

# TDRI

Quarterly  
Review

## Contents

Intricate Issues behind Public Debt Management <i>by Pakorn Vichyanond</i>	3
Proposed Reforms in the Structure of Thailand's Sugar and Cane Industry <i>by Viroj NaRanong</i>	6
Child Poverty in Thailand: A Study Using Non-income and Income Concepts <i>by Jiraporn Plangpraphan and Somchai Jitsuchon</i>	13



Many countries are now suffering from public debt crises. Thailand must be prudent in managing government's borrowings. Without efficiency of resource usage and continual efforts in limiting debt commitments, the country might also encounter sovereign debt problems. See related article on page 3.

## TDRI Council of Trustees and Board of Directors

\* **Mr. Kosit Panpiemras**

Chairman  
TDRI Council of Trustees and  
Board of Directors; and  
Executive Chairman  
Bangkok Bank Public Company  
Limited

\* **Dr. Ammar Siamwalla**

Vice Chairman  
TDRI Council of Trustees and  
Board of Directors; and  
Distinguished Scholar

\* **Dr. Anat Arbabhirama**

Director and Advisor to the  
Board of Directors  
Bangkok Mass Transit System  
Public Company Limited

\* **Mr. Apilas Osatananda**

Chairman  
Development Cooperation Foundation

\* **Dr. Bandid Nijthaworn**

President and CEO  
Thai Institute of Directors Association

\* **Mr. Banyong Pongpanich**

Chairman  
Phatra Securities Public Company  
Limited

**M.R. Chatu Mongol Sonakul**

Chairman  
M.T.R. Asset Managers  
Company Limited

**Dr. Chirayu Isarangkun Na Ayuthaya**

Director-General  
Crown Property Bureau

**Mr. Isara Vongkusolkit**

Chairman, Mitr Phol Group

\* **Dr. Juree Vichit-Vadakan**

Chairperson, Center for Philanthropy  
and Civil Society  
National Institute of Development  
Administration (NIDA)

\* **Dr. Kessara Thanyalakpark**

Assistant Professor  
Faculty of Commerce and Accountancy  
Chulalongkorn University

**Mr. Teisuke Kitayama**

Chairman of the Board  
Sumitomo Mitsui Banking Corporation,  
Japan

\* **Ms. Kobkarn Wattanavrangkul**

Chairperson  
Toshiba Thailand Company Limited

\* **Dr. Kobsak Pootrakool**

Executive Vice President  
Bangkok Bank Public Company  
Limited

**Mr. Mechai Viravaidya**

Chairman, Population and Community  
Development Association

\* **Dr. Narongchai Akrasanee**

Chairman of the Board of Directors  
Seranee Group

**Dr. Pasuk Phongpaichit**

Professor  
Faculty of Economics  
Chulalongkorn University

**Dr. Piyasvasti Amranand**

Chairman  
Energy for Environment Foundation

\* **Dr. Pranee Tinakorn**

Professor of Economics  
Faculty of Economics  
Thammasat University

**H.E. Mr. Shigekazu Sato**

Ambassador of Japan to Thailand

\* **Dr. Snoh Unakul**

Chairman  
TDRI Foundation

\* **Dr. Somkiat Tangkitvanich**

President, TDRI

**Mr. Sompop Amatayakul**

President  
B.B. Business Management Co., Ltd.

\* **Dr. Twatchai Yongkittikul**

Secretary-General  
Thai Bankers' Association

\* **Dr. Virabongsa Ramangkura**

Chairman of the Executive Board  
Double A (1991) Public Company  
Limited

\* **Prof. Dr. Yongyuth Yuthavong**

Senior Advisor to President  
National Science and Technology  
Development Agency

\* Indicates membership on the TDRI Board of Directors.

The Thailand Development Research Institute Foundation was established in 1984 to conduct policy research and disseminate results to the public and private sectors. TDRI was conceived, created and registered as a non-profit, non-governmental foundation, and is recognized as such by the Royal Thai Government. The Institute does technical and policy analyses to support the formulation of policies with long-term implications for sustaining social and economic development. TDRI has six research programs: Human Resources and Social Development, International Economic Relations, Macroeconomic Policy, Natural Resources and Environment, Science and Technology Development, and Sectoral Economics.

**Caption:** Nujpanit Narkpitaks

**Assistant:** Wattana Kanchananit

**Editor:** John Loftus (2<sup>nd</sup> and 3<sup>rd</sup> articles)

**Head of Publications Unit:** Jirakorn Yingpaiboonwong

# Intricate Issues behind Public Debt Management

Pakorn Vichyanond\*

## 1. INTRODUCTION

In recent years (2011-12) economic stresses and strains as experienced by many industrial countries clearly demonstrate the importance and widespread repercussions of public debt management. The United States of America, for example, encountered its limit on government debt of U.S.\$ 16.4 trillion by the end of 2012, so whether the legal amendment or “fiscal cliff” will occur will certainly have strong impact on global economy. Japan and some countries in the Euro zone could hardly restrict their governments’ borrowings, so Japan’s short- and long-term debt surged to 229 percent of GDP in 2011, while those of Greece and Italy reached 160 percent and 120 percent respectively (see Table 1). Another surprise was that even though the European Union (EU) has regulations controlling member countries’ annual fiscal deficits to stay within 3 percent of GDP and public debt outstanding within 60 percent of GDP, actually both member countries and Japan continually undertook fiscal policies in several formats so as to support income of the general public as well as the status of their economies. Governments provided various kinds of welfare which gave rise to enormous amounts of long-term obligated fiscal expenditures. Besides, those welfare programs became the channels which stimulated the general public to request for continual or even more assistance from the governments. In other words, the role of fiscal measures has been converted from being temporary rescuing instruments during economic recession or excessive boom to the permanent ones as demanded by the public. And when the governments could not collect adequate revenue, growing expenditures pressured them to commit more debts on a continual basis until public debt predicaments not only emerged but also persisted or even worsened.

Thailand is not any exceptional case. Even though its ratios of public debt outstanding and fiscal deficit to GDP (41% and 4% respectively) are well below those of EU countries, most political parties tried to utilize fiscal measures in various fashions so as to

attain popularity. Examples of these policy actions were rice pledging, first-time car purchase, free bus service, financial credits extended to small businesses, debt refinancing for low-income farmers, and many other populist measures. Before trying to derive some useful guidelines to achieve optimal public debt management, it is worth reviewing the fundamental roles of public debts in most economies. Primarily, those borrowings are meant to complement tax revenue in financing public spendings and basic infrastructure projects. Secondly, those borrowings enable the government to implement some fiscal policies in order to stabilize the country’s economic growth path. Thirdly, government securities normally play some important roles in the recycling of domestic savings to fund investment and consumption. For example, rates of return on treasury bills and government bonds typically serve as benchmarks for financial instruments issued by private entities, because the government is ordinarily given the best ranking by most credit rating agencies. Moreover, government securities serve as a means of financial intervention in the secondary markets by the central bank for the purpose of tightening or loosening liquidity in domestic financial markets. Such intervention enables the government to flexibly adjust local liquidity in order to properly cope with global trends and/or pressures on the domestic front.

## 2. THAILAND’S REGULATIONS AND THEIR SHORTCOMINGS

Given the prominent roles of public debts in most economies as stated above, the two questions that several parties may have in mind are (1) whether the Thai government has regulations controlling public (domestic and foreign) debts, and (2) whether those rules are adequately prudent ensuring that Thailand will certainly not encounter public debt crises such as the ones in EU and Japan. Details of those rules are the following.

\* Dr. Pakorn Vichyanond is Research Director of the Macroeconomic Policy Program at TDRI. He wishes to thank Dr. Chalongphob Sussangkarn, Distinguished Fellow at TDRI, for valuable comments.

**Table 1 Public Debt Outstanding as a Percentage of GDP in 2011**

Greece	160.81	Singapore	100.79
Italy	120.11	Malaysia	52.56
Portugal	106.79	Thailand	41.69
Ireland	104.95	Philippines	40.47
Spain	68.47	Indonesia	25.03
Japan	229.77	Laos	57.36
U.S.	102.94	Myanmar	44.32
France	86.26	Vietnam	37.97
Canada	84.95	Cambodia	28.60
U.K.	82.50		
Germany	81.51	Singapore	100.79
New Zealand	37.04	Taiwan	40.80
China	25.84	South Korea	34.14
Australia	22.86	Hong Kong	33.86

Source: Eurostat

(1) In each fiscal year the government's total borrowings cannot exceed 20 percent of annual budgetary appropriations plus 80 percent of repayment expenditures. In other words, the government can borrow funds to refinance maturing debts.

