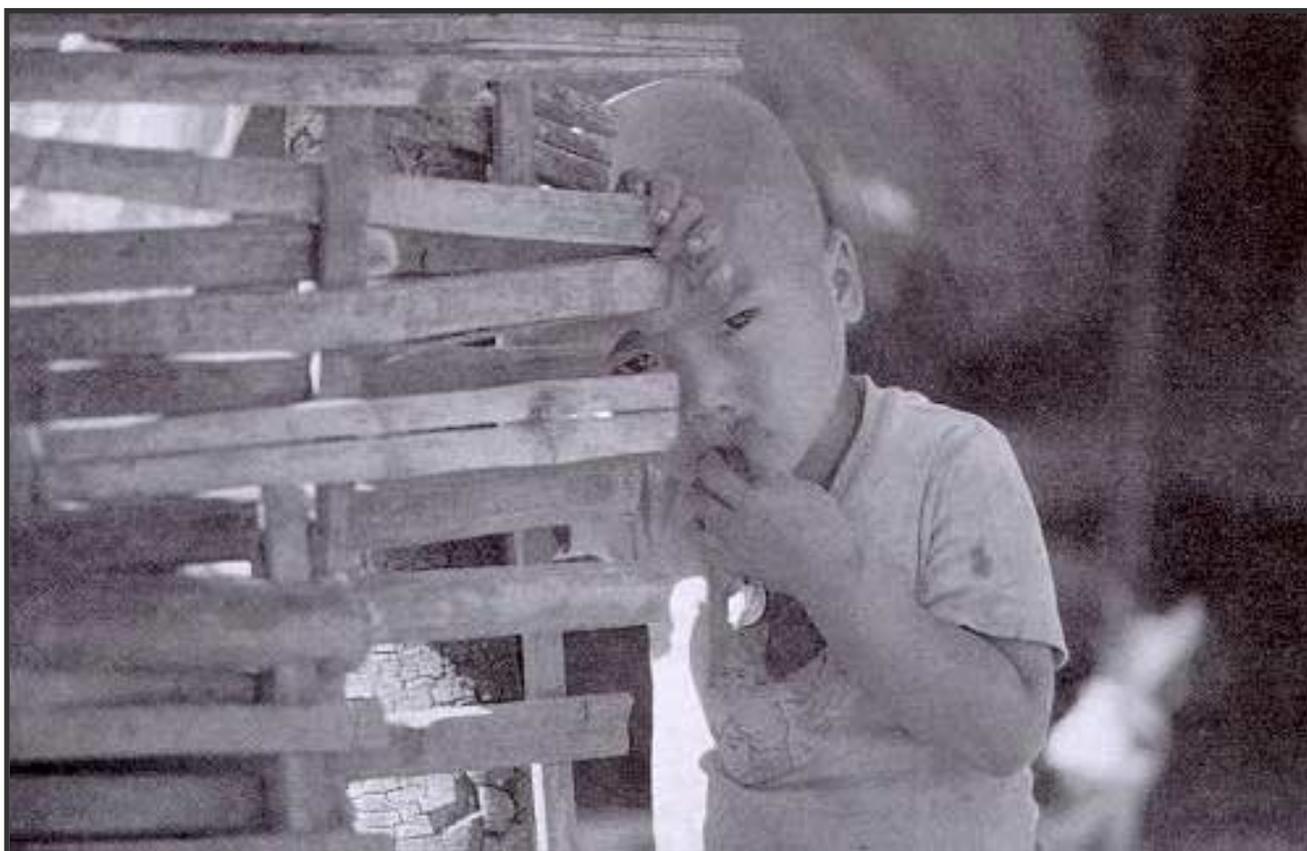


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Possible impacts of the Asian economic crisis on education include: an increase in the number of school dropouts, education budget cut, reduced enrolments, and a reduced rate of transition to higher education. See related article on page 3.

Social Impacts of the Asian Economic Crisis in Thailand, Indonesia, Malaysia and the Philippines: Synthesis Report*

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The Asian economic crisis that began in July 1997 has been accompanied by widespread social distress in the affected countries of Southeast Asia (Indonesia, Malaysia, Thailand, and the Philippines). A fall in output and incomes in these countries has been invariably accompanied by massive job losses as bankruptcies and cutbacks in production have multiplied. This has led to a sharp rise in open unemployment and underemployment. Job losses, falling wages, rising prices of essential goods and services, foreclosure on loans and/or rising cost of debt from private and public sources, decreased access to and/or increased cost of borrowing, etc. are severely affecting the life of the people, particularly the poor, in the crisis-ridden countries. By and large, negative social consequences are likely to persist long after the end of the financial crisis.

