Consolidated Public Budget, mill.baht (Scenario III: SSO expand coverage to dependents and introduce additional taxes)

BASE LINE	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2015	2020
Revenues												
Taxes on income and profits :	**254,089**	**286,019**	**304,752**	**326,937**	**349,983**	**373,849**	**398,485**	**423,833**	**449,827**	**476,389**	**634,875**	**848,336**
Personal	97,033	104,912	110,246	118,463	126,994	135,820	144,922	154,274	163,851	173,621	232,143	312,637
Corporate	140,098	162,415	174,432	186,958	199,976	213,463	227,395	241,739	256,461	271,521	361,168	480,413
Petroleum income tax	16,957	18,691	20,074	21,515	23,013	24,566	26,169	27,820	29,514	31,247	41,564	55,287
Taxes on consumption	**327,802**	**379,716**	**407,811**	**437,095**	**467,529**	**499,062**	**531,633**	**565,170**	**599,589**	**634,797**	**844,385**	**1,123,172**
Business tax	133	101	109	116	124	133	141	150	160	169	225	299
VAT	126,804	147,228	158,122	169,476	181,276	193,503	206,132	219,135	232,481	246,132	327,396	435,491
Specific business tax	13,143	12,960	13,919	14,919	15,957	17,034	18,145	19,290	20,465	21,666	28,820	38,335
Excise taxes	187,722	219,426	235,662	252,584	270,171	288,393	307,214	326,594	346,484	366,830	487,945	649,047
Taxes on international trade	**91,496**	**98,291**	**105,563**	**113,144**	**121,021**	**129,184**	**137,615**	**146,296**	**155,206**	**164,319**	**218,572**	**290,737**
Import duties	91,403	98,116	105,375	112,942	120,806	128,954	137,370	146,036	154,929	164,027	218,183	290,219
Export duties	93	175	188	201	216	230	245	261	276	293	389	518
Other Taxes	**21,075**	**21,549**	**23,144**	**24,806**	**26,533**	**28,322**	**30,171**	**32,074**	**34,027**	**36,025**	**47,920**	**63,741**
Total tax revenues	**694,462**	**785,574**	**841,270**	**901,981**	**965,066**	**1,030,417**	**1,097,903**	**1,167,373**	**1,238,649**	**1,311,531**	**1,745,751**	**2,325,985**
New tax revenues (ass. additional)					**10,153**	**21,649**	**34,633**	**49,172**	**52,279**	**55,498**	**74,829**	**100,903**
sin taxes					7,514	16,043	25,634	36,335	38,548	40,812	54,286	72,210
savings due to CSMBS cons.					2,473	5,297	8,509	12,151	13,014	13,938	19,640	27,675
health taxes					165	310	490	686	718	749	903	1,019
Nontax revenue	**81,340**	**91,327**	**98,084**	**105,127**	**112,447**	**120,031**	**127,865**	**135,931**	**144,209**	**152,677**	**203,086**	**270,138**
State Enterprises 1/	52,061	55,571	59,682	63,968	68,422	73,037	77,803	82,711	87,749	92,901	123,574	164,374
Other (SS contribution???)	29,279	35,756	38,402	41,159	44,025	46,994	50,061	53,219	56,461	59,776	79,512	105,764
Total Revenues	***775,802***	***876,901***	***939,354***	***1,007,108***	***1,087,665***	***1,172,097***	***1,260,401***	***1,352,476***	***1,435,137***	***1,519,707***	***2,023,666***	***2,697,026***
Expenditure												
Current	**717,577**	**751,768**	**807,374**	**866,153**	**924,455**	**986,837**	**1,048,754**	**1,112,878**	**1,179,148**	**1,247,502**	**1,650,740**	**2,181,336**
General public services CSMBS???	40,157	49,722	51,932	53,845	55,829	57,886	60,018	62,229	64,522	66,899	80,164	96,059
Defense	73,681	75,092	80,648	86,439	92,458	98,694	105,135	111,767	118,574	125,536	166,984	222,117
Public order and safety	51,585	55,128	59,207	63,458	67,877	72,455	77,184	82,053	87,050	92,161	122,590	163,065
Education	206,748	211,380	227,020	243,322	260,264	277,817	295,949	314,618	333,779	353,379	470,052	625,247
Health	57,406	81,514	86,876	93,589	92,062	99,889	106,414	113,316	120,612	128,326	174,620	230,621
Social security (without pensions)	12,971	14,382	16,239	18,143	20,224	23,475	25,627	27,904	30,304	32,826	48,814	72,183
welfare	44,071	49,708	51,199	54,452	57,873	61,348	64,958	68,705	72,591	76,613	99,178	126,887
Housing and community amanities	9,254	7,645	8,211	8,800	9,413	10,048	10,704	11,379	12,072	12,781	17,000	22,613
Recreation cultural and religious	5,338	5,874	6,309	6,762	7,232	7,720	8,224	8,743	9,275	9,820	13,062	17,375
Economic services	75,656	85,429	91,750	98,338	105,185	112,280	119,607	127,153	134,896	142,818	189,971	252,693
Interest payments	64,588	68,328	76,897	84,465	88,770	93,270	98,063	103,043	108,234	113,664	144,899	183,540
Other	76,122	47,566	51,086	54,754	58,566	62,517	66,597	70,798	75,109	79,520	105,775	140,698
Capital	**191,036**	**203,737**	**218,812**	**234,524**	**250,853**	**267,772**	**285,248**	**303,242**	**321,710**	**340,601**	**453,056**	**602,639**
Total Expenditure	**908,613**	**955,505**	**1,026,185**	**1,100,677**	**1,175,308**	**1,254,609**	**1,334,003**	**1,416,121**	**1,500,859**	**1,588,103**	**2,103,796**	**2,783,975**
Current deficit	-132,811	-78,604	-86,832	-93,569	-87,643	-82,513	-73,601	-63,645	-65,721	-68,397	-80,129	-86,949
In % of GDP	-2.6%	-1.5%	-1.5%	-1.5%	-1.3%	-1.2%	-1.0%	-0.8%	-0.8%	-0.8%	-0.7%	-0.6%