(2) In each fiscal year the government's commitments of external debts have to stay within 10 percent of annual budgetary appropriations. And the ratio of foreign debt service to export earnings must not exceed 9 percent.

(3) Total government's debt service (principal plus interest) remitted to domestic and foreign creditors must not exceed 15 percent of fiscal revenues.

The above-mentioned regulations may indicate that Thailand is careful about preventing its public sector from borrowing to an excessive extent. However, a closer scrutiny reveals that these rules contain several loopholes as illustrated below.

(1) Financial commitments by state enterprises are only restrained in the aspect of government guarantee. For instance, if the public agencies are limited companies (e.g., Thai Airways Co., Ltd., Bangkok Dock Co., Ltd.) or financial institutions (e.g., Krung Thai Bank, Government Savings Bank, Government Housing Bank), the total amount of government guarantee in each fiscal year cannot exceed 10 percent of the budgetary appropriations. In each case, if the borrower is a limited company, the amount guaranteed by the government cannot exceed six times of the capital fund of that company. If the borrower is a financial institution, the amount guaranteed cannot exceed four times of the capital fund of that financial institution. However, if the public agencies are organizations or authorities (e.g., Electricity Generating Authority of Thailand, TOT Public Company Limited, State Railway of Thailand, Bangkok Mass Transit Authority, Metropolitan Waterworks Authority, Provincial Electricity Authority), there is no limit on the amount of government guarantee. Special preference is given to the agencies providing public utilities such as water works or electricity generation and distribution.

(2) At various times the Thai government issued particular legal decrees enabling the government

to borrow additional funds for extra spendings. Even though some of these borrowings which are allocated to serve emergency incidents (such as the Decree on Soft Loan for Flood-Affected People, B.E. 2555, the Emergency Decree on Water Resource Management, B.E. 2555, the Decree on Insurance Pool Fund, B.E. 2555) may seem justifiable, these special legal decrees effectively nullify the above-mentioned 20 percent limit of government borrowings, so they could lead the country to face public debt predicaments.

(3) Worse yet, recent Thai governments favor the adoption of various populist measures in order to capture public attention. Examples of these populist projects are tax reduction on first-car and first-house purchases, debt suspension for low-income farmers, overall health insurance or the 30-baht scheme, free bus service, and rice pledging program. These fiscal policy actions can easily induce the public sector to be trapped in a vicious deficit cycle such as the ones in Euro zone countries.

(4) Certain ceilings of public debt outstanding to GDP ratio, such as 50 percent or 60 percent, are often announced by the Thai government as a policy guideline in managing public debt. However, this limit has never been legalized. So it does not have any steadfast and favorable impact on public debt management.

### 3. SUGGESTED AMENDMENTS AND THEIR RATIONALES

(1) A very crucial issue in managing public debt is fiscal sustainability. This should be well-preserved at all times for the purpose of supporting stable economic growth path. To achieve this, the Maastricht criteria to limit budget deficits should be put into a law, such as the one by the Indonesian government. This law prescribes that the *consolidated* national and local government's deficit on the *overall cash balance* be limited to 3 percent of GDP in any given year, and that the total central and local government debt not exceed 60 percent of GDP. This

law will certainly help in ensuring fiscal sustainability. In this context, what also deserves strong attention is that the above-mentioned “consolidated and overall cash balance” is defined to cover those on- and off-budget expenditures of all government agencies and state enterprises so as to avoid loopholes.

(2) In complying with the limit of debt commitments, the government should thoroughly examine the public sector's debt servicing capacity in the macro context, not just current expenditures. Examples of items which determine the debt servicing capacity are expected revenue and net project earnings. The government does not have unlimited debt servicing capacity since it cannot always resort to the central bank as a certain source of funds, because doing so may conflict with the prevailing restrictive monetary policy. Neither may it raise particular taxes at any time due to political reasons. Worse yet, it may have difficulties in issuing bonds to the general public or investors overseas if its credibility has deteriorated to some extent. To be on the safe side, the government should disperse its future debt service over the long run and continually abide by its obligations on time. Otherwise, it may get caught in a debt trap or evil cycle such as the ones experienced by some Latin American countries in the past and some Euro zone countries now.

(3) Debt servicing capacity largely depends on the efficiency of fund usage. Therefore, the government should give strong preference to productive investment projects when it comes to the allocations of public borrowings. Special emphasis should be placed upon the investment projects which yield high returns plus low risks within a short time frame.

(4) To achieve efficiency of resource usage essentially requires good coordination and cooperation among relevant parties, including public and private ones. Such coordination and cooperation will also help yield benefits from economy of scale. Route planning or logistics of transport is one clear-cut example of projects that need comprehensive cooperation among several concerned authorities holding responsibilities in designing and constructing roads, railways, subways, expressways, and skytrains. Thus, strong attention

should be given to the timing of cooperative efforts to undertake the targeted projects.

(5) The time profile is a very important element of public debt management in many respects. Other than the timing of cooperative efforts among various agencies involved, the government should investigate the overall profile of its existing debt service before committing new debts. This consideration will help select proper maturities of new debts so that the country's future debt services do not cluster in any particular period. Avoiding such bunching-up will help the government reduce the risk of encountering debt tension. Close and continual monitoring of the overall debt service profile together with global financial atmosphere will give opportunities for adjusting or improving the prevailing debt obligations by prepaying or refinancing some parts of the debts already committed. Examples of such improvements are to reduce foreign exchange risks, lessen debt burden, and smoothen debt service structure in the future.

(6) Another crucial facet of public debt management is its consistency with the prevailing and upcoming monetary and exchange rate policies. Otherwise, conflicts may arise and generate adverse effects to all concerned parties. Strong attention should also be given to global economic atmosphere and domestic income distribution. These elements are suggested because domestic policy actions are ordinarily subject to the prevailing external constraints. Meanwhile, those actions certainly have impact upon income distribution.

The above-mentioned six aspects of measures recommended to deal with public debts may seem complicated and difficult to implement, but they should assist the country in averting sovereign debt difficulties. They deserve continual efforts, because once the degree of investor confidence is shaken or declines due to the high chance or actual occurrence of sovereign debt crises, the recuperation tends to take a very long period of time as widely experienced by several member countries in the Euro zone (e.g., Portugal, Ireland, Italy, Greece, and Spain) between 2008 and 2013.



# Proposed Reforms in the Structure of Thailand's Sugar and Cane Industry

Viroj NaRanong\*

## 1. BACKGROUND

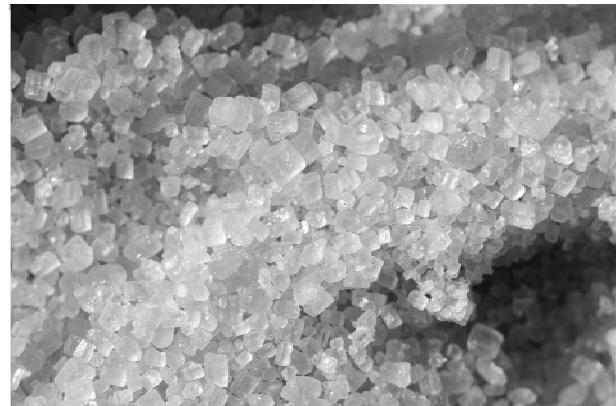
**D**uring the past three decades, the Thai sugar and cane industry has been under the state-controlled system known to the public as the “70:30 revenue-sharing system,” which has been implemented since 1982/83 in the wake of unanticipated oversupply of cane and the fall in the global price of sugar in 1981/82. To gain support from the major stakeholders, the government set new domestic prices of sugar at twice that of the then global prices. The excess profit from the increased price of the domestic sales (the so-called “Quota A”) was used to support both farmers and mills. The 1984 Cane and Sugar Act was enacted to form the backbone of the system.

For 15 years since that time, the system ran rather smoothly. The negotiations on cane prices, which once had been unpredictable — and occasionally violent or the cause of street demonstrations — were replaced by peaceful talks at the negotiating table.

The Thai sugar industry has grown from being the fifth or sixth largest exporter in the world to be among the top three, eventually securing the solid position of “Number 2 exporter.” Ironically, this expansion was possible because of the stability afforded by the government’s control and the 1984 Cane and Sugar Act, both of which were designed in light of the South African system to curb the area planted with cane and the capacity of mills.

The 1997 Asian financial crisis, which had its origins in the overvaluation of the Thai Baht, resulted in floatation of the currency from the beginning of July that year. This resulted in de facto devaluation of the Baht from an exchange rate of about 25 baht to US\$1 to more than 50 baht per dollar. As a result, the global price of sugar (when converted into baht) tended to catch up with, and, occasionally stayed above, the controlled domestic price. Whenever this happened, sugar disappeared from the domestic market.