There are variations among the affected countries in many aspects: the level of development, the endowment and accumulation of capital both economic and social, the policies pursued, past experience on economic and financial problems, and so on. To foster an insight for policy formulation in the affected countries as well as other countries in the region, the Thailand Development Research Institute with generous financial support from the Ford Foundation has coordinated a collaborative research project on the Social Impacts of the Asian Economic Crisis in Indonesia, Malaysia, the Philippines, and Thailand.

The major goals of the project are: to document, as well as possible with existing information, the major social impacts of the crisis in Indonesia, Malaysia, Thailand, and the Philippines; to review the positive and negative effects of key policies on the poor, and to suggest appropriate changes in policy responses, both to improve the lot of the poor in the current crisis, and to improve the social and economic framework for dealing with future stress.

The primary objective of this paper is to provide an assessment of the social impact of the Asian financial

crisis drawing on the findings of the four country studies. The information, speculation and views expressed regarding causes and impact of the crisis in the participating countries will be as much as possible based on the country studies, except where specifically noted.

THE CAUSES OF THE CRISIS

The "macroeconomic history" of the crisis differs considerably across the four countries. In general, however, it is agreed that rapid financial liberalization, with inadequate attention to problems of corporate governance and of prudential regulation, amid poor macroeconomic management, and other policy and institutional failures, are common factors underlying the problems of these four Asian economies. The previous growth of the four countries had been built on shaky and unsustainable foundations, to varying degrees. Differences in the extent of these structural weaknesses have resulted in differences in the depth and breadth of the impacts of the crisis in the four countries. In brief, the fundamental causes of the crisis, as documented by country studies, include: dramatic decline in export growth; structural weaknesses in local institutions; decreasing competitiveness; export market structure; increasingly liberal capital account policies; financial liberalization with fixed exchange rate; premature liberalization of financial institutions; weak or mismanaged financial mechanisms; weak public and corporate governance; "herd" investment, panic and moral hazards in the financial sector; crony capitalism; currency speculators' attacks; the International Monetary Fund (IMF) and domestic policy responses; and unstable and unsound political climate.

With such a long inventory of causes, it is hardly surprising that there does not exist an unanimity of views regarding the relative importance of each element. Clearly, there is not one single explanation or cause but a

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complex set of problems that precipitated the crisis. An attempt has been made to group these problems into three fundamental causes of the crisis, viz., a dramatic decline in export growth, increasingly liberal capital account policies, and the “herd” behavior¹ of foreign market participants (Islam 2000: 2). Yet, it was not necessary for the four country studies to fully agree with this grouping of the fundamental causes of the crisis.

The Thai study takes the slow-down of export growth as a signal for the crisis. “Signs of an imminent economic crisis were apparent in 1996 when export growth slowed down and manufacturing competitiveness fell, especially in the second half of 1996, when the export growth rate sank suddenly to zero percent with unclear reason” (Sauwalak 2000: 2). Export slow-down played a big role in bringing about the crisis. The time prior to the crisis was a period of worldwide export downturn with a drop in demand for exports from Asian countries. The Japanese recession and depreciation of yen also led to decreasing demand for imports from other Asian countries. Thailand faced a sharp drop in export in 1996 from double-digit to zero growth rate.

The Thai study attributes the financial meltdown in mid-1997 largely to three policy errors: financial liberalization with a fixed exchange rate, premature liberalization of financial institutions, and failure to prudently supervise the financial institutions. Altogether, these largely mismanaged financial mechanisms gave rise to high speculation and a free flow of capital. What’s more, Thailand had been under heavy attacks on the baht from currency speculators since late-1996 and exhausted its foreign reserve defending the currency. Capital flight began accelerating from late-1996 to mid-1997. With the failing government efforts to save the baht, devaluation seemed imminent and there came a crisis of confidence in the currency.

Panic and moral hazards in the financial sector is another factor accelerating the tempo of the crisis. Prior to the crisis, the Thai financial system was already in a mess with high risk investment and moral hazards. Herding investment was mentioned in the Thai study to describe foreign investors’ behavior in diversifying investment without sufficient business information. Investors’ panic began when creditors started withdrawing their credit as they saw others doing the same. This led to rapid capital flight out of Thailand and the region.

Other factors causing the Thai crisis include the lack of transparency, weaknesses in local institutions, weak macro-economic management by government agencies, and problems of governance in both the public and the private sectors (“crony capitalism”). Structural weaknesses also mattered in the Thai case. Even before the crisis, Thailand was facing the problem of long run competitiveness, with more intensive use of inputs (cheap labor and raw materials) and mobilization of resources rather than increases in efficiency.

The bubble in Thailand burst in 1997 when several currency attacks since 1996 severely depleted the Bank of Thailand’s foreign reserve and the baht was

finally floated. With exports, and growth more generally, most adversely affected, the property market, construction sector, stock market and financial institutions were also put under strain, setting up the pegged Thai baht as the choice target in the region for currency speculation (Jomo and Lee 2000: 4). By mid-1997 Thailand had exhausted its foreign reserve. The baht was finally floated on July 2, 1997 and the Asian financial crisis arrived.

The currency crisis in Thailand was followed by currency devaluation in Malaysia and the Philippines in mid-July and Indonesia in mid-August of the same year.²

At the beginning, Indonesia, which faced the crisis two months after Thailand, seemed to be handling the situation better. It did not go through a long period of denial or a vain and costly attempt to defend the currency; it appeared to act more quickly and decisively in attacking financial sector weaknesses. However, a few key policy misjudgments, together with growing political and social uncertainties associated with the health and political plans of the then President Soeharto, combined to bring about the currency collapse and cause an economic recession much more severe than Thailand’s.

The Malaysian study argues that the crisis began as a currency crisis that catapulted into a financial crisis. Jomo, K. S. and Lee Kwok Aun do not quite agree with the many explanations for the crisis such as crony capitalism, poor macroeconomic management, corruption, lack of transparency and moral hazards. For example, crony capitalism—which has existed for some time—failed to explain how Malaysia sustained rapid growth for four decades after independence in 1957 without experiencing an earlier financial crisis of comparable magnitude. The crony capitalism explanation ignores the similarities with financial crises in developed and other developing economies, occurring with increasing frequency since late 1997 (Jomo and Lee 2000: 7). Crony capitalism only exacerbated the crisis in Malaysia.

Unlike Thailand or Indonesia, financial liberalization was not a major factor in the Malaysian crisis. Learning from the experience of the severe banking crisis of the late 1980s, Malaysia prudently improved its regulations, and as a result, its economy was not as badly undermined by liberalization as the other three economies. The level of Malaysia’s foreign liabilities did not exceed its foreign exchange reserves.

The currency and financial crises in Malaysia became a crisis of the ‘real economy’ mainly due to the government’s policy responses, and partly due to financial market demands and the IMF. The study pointed out that the crises have been due to the undermining of previous systems of international and national economic governance as a result of deregulation and other developments associated with financial liberalization and globalization. Thus, the erosion of effective financial governance at both international and national levels created conditions that led to the crises (Jomo and Lee 2000: 7).

Other factors also played some part in bringing about the Malaysian crisis. The quasi-pegging of the ringgit to the US dollar and its appreciation before the crisis adversely affected Malaysian exports and growth. The domination of investment in domestic and primary production implied the failure to progress more rapidly to higher value-added production and eroded the export competitiveness. Furthermore, with the baht down in July 1997, the ringgit was under strong pressure. The monetary authorities tried to defend the ringgit but eventually gave up by the third week of July 1997. The cost of aborted ringgit defense was around nine billion ringgit or almost US\$4 billion. The ringgit fell precipitously after mid-July 1997, reaching 4.88 to the US dollar in early January 1998. The stock market fell even more severely.

For the Philippines the major cause of the crisis was mainly the speculative attacks on the currency. As Thailand's situation worsened in May 1997, Philippine authorities quickly reacted by intervening in exchange markets and by raising interest rates. After Thailand's move to a floating rate system on July 2, 1997, the Philippine peso was under intense speculative attack. Philippine monetary authorities tried to defend the average peso/dollar value by further increases in interest rates as well as foreign exchange intervention. On July 11, the peso finally went on a float³ (to P29.45 to dollar from 26.37 the day before). It went down from P26.37 to a US dollar to P40/US\$ by the year end.

Another factor that aggravated the speculation was the political uncertainty arising from the growing tension associated with the "anti-charter-change" against the administration under former President Fidel Ramos. Further, the BSP, the Philippines' central bank, was said to have confused the market by being "in and out," leading to new signs of volatility.