The growers began to be dissatisfied with the (rather stabilized) price of cane, which had been determined based on the weighted average of the export



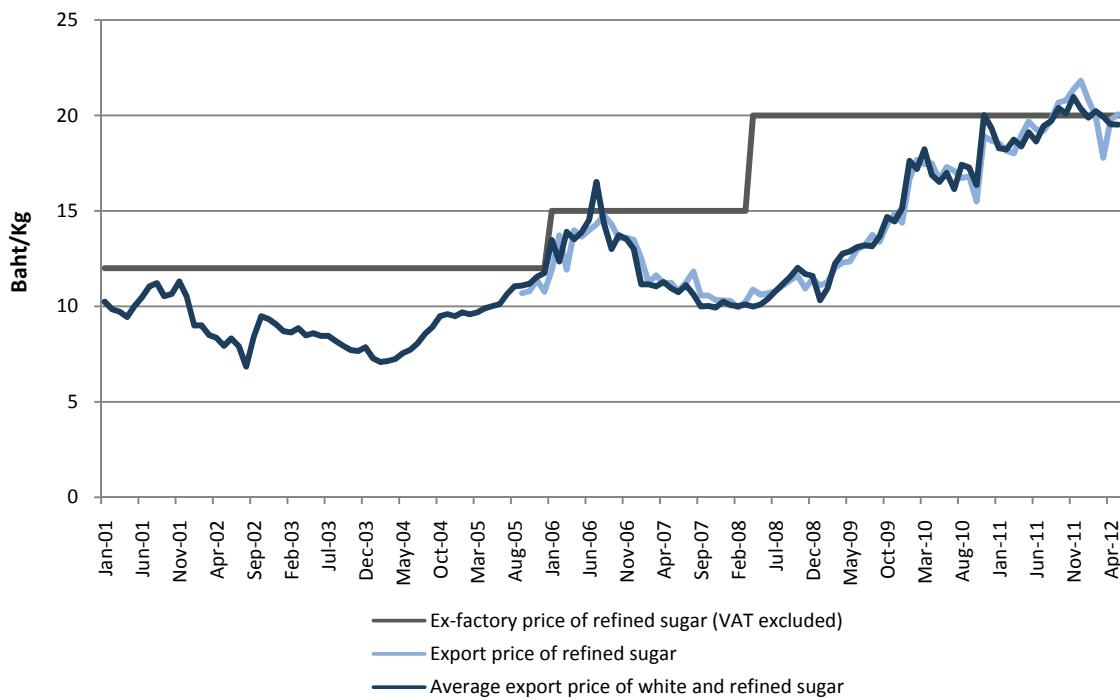
and domestic prices of sugar (the latter which has remained constant for more than 15 years), and started to apply pressure for a hike in domestic sugar prices. Most government administrations did not want to touch the controlled price of domestic sugar, which still remained higher than the export price most of the time (Figure 1), but often worked around it to satisfy growers’ demands by having the Cane and Sugar Fund (CSF) borrow extra money, most of the time from government banks, to top up the cane prices paid by the mills under the 70:30 scheme. On the surface, CSF’s debt was the industry’s own debt. However, the producers apparently had no plan — or intention to repay the debt, which reached a total of 25 billion baht in 2008, when the late former Prime Minister Samak Sundaravej decided to raise the domestic price of sugar by 5 baht/kg (an approximate 33% increase) and use the extra revenue solely for debt repayment.

While the core of the “70:30 revenue sharing system” was based on the South African model in the 1980s, our system implements only half of its stabilization system, i.e., CSF compensated both growers and mills (also based on the 70:30 ratio) in a bad year; however, it never collected a significant fee from them in a good year. The small stabilization fees, usually around 0.5 percent of the revenue, were often collected after CSF had already got into debt.

Under this system, cane prices are paid in two installments: the initial (pre-season) and the final prices.

---

\* Dr. Viroj NaRanong is Research Director on Health Economics and Agriculture at Thailand Development Research Institute (TDRI). Correspondence: E-mail: [virojtdri@yahoo.com](mailto:virojtdri@yahoo.com) or [viroj@tdri.or.th](mailto:viroj@tdri.or.th); Fax: +66(0)2 718 5461-3; Mobile: +66(0)81 382 7846.

**Figure 1 Controlled ex-factory price vs export price of sugar January 2001 to May 2012**

*Source:* Compiled by the author based on data from the Office of the Cane and Sugar Board (OCSB) and the Office of Agricultural Economics (the latter is available from [http://www.oae.go.th/oae\\_report/export\\_import/export.php](http://www.oae.go.th/oae_report/export_import/export.php)).

At the beginning, millers fought for the low initial prices of cane, but later they tended to agree to high prices so that growers would have an incentive to expand. This practice also increased the chance that both parties would be compensated by CSF. In 2006/07, in spite of the 3-baht sugar price hike, CSF was liable to pay the mills 9.8 billion baht (70% of which was for the overpaid cane and 30% to compensate mills for their “low return”). The Cabinet during the Surayud Chulanont Administration decided to have CSF borrow from the Bank for Agriculture and Agricultural Cooperatives (BAAC, which is a government bank) to pay the mills. The government committed itself to allocate a specific annual budget of 450 million baht to CSF, which would use that fund to repay BAAC until the debt would be paid off in 2020.

As mentioned previously, in 2008, Prime Minister Samak decided to increase the domestic sugar price by 5 baht/kg, the revenue from which would be designated to repay the accumulated CSF debt, which had reached 25 billion baht by then.

Based on an initial study by the National Economic and Social Development Board (NESDB) and repeated requests from the Beverage Association to reduce the domestic price of sugar after CSF would supposedly complete its debt repayment in late 2011,<sup>1</sup> the Ministry of Industry (MOI), based on a Cabinet resolution of the Abhisit Vejjajiva Administration, had CSF commission the present research project to be carried out by the Thailand Development Research Institute (TDRI) in 2011.

In late 2011, as MOI proposed to the new government that CSF borrow an amount to top up the cane price for the year 2011/12 by 154 baht/ton, the Cabinet of the Yingluck Shinawatra Administration asked MOI to oversee our study to make sure that it would be finished by its September 2012 deadline in order to be able to implement our proposal in this cane-crushing season (2012/13). The final TDRI report was submitted in September, but was under scrutiny by the overseer committee for almost four months before it was approved, after only minor revisions were requested, at the end of January 2013.

## 2. MAIN OBJECTIVES

The main objectives of the proposed reform are as follows:

- To prevent occasional sugar shortages in, or disappearance from, the domestic market when the global price is higher than the controlled domestic price
- To work out a system that provides a fair price of sugar for the downstream industry
- To reform the cane pricing system (also known as “revenue sharing system”) to improve efficiency and flexibility as well as lessen controls



- To reform CSF so that it can provide stability for both the growers and the industry
- To conduct organizational reform, including drafting, or overhauling the Cane and Sugar Act

### 3. PROPOSED REFORMS

Based on our lengthy analysis (see the full report in Thai available from <http://tdri.or.th/research/structural-change-sugar-cane-industry/>), it is proposed in the study that structural reforms be instituted in all major aspects, mainly the domestic sugar market, the cane buying/pricing system, including the role of CSF as the price stabilizer, and organizational and legal reforms.

#### 3.1 Domestic sugar market

Even with, or because of, the overly controlled system — a combination of domestic quota and price controls — it has been repeatedly the case that the existing system has failed to guarantee the availability of sugar when the export price is significantly higher than the controlled ex-factory price. Whenever that happens, sugar tends to disappear from the market to be sold at higher prices in the black market, as well as be smuggled across borders to neighboring countries.

The study proposes three — or rather one — actual measures to solve this problem, since the other two are in fact non-measures. The first one is to abolish the domestic price control of sugar. This “non-measure” alone will provide every stakeholder with an incentive to supply sugar to the domestic market *at all times*.<sup>2</sup> In order to ensure domestic availability and a reasonable price, and to provide small and independent mills with a level playing field in the domestic market, the domestic quota (Quota A) would remain in place, where the *annual quota* will be allocated to each mill according to its past share of cane crushing, but shorter-term allocations — such as the current weekly allocation — would be *strictly forbidden* since there are risks that this

cartel-like mechanism might be exploited to facilitate price collusion in the absence of price controls.

Once the price controls are lifted, the administration of the domestic quota should be much easier than in the past, since there would be no gain from selling sugar in the domestic black market. The current ASEAN Free Trade Area (AFTA) agreement — under which all neighboring countries now charge zero import tax on sugar — should also curb any incentives to smuggle sugar across the border, since the smugglers’ cost would not be significantly less than that of the importers.

Since it is possible that such reform could result in an increase in domestic consumption of sugar, and to ensure that there would be no shortage as people might change their buying behavior, it is proposed in the study — as a precaution — that the Sugar Committee increase the domestic quota by at least 10 percent in the first year of implementation, a rate which is significantly higher than the usual increase in annual consumption. If this proves to be too much — in the sense that millers cannot sell their whole allotted quota while the wholesale price is in line with the export price — the formal first year quota could be adjusted accordingly at the end of the year in order to honor reality.

For the subsequent years, it is proposed in the study that loose but binding rules for the Sugar Committee be followed: (a) if the average wholesale price is greater than the average export price by  $x$  percent, the domestic quota for the next year must be increased by at least  $x/2$  percent; and (b) if the average wholesale price is less than the average export price by  $y$  percent, the domestic quota for the next year can be decreased by no more than  $x/5$  percent, but the Committee is allowed to maintain or even increase the quota if it deems necessary. Moreover, the Committee can impose an extra quota during the year if it finds that the average wholesale price in the previous few months is significantly greater than the average export price. In such a case, the extra quota should be offered to all mills according to their initial share, but every mill should be allowed to decline such an offer.

The third non-measure is also a precautionary one that is designed simply to deter price collusion. In principle, it is proposed that the government abolish protection and allow the import of white sugar, including from non-ASEAN countries, at zero tax. As the world’s solid second-largest exporter of sugar, under normal circumstances, it is not expected that anyone in Thailand would find it profitable to import sugar to compete in the domestic market. However, this non-measure might be necessary to discourage any attempts to tacitly form a cartel aimed at establishing a monopolistic price in the domestic market.

Together, these measures should be sufficient to make the domestic sugar market resemble a competitive one. Their impacts on households — since the sugar price would occasionally be higher than the currently

controlled one — should be minimal, since the outlay for sugar in most households is rather small. There is also a good chance that the domestic price would fall below the current controlled price more often than not. As for the downstream industries, they will be likely to pay as much as the export price, which would still provide them with a slight advantage when compared with their competitors in countries that import sugar from Thailand.

### 3.2 Cane buying/pricing system

Instead of using the current revenue-sharing system in which the price that a farmer receives for sugarcane would vary somewhat with his/her counterpart mill's performance (e.g., the sugar extraction rate) and decisions (e.g., on the percentage of white sugar the mill chooses to produce), it is proposed in the study that, under a new pricing system, *all farmers would receive the same price for cane according to its sugar content (CCS)*, which would be computed from a formula based on a specified set of standard production efficiency parameters of the "representative mill." The only unknown parameters in this formula are the reference prices for sugar, which also would depend on the exchange rate, and that would be drawn mainly from the most-quoted international futures markets.

The proposed cane price formula is based on 70 percent of revenue (as in the current 70:30 sharing system) from the standard mill with a 90 percent efficiency rate for sugar extraction (half in raw sugar at 96 polarization (sucrose content) and the other half in refined sugar) from each CCS of cane, plus molasses equivalent to 7 percent of the value of the sugar:<sup>3</sup>

$$\text{Cane price} = 0.0007 X 90 X \text{CCS} X 1.07 \\ [50(P_{\text{raw}} + \text{Prem}_{\text{raw}}) + 50(P_{\text{white}} + \text{Prem}_{\text{white}})]$$

Where  $P_{\text{raw}}$  is the New York #11 price of raw sugar (baht/kg)

$\text{Prem}_{\text{raw}}$  is the Thai (location) premium for raw sugar (baht/kg)

$P_{\text{white}}$  is the London #5 price of refined sugar (baht/kg)

$\text{Prem}_{\text{white}}$  is the Thai (location) premium for refined sugar (baht/kg)

and CCS is commercial cane sugar content.

In return, sugar mills would be allowed to change their product mix or production processes as they see fit. For example, a mill might choose to use all of its cane juice to produce only white sugar, while paying a cane price according to the formula that is based on the assumption that each mill's sugar consists of only 50 percent of white sugar, or a mill can produce both sugar and ethanol from the same batch of cane



(e.g., using the first few of six extracts to produce sugar and the remaining extracts to produce ethanol), a process that should be more cost-effective than producing ethanol from molasses, which has also been in shortage since the government decided to abolish the sale of gasoline with 91 RON (Research Octane Number) earlier in 2013.

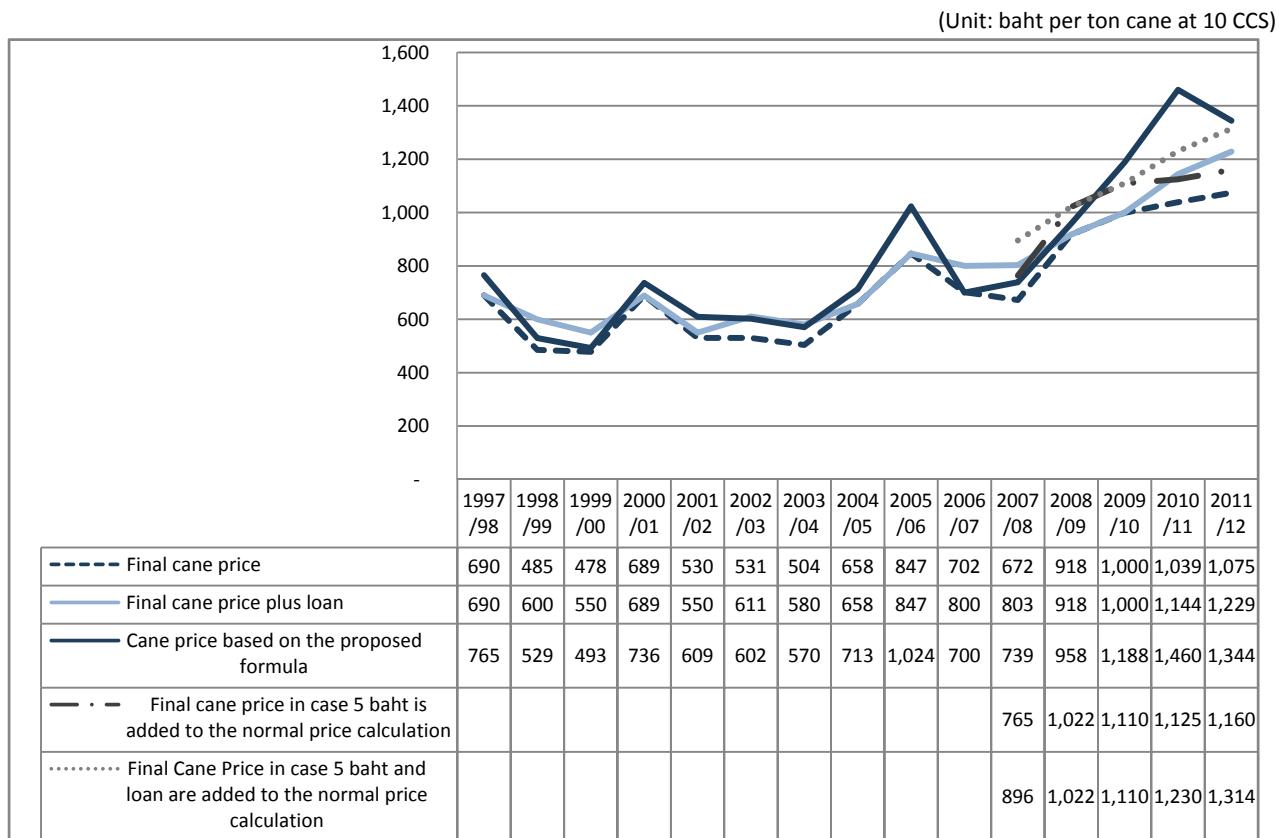
Compared with the current cane pricing mechanism, the proposed one would be likely to increase the cane price (see the comparison of the simulated price using our formula versus actual past prices shown in Figure 2). However, the study also contains a proposal for a four-year transition period that would enable the mills to improve their efficiency before the full-fledged formula is applied.

As in the current system, the cane price would be paid in two installments: the initial and the final prices.

**The initial price of cane**, to be paid within a few weeks after cane delivery, would be the higher amount of: (a) the minimum price of 1,100 baht per ton of standard cane (at 12 CCS)<sup>4</sup> or (b) 90 percent of the expected price computed from the formula based on the specified parameters and the average futures price of raw sugar (contract #11) and white sugar (contract #5), plus the committed or estimated Thai premium (using the pre-committed or the average exchange rate in the month of September prior to the new cane-crushing season that usually begins in November).