From the level of P39.95/US\$ at the end of 1997, the peso reached P45.05/US\$ in early January 1998 in association with the continued instability in the region, particularly amid the threat of yuan devaluation, the weakening of the yen and the continued speculative attack on the Hong Kong dollar. By this time, the Philippine monetary authorities seemed to yield to the speculative attack by allowing the currency to depreciate along with the rest of the Asian currencies.

ECONOMIC IMPACT

In general, the economic impact of the crisis in the four affected countries include, a dramatic decrease of gross domestic product (GDP) growth with uneven impact across economic sectors, domestic business collapse and insolvency, drastic local currency depreciation, inflation and increased cost of living, retrenchment and unemployment, substantial decrease in income, reduced personal consumption, and reduced government spending. The effect has been felt to a varying degree among the four countries. Thailand and Indonesia were severely affected while Malaysia and the Philippines were less.

In Thailand, the manufacturing sector has been heavily hit, though the impacts have been uneven within the sector. The capital intensive industries were affected earlier and more than the labor intensive industries. By looking at the change in quarterly GDP by sector, the Thai study suggested that the non-agricultural sectors combined have experienced larger negative impacts than the agricultural sector which also registered negative growth in mid-1997 and the first half of 1998. The construction sector experienced the largest negative value changes in late 1997-1998. The manufacturing sector GDP declined to negative values from the second quarter of 1997 but its growth became positive since the fourth quarter of 1998. The real estate and business sub-sector was adversely affected in 1997 and 1998, but began to turn around in 1999. It was observed that although agricultural exports increased during 1997-1998, the benefit of the baht devaluation decreased in 1999.

The Indonesian economic crisis is characterized by massive price adjustment and drastic economic contraction. The biggest factor contributing to the economic contraction was a sharp decrease in investment, while consumer spending was relatively constant. The sharp contraction in the real sector of the economy was accompanied by the movement of resources from the non-traded to the traded sectors, from the import-dependent to the export-oriented industries, and from the modern to the traditional sector. The inflation rate increase was dramatic, reaching 77.6 percent in 1998, from below 10 percent prior to the crisis. The growth rates of liquidity and the money supply increased very drastically in the first half of 1998 while the money in circulation increased by 60 percent in the first six months of 1998. The interest rate was very high in 1998 but started to fall in mid-1999 (decreasing from 30 percent in April and May 1999 to 13 percent in August of the same year). The exchange rates depreciated from Rp.2,400/US\$ before the crisis in July 1997, to Rp.15,000/US\$ in July 1998, and around Rp.9,000/US\$ in September 1998. Tubagus Feridhanusetyawan maintains that the depreciation of the exchange rates was mainly due to the excessive monetary expansion to save the banking system from collapsing (Feridhanusetyawan 2000).

At the Seminar in Bangkok on May 26, 2000, to discuss the findings of the project, Peter Warr showed that the extent of the crises in Indonesia and Thailand could be compared more realistically with a use of the real GDP growth rates of the two countries and some kind of standardization as shown in Table 1. The annual growth rates of real GDP show that Thailand had been hit by the crisis since 1997, got worse in 1998 and recovered in 1999, whereas in 1997 Indonesia was not yet severely impacted by the crisis but was hit harder than Thailand in 1998 and did not recover in 1999. When the growth rate is standardized by using 1996 rates as reference (100), it was found that the economic slowdown in the two countries during 1998-1999 was at

about the same level—the growth indices of Indonesia and Thailand in 1998 were, respectively, 9.6 and 12 percent less than the 1996 values. This implies that when the 1998 situation is compared with that in 1996, Thailand appears to have been hit harder than Indonesia. However, when 1997 rates are used as reference (when Thailand was already hit by the crisis), the index in 1998 reflects a less severe impact for Thailand than for Indonesia.

Using a similar approach, the real GDP growth rates of Malaysia and the Philippines indicate that both economies obviously contracted in 1998, Malaysia from 7.7 percent in 1997 to -7.5 percent in 1998, and the Philippines from 5.2 percent down to -0.5 percent between 1997 and 1998. While the real GDP growth indicates that the Malaysian economy grew faster than the Philippine in 1999, the standardized index shows that the Philippines was doing better than Malaysia in 1999, no matter what year (1996 or 1997) was used as reference.