**The realized price of cane** would be recomputed immediately after the end of the production year (i.e., in early October) using the actual prices, premiums, and the exchange rate from the Thai Cane and Sugar Corporation's sale of the sample pool of export sugar (all 0.8 million tons of "Quota B," half of which would be raw sugar at 96 IPS (International Pol Scale) and the other half would be refined sugar.<sup>5</sup>

**The final price of cane** would be either the initial price or the realized price minus the amount the mills deduct and deliver to the stabilization fund of CSF on behalf of the farmers. There are several possible scenarios:

**Figure 2 Actual versus simulated cane prices based on the proposed formula**

**Note:** The final price that the growers receive might differ from that in our formula, depending on the compensation from CSF or the fee they have to pay CSF that year.

**Source:** Compiled and simulated by the author based on data from the Office of the Cane and Sugar Board and United States Department of Agriculture.

- If the realized price falls *below* the initial price, *the final price would be the same as the initial price* (i.e., the farmers would not receive any more payment than the amount they had already received as the initial price, and *CSF would draw from its stabilization fund<sup>6</sup> to compensate the mills for the over-paid price, plus 42.86 percent<sup>7</sup> of that amount to compensate the mills for their unanticipated low revenue*).<sup>8</sup>
- If, however, the realized price is *higher than the initial price, but below the estimated price*, *the final price would be the same as the realized price*, and the mill would be liable to pay the difference to the farmers.<sup>9</sup>
- The other case is that the realized price is *higher than both the initial and the estimated prices (and the estimated price was also higher than the minimum price)*, *the final price would be equal to the estimated price plus 80 percent of the difference between the realized and the estimated prices*. The mill would pay the farmers the difference (between the final and initial prices), and deliver the 20 percent of the difference

between the realized and the estimated prices to CSF on behalf of the farmers plus 42.86 percent of that amount as its own contribution to the stabilization fund of CSF.

Under this set of rules (also spelled out in the proposed Cane and Sugar Act), CSF would act as the price stabilizer, a much more credible role than now exists (as well as in the past three decades) under which CSF is liable to compensate the mills in a bad year (according to Article 56 of the 1984 Cane and Sugar Act). However, there is no explicit rule to collect a significant stabilization fee from the industry in a good year; the combined practices have forced CSF to be in continuous debt with neither means to repay nor credibility to borrow, except from government banks under the government's guarantee.

### 3.3 Organizational and legal reforms

The current governing body of the industry consists of the Cane and Sugar Board (CSB) and its subordinate boards: the Executive Board, the Cane Board, the Sugar Board, and CSF, and two administrative offices: the Office of the Cane and Sugar Board

(OCSB) and the Office of the Cane and Sugar Fund (OCSF).

In the study, it is proposed that the Cane Board be abolished, as cane quantity control has never been enforced and is deemed rather undesirable to do so now. It is also proposed that the Sugar Board be reorganized in such a way that the members from the government would constitute half the board, with one of the members appointed by the Minister of Commerce to serve as the chairperson, since the board's role in allocating the domestic quota and preventing monopoly would become a more important issue after the abolishment of the domestic price control.

CSF (and OCSF) would have more important roles and would need to be more independent as well as have better financial and administrative measures in place. In the study, it is proposed that a designated stabilization fund be set up as an independent fund within CSF to ensure that the fund would be allowed to be used for price stabilization only and for no other purpose.<sup>10</sup>

The cane and sugar industry (and OCSF) should devise a long-term research and development plan as well as set up a research institute that would work within the industry and coordinate with other governmental funding and research agencies. CSB and CSF should also work together to determine research and operational fees accordingly, which in the study are proposed to be collected from farmers and millers on a 50:50 (rather than 70:30) basis.

OCSB would be relieved of most of its control work and should be geared toward being an information and strategic center, which should become a more important and compelling task as Thailand has continued to expand its cane and sugar production almost fivefold within only three decades, making more people's welfare dependent on the industry's long-term health and sustainability.

The Ministry of Commerce's role would be shifted from maintaining price controls to preventing collusion and protecting consumers through such means as product labels.

### ***The 1984 Cane and Sugar Act***

The 1984 Cane and Sugar Act was designed in such a way that it provides very extensive power to CSB. However, CSB and its subordinate boards and organizations have been selectively using their power or enforcing the law, which has resulted in a lack of implementation of some key articles, such as Article 57, which requires the mills to send their — as well as the growers' — surplus revenue to CSF, but in practice the calculation of the final cane price was done in such a way that there would never be any surpluses. Since this practice — that tends to leave CSF in constant debt — benefits both mills and growers, it has been allowed to be administered against the spirit of the law for almost 30 years.

The study, therefore, includes a draft of a new cane and sugar act in such a way that the stakeholders would have to follow and comply with the main system design and specified formula, and that the system would not be swayed or swung by political or bureaucratic judgments, or rely too much on results of negotiations by the main stakeholders.

However, if chosen by the government and agreed upon by CSB, all the proposed reforms could be undertaken even now under the current 1984 Act while the new draft is still being put through the legislature. In this respect, the current law itself, or the processes that are needed to enact the new law, is not the obstacle that would prevent the reform from being implemented in this coming season (2012/13), although the new law is still badly needed to ensure that the reforms that would be carried out in the future would not deviate from their essential designs, which are necessary to achieve all the objectives proposed in the study.

### **ENDNOTES**

<sup>1</sup> The debt, however, had never been repaid in full because CSF was later forced by the growers to borrow again to top up the cane price for the year 2011/12.

<sup>2</sup> While the existing measures appear to provide an extra incentive for selling sugar in the domestic market as the controlled domestic price tends to be higher than the export price most of the time, they failed miserably when the relative prices were reversed.

<sup>3</sup> The original formula proposed 7 percent, with a contingency clause that it would be upgraded to 8 percent in the following production year should the government follow its commitment to abolish the sale of 91 RON (Research Octane Number) gasoline. Since this actually happened in 2013, the multiplier 1.07 would be changed to 1.08 should this formula be used in the next production year (2013/14). Interestingly, India's Rangarajan Committee Report, which came out in October 2012 — just a few weeks after our submission — proposed a cane price that is equivalent to 70 percent of revenues from sugar and all byproducts, or 75 percent of revenues from sugar alone. It should be noted that the latter share of 75 percent is almost identical to the multiplication product of our 1.07 x 70 percent.

<sup>4</sup> The Standard sugarcane at 12 CCS has been chosen because it is the closest representative to the average CCS of Thai cane in recent years. Even if one excludes the northeastern region of Thailand, the average CCS in each of other regions would still be higher than 11 in normal years. Therefore, on average, the proposed minimum price (1,100 baht per ton of cane of 12 CCS) would mean that the

farmers in every region still receive more than 1,000 baht per actual ton of cane.

<sup>5</sup> At present, the formal Quota B is 0.8 million tons per annum, but the actual amount put up for bidding by the Thai Cane and Sugar Corporation is only one half of that (0.4 million tons of the raw sugar, at the average polarization of about 98).

<sup>6</sup> The study also proposes that CSF open a specific stabilization fund/account whereby the fund cannot be used for other purposes (including its administrative costs, which should be drawn from the main CSF). This is to ensure credibility of the stabilization fund, especially if it would have to borrow from a financial institution.

<sup>7</sup> 42.86 percent is equivalent to 30/70.

<sup>8</sup> Except for the case where the minimum price kicked in as the initial price — which means that 90 percent

of the expected price fell below the minimum price. In such a case, while CSF would still compensate the mills fully for the price they overpaid the farmers, its designated compensation to the mills would be limited to 42.86 percent of the difference between the 90 percent of the expected price and the (lower) realized price.

<sup>9</sup> If necessary, in these years the Cane and Sugar Board (CSB) may also vote to collect the stabilization fee from both farmers and millers up to 3 percent of the annual revenue of the industry. Normally, however, this would not happen since the farmers and millers combined constitute the majority of CSB, so it is unlikely that they would vote to tax themselves unless they agree that it is absolutely necessary.

<sup>10</sup> Including its rather small administrative costs, which will have to be shouldered by the main CSF fund.



# Child Poverty in Thailand: A Study Using Non-income and Income Concepts

Jiraporn Plangphan  
Somchai Jitsuchon\*

This report is based on two research projects financed by the UNICEF office of Thailand. The first research project, which was completed in 2008, was aimed at producing a set of indicators on deprivation that measure Thai children's poverty situation that go beyond the monetary dimension. The indicators were computed using data from the Multiple Indicators Cluster Survey (MICS), which was a pioneer survey conducted by the National Statistical Office (NSO) of Thailand with financial support from UNICEF. The basic set of deprivation indices were computed based on methodology developed in the University of Bristol's "child poverty study." Under that method, absolute poverty among children is measured by deprivation of human needs in many areas (food, safe drinking water, sanitation facilities, health, shelter, education, information, access to services). However, we follow an NSO-UNICEF report in grouping the various MICS indices into eight categories as follows:

1. Nutrition
2. Child health
3. Reproductive health
4. Child development
5. Education
6. Environment
7. Child protection
8. Child vulnerability, including to HIV/AIDS, and orphanhood

This basic set of deprivation indices was further investigated to find correlations with Thailand's official monetary poverty indicators (using the Socio-Economic Survey, or SES) in the same year (2006). This exercise has important policy implications. For those indices which were strongly positively correlated with monetary poverty, finding ways to increase households' income should suffice to simultaneously reduce deprivation. For the remaining indices, which can be either reversely correlated or uncorrelated with monetary poverty, we need policy measures that are specially designed to correct the problem, and should not expect that increased income would help.



The next task is to construct different levels of composite child deprivation indices. The first level is the computation of composite deprivation indices of the eight categories following the above-mentioned NSO-UNICEF list. The eight composite indices were further lumped into a single child composite index for each household. The composite indices for the first two levels are classified according to their severity. The third level of the composite indices is at the provincial or the regional levels, where the household deprivation indices are further aggregated into provincial or regional indices.

Since the MICS survey in 2006 was a special survey that might not be routinely conducted on a regular basis, the issue of sustaining the monitoring of child deprivation arose. The second research project was initiated to examine the suitability of using another similar survey, the Child and Youth Survey (CYS), which is routinely conducted by NSO to produce child deprivation indices of the same nature as those using MICS. The study used CYS for 2008 to compare the data with MICS 2006, and reported the findings. Of 61 basic deprivation indices in MICS, only 20 can be reproduced using CYS (see Table 1). These matched indices fall into six NSO-UNICEF categories; the missing two are nutrition and reproductive health because the questions in the questionnaire that were needed to compute the relevant indicators are not present in the CYS. Since the numbers of matched

\* Ms. Jiraporn Plangphan is Senior Researcher, and Dr. Somchai Jitsuchon is Research Director, Inclusive Development, Macroeconomic Policy Program, TDRI.

**Table 1 Comparison of deprivation variables from MICS and CYS**

MICS	Indicators	CYS
<b>Nutrition</b>		
MICS 6	Underweight prevalence	X
MICS 7	Stunting prevalence	X
MICS 8	Wasting prevalence	X
MICS 45	Timely initiation of first breastfeeding	X
MICS 15	Exclusive breastfeeding rate	X
MICS 16	Continued breastfeeding rate at 20–23 months	X
MICS 17	Timely complementing feeding rate	X
MICS 18	Frequency of complementing feeding	X
MICS 19	Adequately fed infants	X
MICS 41	Iodized salt consumption	X
MICS 9	Low birth weight infants	X
MICS 10	Infants weighed at birth	X
<b>Child health</b>		
MICS 25	Tuberculosis immunization coverage	X
MICS 26	Polio immunization coverage	X
MICS 27	Diphtheria, pertussis and tetanus (DPT) immunization coverage	X
MICS 28	Measles immunization coverage	X
MICS 29	Hepatitis B immunization coverage	X
MICS 31	Fully immunized children	X
MICS 32	Neonatal tetanus protection	X
MICS 33	Use of oral rehydration therapy (ORT)	X
MICS 34	Home management of diarrhea	X
MICS 35	Received ORT or increased fluids and continued feeding	X
MICS 23	Care-seeking for suspected pneumonia	X
MICS 22	Antibiotic treatment of suspected pneumonia	X
MICS 24	Solid fuels	✓
<b>Environment</b>		
MICS 11	Use of improved drinking water sources	✓
MICS 12	Use of improved sanitation facilities	✓
MICS 13	Water treatment	✓
MICS 14	Disposal of child's feces	X
MICS 95	Slum household	✓
<b>Reproductive health</b>		
MICS 21	Contraceptive prevalence rate	X
MICS 20	Antenatal care	X
MICS 44	Content of antenatal care	X
MICS 4	Skilled attendant at delivery	X
MICS 5	Institutional deliveries	X
<b>Child development</b>		
MICS 46	Support for learning	✓
MICS 47	Father's support for learning	✓
MICS 48	Support for learning: children's books	✓
MICS 49	Support for learning: non-children's books	✓
MICS 50	Support for learning: materials for play	✓
MICS 51	Non-adult care	✓
<b>Education</b>		
MICS 52	Pre-school attendance	✓
MICS 54	Net intake rate in primary education	✓
MICS 55	Net primary school attendance rate	✓
MICS 56	Net secondary school attendance rate	✓
MICS 60	Female adult literacy rate	✓
<b>Child protection</b>		
MICS 67_1	Marriage before age 15	X
MICS 67_2	Marriage before age 18	X
MICS 68	Young women aged 15–19 currently married/in union	X
MICS 69_1	Spousal age difference: age 15–19 years	X
MICS 69_2	Spousal age difference: age 20–24 years	X
MICS 101	Child disability	X
<b>Vulnerable children</b>		
MICS 75	Prevalence of orphans	✓
MICS 76	Prevalence of vulnerable children	✓
MICS 78	Children's living arrangements	✓
MICS 81	External support for children orphaned and made vulnerable	X

MICS	Indicators	CYS
<b>HIV and AIDS</b>		
MICS 82	Comprehensive knowledge about HIV prevention among young people	✓
MICS 86	Attitude toward people with HIV and AIDS	X
MICS 89	Knowledge of mother-to-child transmission of HIV	X
MICS 90	Counseling coverage for the prevention of mother-to-child transmission of HIV	X
MICS 91	Testing coverage for the prevention of mother-to-child transmission of HIV	X

indicators are too few, we are not able to compute composite indices using CYS as we did with MICS. Another limitation is that we cannot repeat the exercise of finding correlation between the MICS-like indicators from the CYS with monetary poverty from SES, as the two surveys seem to use a different sample frame.

A comparison of MICS 2006 with CYS 2008 using individual MICS-like basic deprivation indices reveals that the child deprivation situation generally improved during the period 2006-2008. However, at the provincial level, the comparison of composite child deprivation indicators shows that the situation in some provinces was worse in spite of the general improvement at the country level. Detailed investigation of changes in individual deprivation indicators produces many interesting findings: for example, more children attended school and mostly at younger ages; families took care of their children better, in terms of both educational care and living care; and children were generally less vulnerable to being orphaned, or having parents or adults who were suffering from chronic illnesses.

The report concludes with discussions of some policy implications and possible further studies. Two policy implications stand out. First, policymakers must not concentrate their attention on monetary poverty only, as there are many MICS deprivation indices that are not correlated with monetary poverty (Figure 1). Second, budget allocation into geographical areas, such as at the provincial and the regional levels, should take into account the areas' general deprivation situation as well as deprivation specific to those areas. As for possible further studies, the findings of the report

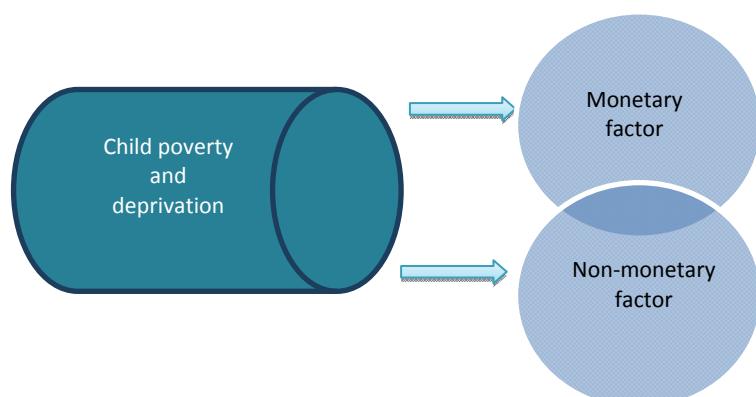
suggest that more detailed investigation should be conducted regarding those deprivations not related to income, and that more in-depth analysis is needed at the provincial level, as well as maeso analysis.