Among the four affected countries, the Philippines was affected the least for several major reasons; its experience of the financial crisis during 1983-1985, the improved political and public governance in relation to financial and economic management, and its export market structure which is tied with the US and European markets. The Philippine

exports to the European Union (EU) and the North American Free Trade Agreements (NAFTA) in 1996 accounted for as much as 53.6 percent of its total exports, the highest percentage for any country in Asia (Table 2). Thus, at the outbreak of the Asian crisis, the Philippine government declared that the country was not in crisis. A major reason for this confidence would have been the export factor. Export growth of the Philippines during this period was the highest in Asia (Passadilla 2000: 14).

An additional reason of why the Philippines was less affected compared to Thailand, Indonesia and Malaysia is the timing of the crisis or “luck” as the author puts it. That is, the crisis struck while the Philippine bubble was still incipient (Passadilla 2000: 20).

SOCIAL IMPACT

The examination and comparison of the social impact in the participating countries is constrained by a number of factors. As put by the Malaysian study, the actual impact of the economic recession is difficult to measure empirically and assess with accuracy and objectivity. The links between the cause and effect are not always direct or obvious, and are also subject to theoretical debate. There is also a need to distinguish

Table 1 Growth Rates of Real GDP of Thailand, Indonesia, Malaysia and The Philippines, 1996-1999

	1996	1997	1998	1999
Growth rate of real GDP				
Thailand	5.9	-1.8	-10.4	4.0
Indonesia	8.0	4.7	-13.7	0
Malaysia	8.6	7.7	-7.5	5.4
Philippines	5.7	5.2	-0.5	3.2
Level of real GDP growth (1996= 100)				
Thailand	100	98.2	88.0	92.6
Indonesia	100	104.7	90.4	90.4
Malaysia	100	107.7	99.6	105.0
Philippines	100	105.2	104.7	108.1
Level of real GDP growth (1997=100)				
Thailand	101.8	100	89.6	93.2
Indonesia	95.3	100	86.3	86.3
Malaysia	92.3	100	92.5	97.5
Philippines	94.8	100	99.5	102.7

Sources: Jomo and Lee (2000: 6); Passadilla (2000: 15-20); and Warr, Peter, Seminar on “Social Impacts of the Asian Economic Crisis,” Bangkok, 26 May 2000 (commentary note).

Table 2 Export by Destination of the Four Crisis-Affected Countries in 1996 (% of total exports)

	Asian	Chinese econ.	EU	Japan	NAFTA
Thailand	19.0	10.6	15.1	15.8	18.6
Indonesia	13.4	9.9	15.1	26.3	16.4
Malaysia	27.0	12.0	13.3	12.9	20.7
Philippines	12.7	8.8	17.0	18.0	36.4
Singapore	32.7	14.0	11.8	7.2	17.4

Source: Asia Pacific Economics Profiles, Asia Pacific Economics Group, Financial Times, 1997.

other economic trends from the direct social impacts of the crisis even though they might occur simultaneously. In the case of Malaysia, as well as other countries, it is difficult to separate out the adverse impacts of international price movements or other non-economic changes (e.g., weather) on the economy during the crisis. Furthermore, the comparison among the participating countries is made more difficult by the use of different measurements of the effects.

Table 3 summarizes social impact issues covered by the four country studies. It may be observed that a larger number of issues are touched upon in the studies of the more affected economies (Thailand and Indonesia) than those of the less affected economies (Malaysia and the Philippines).

Employment

Employment problems during the crisis consisted of lay-off, wage cuts, reduced work hours, unemployment, underemployment, movement between formal and informal sectors, movement among economic sectors, occupational change, moving out or in the labor force, etc. While effects have differed in magnitude and composition in the four countries, there have been some similarities. For instance, labor market impacts were much more severe in urban than in rural areas. Decreases in employment, hours, and wages appear to have been concentrated much more in the formal than in the informal sectors. And within the formal sector, construction and financial services have been especially hard hit.

In Thailand, unemployment rates increased substantially from their usually low values: the dry season (February) rate having risen from 2.2 percent in 1997 to 4.6 percent in 1998 and 5.2 percent in 1999, while the wet season (August) rate from 0.9 percent in 1997 to 3.4 and 3.0 percent in 1998 and 1999, respectively.⁴ The reason why the unemployment rate did not rise too high was partly due to flexible wage rates. While the unemployment rate increased 2.4 percent during the dry season of 1997-1998, real average monthly wage earnings fell 4.62 percent. In addition, unemployment was also cushioned by the reduction in hours worked or underemployment. During the dry season, underemployment (work less than 30 hours per week) increased from 5.5 percent to 10.1 percent and 7.6 percent between 1997 and 1999. A similar increase was also evident in the wet season underemployment. Changes in underemployment rates are more sensitive to the crisis impacts than changes in unemployment rates. Another reason for low unemployment rates in spite of the crisis is the decrease in labor force participation rates, especially in 1998. An additional indicator of the employment problem not usually mentioned in the Thai labor literature is the number of days spent looking for work. Sauwalak Kittiprapas reports that during the crisis the average number of days spent looking for work during the slack season (February), increased from 60 days in 1997 to 69.4 days in 1998 and jumped to 92.8 days in 1999. During the high season (August), it increased from 74 days in 1997 to 87.5 and 91 days in 1998 and 1999 respectively (Sauwalak 2000).

Table 3 Social Impact Issues in the Four Country Studies

Issue discussed		Thailand	Indonesia	Malaysia	Philippines
Employment		✓	✓	✓	
	Formal/informal/displaced	✓	✓		
	Unemployment	✓	✓	✓	✓
	Underemployment	✓	✓		✓
	Participation rate	✓	✓	✓	✓
	Sectoral mobility	✓	✓	✓	✓
	Retrenchment	✓		✓	✓
	Wage, real wage	✓	✓	✓	
	Strikes			✓	
	Geographical mobility	✓			
	Urban-rural migration	✓	✓		✓
	Overseas/guest workers	✓	✓		✓
Vulnerable, disadvantaged groups	Women	✓	✓	✓	
	Children	✓	✓	✓	✓
	Elderly	✓	✓	✓	
Poverty		✓	✓	✓	
Income distribution		✓	✓		✓
Education		✓	✓	✓	✓
Health		✓	✓	✓	✓
Housing/shelter		✓			✓
Environment		✓			
Community/family		✓			
Food security			✓		
Safety net		✓	✓	✓	✓

The movement of workers between the formal and informal sectors as reported by Sauwalak deserves a closer look. The definition adopted by her is broad and arbitrary. Her conclusion that the formal sector employment expanded instead of contracted seems to be against the fact that during the crisis, particularly in 1998, there was a large number of lay-off from formal establishments in the range of 355,000–656,000 workers (Srawooth 2000a: 13). Secondly, there was widespread downsizing of formal employment institutions both in the public and private sectors. Thirdly, there was a big drop in the number of workers in the construction sector during the crisis. However, while formal employment, as defined by Sauwalak, decreased by 498,930 persons between 1998 and 1999, during the dry season, informal employment increased by 32,965 persons; during the high (wet) season, employment in both sectors increased. Furthermore, the cut off point of those working in establishments employing 10 persons and more as formal employment, because of the reason that such employment is regulated by the labor law, may not be valid anymore. Starting from April 1, 2001, “all” establishments will have to enroll in the national social security system.

By economic sector, employment in construction dropped significantly while manufacturing and finance also lost some workers. The loss may have been absorbed by the services and commerce sectors. The magnitude of sectoral movement in 1999 was smaller compared to 1998.

In Indonesia, unemployment increased slightly from 4.7 percent in 1997 to 5.5 and 6.4 percent, respectively, in 1998 and 1999. This increasing trend suggests that the adjustment in the first year of the crisis was the adjustment in real wages due to inflation, with a slight increase in unemployment. When inflation decreased in 1999, thereby sharply increasing the real wages, employment finally had to adjust, and as a result, the unemployment rate was higher in 1999. The Indonesian study quoted Agrawal (1996) in concluding that unemployment in Indonesia is not a serious problem: first, the unemployed are mainly young people who have entered the job market for the first time, and second, the duration of unemployment is usually short—an indication of the relatively flexible nature of the labor market in Indonesia.

Unemployment in Malaysia during the crisis increased from 2.4 percent in 1997 to 3.2 and 3.0 percent, respectively, in 1998 and 1999. This level of unemployment was in fact lower than the rates in 1991 (4.6%) and 1992 (3.7%). Even so, Jomo and Lee (2000: 29) mention that the impact of the crisis in reducing employment came as a shock as Malaysia had been accustomed to sustained economic growth for many years. Employment in construction fell most sharply in 1998, while manufacturing, agriculture, as well as financial and business services also hard hit; manufacturing continued to experience severe job losses in 1999.