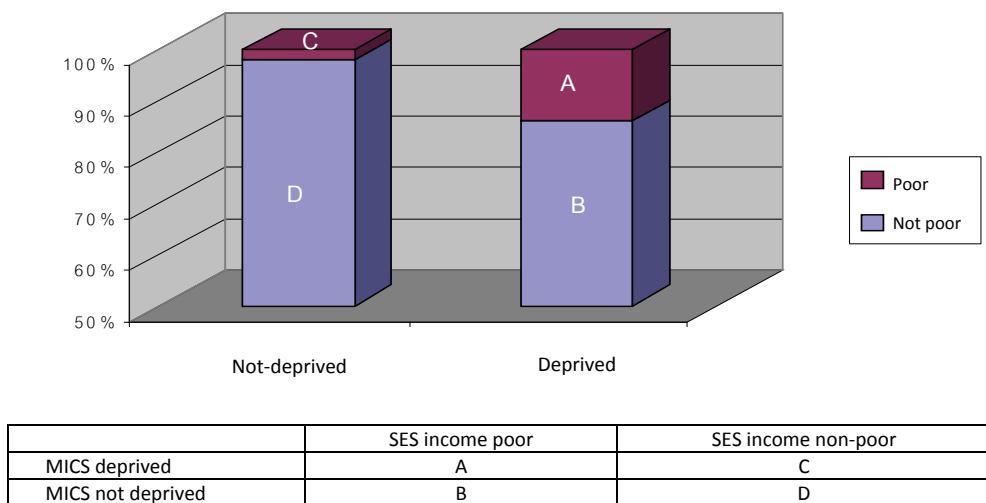
To study the linkages between MICS/CYS non-monetary deprivation indices with the traditional monetary poverty indices we need to combine the MICS/CYS data set with the income and expenditure household survey data. We chose the SES conducted by NSO because it is the flagship data set for calculating official monetary poverty in Thailand. The linkages are possible at the national, regional, and provincial levels.

There are potentially many methods to examine the links between the number of primary sample unit (PSU)-level deprivation from MICS/CYS and income poverty from SES. An odds ratio was chosen to calculate the links because it is an easy-to-understand correlation index. For example, if there is some positive relationship between, say, a household's use of solid fuels and income poverty, then income-poor households would be more likely to use solid fuels when compared with non-poor households. Figure 2 illustrates the poverty status of the frequency counts of households falling into these categories, as depicted by A, B, C and D.

The ratio measures the relative probability of a family being deprived, which is the comparison of the deprivation probability when that family is poor against when it is not poor. An alternative interpretation can go the other way around: the odds ratio measures relative probability of a family being income poor, compared with the case when the family is deprived versus when it is not deprived.

**Figure 1 Underlying causal factors of child poverty and deprivation**



**Figure 2 MICS 24 deprivation (use of solid fuels), by poverty level**

Thus, the odds ratio is computed as follows:

$$\text{Odds ratio} = (A/B)/(C/D)$$

If the odds ratio equals 1, then there is no probability difference of being deprived and being poor. If the ratio exceeds 1, then there is a high probability that a poor family is deprived, or that a deprived family is poor. When the ratio falls below 1, the probability relationship is reversed: a poor family is more likely to not be deprived, or a deprived family not poor. In the solid fuel example, 14 percent of the income poor households indeed used solid fuels while only 2 percent of the income non-poor households did. The odds ratio therefore is:  $(14/86)/(2/98) = 7.98$ . Translated, that indicates that the income poor households were about eight times more likely to use solid fuels than the non-poor ones. In other words, deprivation of proper cooking fuel had much to do with being income poor. The two concepts thus relate quite closely.

### CHANGES IN CHILD DEPRIVATION DURING THE PERIOD 2006-2008

This section reports on changes in the child deprivation situation during the period 2006-2008, by comparing the indices from MICS 2006 with those computed from CYS 2008. The changes can only be done for the matched 20 deprivation indices. Two ways of making the comparisons are possible, one between composite indices of the two years; the other, between individual matched indicators.

#### Changes in composite deprivation indices during the period 2006-2008

The procedure for computing composite indices is similar to what was done in the 2006 MICS survey. As shown in Figure 3, three levels of composite indices are computed, namely categorical composite indices,

household composite indices and provincial composite indices.

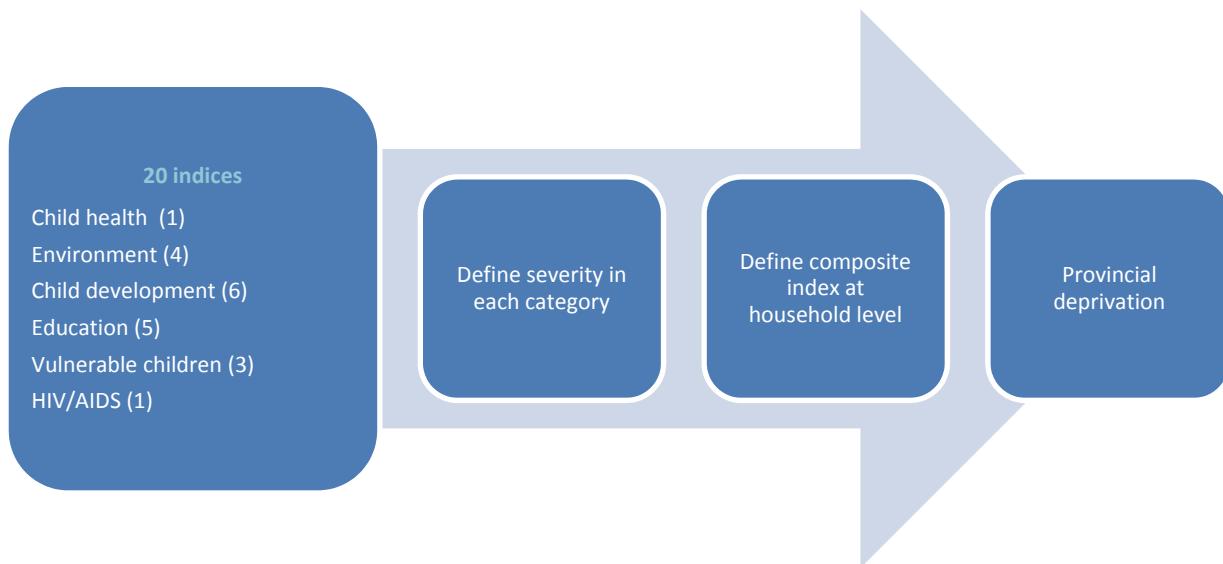
The 20 matched variables were classified into six subgroups:

1. Child health – 1 indicator
2. Environment – 4 indicators
3. Child development – 6 indicators
4. Education – 5 indicators
5. Vulnerable children – 3 indicators
6. HIV and AIDS – 1 indicator

The 20 indicator variables in CYS were further classified according to their correlations with income poverty, as explored previously with the MICS counterparts, as shown in Tables 2 and 3. Note that the positively correlated CYS indicators are classified by their MICS counterparts' odds ratios (in relation to income poverty) equal to or more than 1.5, the reversely correlated CYS by odds ratios below 0.75 and the uncorrelated CYS by odds ratios between 0.75 and 1.5. The 1.5 and 0.75 thresholds, rather than a threshold of 1.0, was used to account for statistical errors.

Criteria for determining the severity of the categorical composite indices are shown in Tables 4 and 5 and reflect the new classification of household composite indicators.



**Figure 3** Steps for constructing composite child deprivation indices**Table 2** Number of CYS-MICS deprivation indices, by correlation with income poverty

	Positively correlated	Uncorrelated	Reversely correlated	Total
Child health	1	-	-	1
Environment	4	-	-	4
Child development	4	1	1	6
Education	3	2	-	5
Vulnerable children	1	2	-	3
HIV and AIDS	-	1	-	1
<b>Total</b>	<b>13</b>	<b>6</b>	<b>1</b>	<b>20</b>

**Table 3** CYS-MICS indices and odds ratios of MICS indices with income poverty

MICS indices	Categories/description	Odds ratio	Odds ratio group (correlation)
<b>Child health</b>			
MICS 24	Solid fuels	6.90	Positive
<b>Environment</b>			
MICS 11	Use of improved drinking water sources	3.60	Positive
MICS 12	Use of improved sanitation facilities	3.46	Positive
MICS 13	Water treatment	1.87	Positive
MICS 95	Slum household	3.11	Positive
<b>Child development</b>			
MICS 46	Support for learning	1.80	Positive
MICS 47	Father's support for learning	2.97	Positive
MICS 48	Support for learning: children's books	3.03	Positive
MICS 49	Support for learning: non-children's books	1.53	Uncorrelated
MICS 50	Support for learning: materials for play	0.70	Reverse correlated
MICS 51	Non-adult care	2.06	Positive
<b>Education</b>			
MICS 52	Pre-school attendance	1.92	Positive
MICS 54	Net intake rate in primary education	1.26	Uncorrelated
MICS 55	Net primary school attendance rate	1.32	Uncorrelated
MICS 56	Net secondary school attendance rate	2.66	Positive
MICS 60	Female adult literacy rate (age 15–24)	2.54	Positive
<b>Vulnerable children</b>			
MICS 75	Prevalence of orphans	1.21	Uncorrelated
MICS 76	Prevalence of vulnerable children	1.23	Uncorrelated
MICS 78	Children's living arrangements	1.71	Positive
<b>HIV and AIDS</b>			
MICS 82	Comprehensive knowledge about HIV prevention among young people	0.81	Uncorrelated