Surprisingly, the unemployment rate in the Philippines increased drastically in 1998 to 10.1 percent, from an average of 8.4 percent during 1990-1996. The figure could have been higher if the labor force participation rate did not decline from 66.7 percent in 1996 to 66.3 and 66.1 percent, respectively, in 1997 and 1998. The labor force dropout rate was most pronounced among the younger age bracket, i.e., the 15-24 age group, suggesting that most of the job cuts involved temporary and/or short-tenure rather than full-time and long-tenure jobs. Most of the unemployment occurred in Metro Manila. The majority of unemployment in 1997 and 1998 was in the lower skill market like production, clerical and agricultural work. Underemployment, on the other hand, declined slightly by 6.0 percent from 1997 to 1998.⁵

The crisis affected overseas Filipino workers (OFWs) a little less than was earlier expected. The OFWs have been an important source of foreign exchange for the Philippine economy for many years. They also helped ease the country's unemployment problem; without the overseas jobs, the unemployment rate would have increased by another 2 percentage points. The Asian market share of OFWs in 1997 increased to 42 percent from 27 percent in 1990. The affected economies of Indonesia, South Korea and Thailand employ less than 10 percent of the OFWs working in Asia. However, data on deployment and remittances show that growth has slowed. Foreign remittances dropped by 14 percent in 1998 from 1997. Although in the first half of 1999, total remittances picked up, remittances from Asia continued to drop.

Poverty and income distribution

In most affected countries, income losses were widespread across occupations and sectors. In the Thai public sector, civil servants were subject to pay cuts ranging from 5 to 10 percent, and a freeze has been imposed on salary increments for higher categories of civil servants. In the private sector, especially in construction, finance, and manufacturing, significant lay-off were obvious. The private sector faced even greater income reductions as a result of cuts in salary, overtime pay and other benefits. Workers in small and medium enterprises and the self-employed were expected to lose substantial income.

Calculations based on the Socio-economic Survey data of 1996 and 1998, reveal only minor changes in aggregated poverty and income distribution between the two years. The Thai study provides data on changes in average real income by work status and income components, poverty incidence, and poverty profiles by different classifications of households. The study applies a new poverty measurement based on the weighted calculation of calorie requirements, consumption basket and spatial price indices. Accordingly, the poverty lines based on this method, for rural and urban areas, respectively, were 8,878 and 10,924 baht in 1996, and 10,383

and 12,350 baht in 1998. With reference to these poverty lines, the study concludes that poverty incidence (by head count index) for the whole country increased marginally from 14 percent in 1996 to 14.29 percent in 1998. The number of people under the poverty line increased from 8.42 to 9.12 million or by 8.3 percent. Under a more conventional approach of poverty measurement, with lower poverty lines,⁶ the National Economic and Social Development Board (NESDB) indicates that the number of the poor was 6.8 million in 1996 and increased to 7.9 million in 1998 or by 16 percent (NESDB 1999: 4).

According to the Thai study, poverty incidence increased in almost every part of the country except in the North. Bangkok and the rural areas were more affected by the increase in poverty incidence. Yet, more than half of the poor were living in the Northeast. It was found that those in agriculture and construction were worse off during the crisis. The study indicates that the extremely high and low educated groups (higher education graduates and unskilled workers) were more affected by poverty than the others. The Thai study also examines changes in income shares by decile and income distribution. In contrast to the findings of another study (Knowles *et al.* 1999: 17), the Thai study suggests that income distribution slightly improved because the rich were more affected and lost greater income share than the poor.

A comparative analysis of the crisis-induced poverty in Indonesia is made difficult by the use of different methodologies and types of data. Keeping this in mind and with some adjustments, poverty incidence in Indonesia appears to have declined from 9.75 percent in February 1996 to 7.64 and 7.53 percent, respectively, in February and May of the following year. It went up to 13.1 percent in February and 16.07 percent in August 1998, and peaked at 17.35 percent during September and December 1998. By August 1999, the poverty rate came down to 9.79 percent, close to the level in 1996.

Based on the expenditure level, the distribution of real expenditure in Indonesia appears more even after the crisis. The data shows that the upper middle class was hit harder during the crisis. In general, the expenditure of the rich fell more than that of the poor.

In connection with poverty, food security became a crucial issue at the household level in Indonesia. Food prices increased by more than 118 percent in 1998, compared with the 78 percent increase in general inflation and a 17 percent increase in nominal wages, on average. The average price of rice increased from about Rp.1,000/kg just before the crisis in 1997 to about Rp.2,750 (a 275 percent increase) in early 1999.

The poverty rate in Malaysia increased from 6.1 percent in 1997 to 7.0 in 1998, reversing the long-standing trend of declining poverty, from 8.9 percent in 1995. The incidence of hardcore poverty—defined as households receiving less than half the poverty line income—also rose, from 1.4 percent to 1.7 percent. The number of households living below the poverty line in-

creased from 346,000 in 1997 to 422,100 in 1998, i.e., by 22 percent, according to another social impacts survey.