**Table 4** Numbers of MICS/CYS indices and deprivation possibilities for each category

Category	No. of indices	Pass/not deprived	Fail	
			Deprived	Severely deprived
Child health	1	✓		✓
Environment	4	✓	✓(1-2)	✓(3-4)
Child development	6	✓	✓(1-3)	✓(4-6)
Education	5	✓	✓(1-3)	✓(4-5)
Child vulnerability	3	✓	✓(1)	✓(2-3)
HIV and AIDS	1	✓		✓

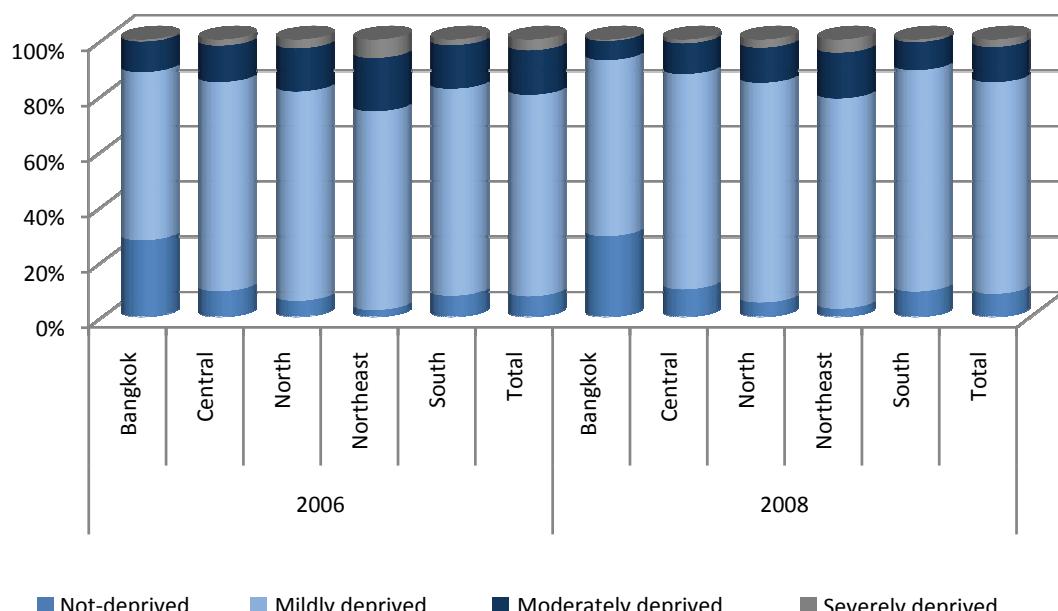
**Table 5** Criteria for calculating child deprivation index at the household level

Deprivation level for composite index	No. of severely deprived categories	No. of deprived categories	No. of not-deprived categories
Severely deprived	3		
	1-2	3-4	0-2
Moderately deprived	1-2	0-2	3-4
	0	4-6	0-2
Mildly deprived	0	1-3	3-5
Not deprived	0	0	6

Using the criteria listed in Tables 4 and 5, the composite child deprivation indices for 2006 and 2008 were computed and compared. Figure 4 reflects the distribution of household-level child deprivation indices, by region. There were clear improvements over the two years due to a smaller proportion of households falling into the severe or moderate deprivation category and a larger proportion of those who were mildly deprived or had no deprivation. This was true almost uniformly across all regions.

As in the investigation into the child deprivation situation using the MICS survey in 2006, it is always

important to be able to identify geographical areas where the problems were more serious, and/or where the problems were getting more serious during the period 2006-2008. Regional distribution as shown above is certainly not very useful. We therefore present the household composite deprivation indices at the provincial level in Figure 5. The general improvement in child deprivation at the regional level carries through to the provincial level. There was a greater number of provinces with a smaller number of poor deprivation indicators in 2008 than in 2006. However, there are some additional findings arising from detailed investigation at the

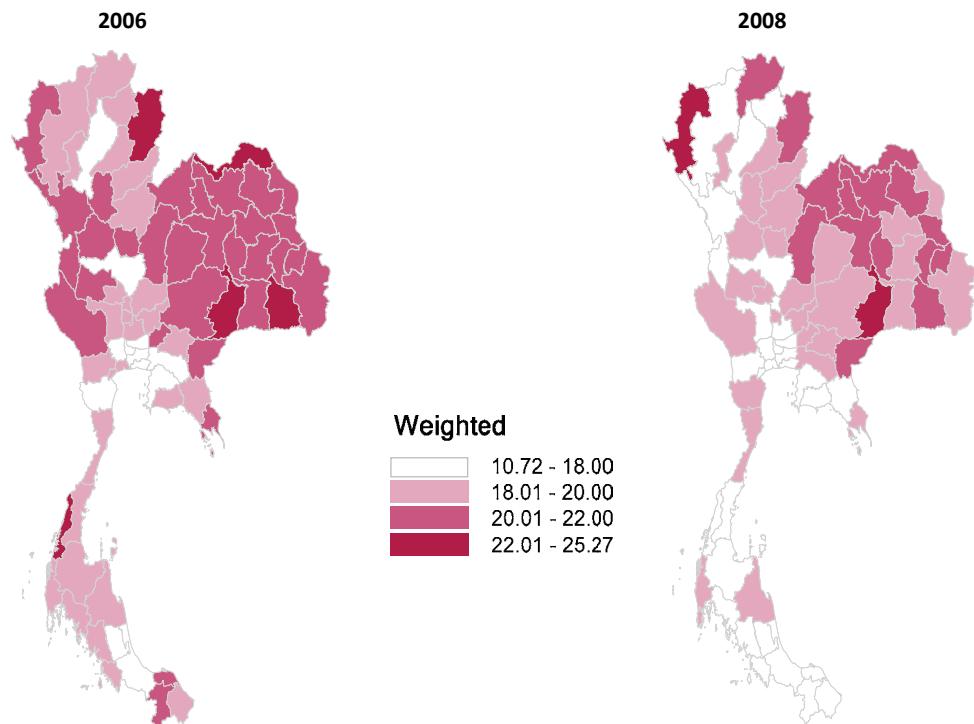
**Figure 4** Child deprivation index by region, 2006-2008

Source: Calculated from MICS 2006 and CYS 2008. Thailand Development Research Institute.

provincial level. For example, Mae Hong Son Province shows marked deterioration in child deprivation during the period 2006-2008. In 2006, the province did not make it into the top 10 most serious problems, but was ranked top in 2008. Closer investigation into individual MICS indicators shows that Mae Hong Son was worse in 14 of 20 indicators, indicating a more systematic deterioration rather than short-term limited effects.

The above finding about Mae Hong Son Province has a clear and powerful policy implication, as it once again emphasizes the inadequacy of using general improvement of child deprivation, as there are often areas suffering more from deprivation in spite of general improvement. More still needs to be done to ensure that these areas get the proper attention from policymakers that they deserve.

**Figure 5 Provincial composite child deprivation index, 2006 and 2008**



<b>Weighted index</b>			
<b>Rank</b>	<b>Provinces</b>	<b>2008</b>	<b>2006</b>
1	Mae Hong Son	25.27	Srisaket
2	Buri Ram	24.42	Buri Ram
3	Nongkhai	21.91	Ranong
4	Udon Thani	21.44	Nongkhai
5	Loei	21.12	Nan
6	Nongbua Lamphu	21.07	Nongbua Lamphu
7	Mukdahan	20.98	Kanchanaburi
8	Khon Kaen	20.84	Trat
9	Chiang Rai	20.84	Roi Et
10	Sa Kaeo	20.80	Yasothon
11	Mahasarakham	20.64	Nakhon Ratchasima
12	Amnat Charoen	20.63	Sa Kaeo
13	Yasothon	20.59	Udon Thani
14	Srisaket	20.50	Kalasin
15	Phetchabun	20.50	Phichit
16	Nan	20.08	Mae Hong Son
17	Kalasin	20.06	Yala
18	Surin	19.99	Mahasarakham
19	Lop Buri	19.90	Nakhon Phanom
20	Phitsanulok	19.75	Kamphaengphet

Source: Calculated from MICS 2006 and CYS 2008. Thailand Development Research Institute.



### *Thailand Development Research Institute*

---

*565 Ramkhamhaeng 39, Wangthonglang District, Bangkok 10310 Thailand  
Tel: 66 2 718 5460, 718 5678-89; Fax: 66 2 718 5461-62  
Email: publications@tdri.or.th; Web site: <http://www.tdri.or.th>*