The effect of the crisis on income distribution in the Philippines was examined through the SAM (social accounting matrix). The result shows that much of the effect fell on the middle income group, particularly those at the lower end (earning between P50,000–99,999 a year), and those in the urban sector. The highest income class was also affected by the crisis. On the other hand, the two poorest income groups (family income under P20,000 and between P20,000–49,999) were less adversely affected.

A study by the Asian Development Bank (ADB) (Knowles *et al.* 1999) shows that the incidence of poverty in the Philippines declined significantly from 44.2 percent in 1985 to 35.5 percent in 1994 and 32.1 percent in 1997. But there are no comparable post-crisis estimates of poverty incidence. The surveys of the Social Weather Stations, however, indicate an upward trend in self-rated poverty between 1997 and 1998.

Education

Possible impacts of the crisis on education include: an increase in the number of school dropouts (due to contraction of family income and the increasing cost of living as well as need for supplementary family labor); education budget cuts; reduced enrolments; and a reduced rate of transition to higher education. In Thailand, an official estimate suggested that in 1998 some 126,000 students dropped out due to the crisis, another 276,000 left school early (after primary or secondary schooling), and a number of others moved to lower-priced schools or shifted from urban schools to less expensive rural schools. In general, school enrolments dropped 7.2 percent for private schools and 1.8 percent for public schools.

In Indonesia, the secondary school enrolment rate dropped by only 5 percent from the level of 65 percent prior to the crisis. The decrease of the enrolment rate was more significant in urban areas. The dropout rates among children aged 13-19 (secondary school) in urban communities increased from 11.1 percent in 1997 to 17.5 percent in 1998. In rural areas, it increased from 13.5 percent to 16.8 percent over the same period. The enrolment rates at the elementary level decreased slightly by 0.1 percent in rural areas, and 3.3 percent in urban areas. For the secondary level, the enrolment rates declined by 5.2 percent in urban areas and 2.5 percent in rural areas. By and large, the Indonesian impact of the crisis on education is not alarming, considering the fact that the dropout rate in Indonesia has already been quite high. This view is consistent with the findings of the ADB study that the crisis has not yet had a dramatic effect on school enrolment, particularly at the primary level (Knowles *et al.* 1999: 24).

Similar to Indonesia, primary school enrolment in Malaysia appears to have been fairly unaffected by the

crisis. In fact, the number of under-enrolled primary schools (i.e., with less than 150 students) declined during 1997-1999. Secondary school enrolment did not show significant declines either, both at the start of the 1998 and 1999 school years.

However, the impact of recession on education may not be reflected in enrolment rates as families may choose to continue their children's education for many reasons and adjust family spending or apply other solutions, and may also receive direct or indirect forms of government support. For example, the cost of textbooks which is a major financial burden for low-income families could be subsidized by the government. The impact of the crisis on education in Malaysia is also difficult to assess because data on dropout rates are not publicly available, while other qualitative aspects of education are difficult to measure.

Tertiary education may be more obviously affected. Malaysia has a very high proportion of tertiary students studying abroad, especially in the UK, Australia, the US, Canada, India and Taiwan. The sudden increase in foreign education costs, due to the collapse of the ringgit, has compelled many students to seek alternatives locally. Some prospective students had to postpone or cancel their study plans.

The impact of the crisis on education in the Philippines is not clear (partly due to lack of data on drop out after 1998). At the elementary level, the dropout rate in the public schools declined from 8.3 percent in 1997 to 7.77 percent in 1998. For the private schools, the decline was from 4.3 percent to 3.93 percent over the same period. Between 1998 and 1999, however, the enrolment rates in elementary and secondary public schools increased, while those in private schools decreased, implying that there were some movements of students from private (more expensive) schools to public (less expensive) schools. On the supply side, the Philippine study indicates a reduction of education budget from 24.74 percent of government consumption in 1997 to 24.18 percent in 1998. This cut resulted in fewer classroom units and desks built, reduced provision of instructional materials, and limited training of personnel.

Health

The crisis could affect health conditions of the people in many ways. For an individual, the increased burden, more work for less money, change in work condition, increased tension, etc., could result in health problems. In addition, the decrease in health expenditure, private or public, due to the rising costs of health services or decrease in income, could affect the supply and consumption of health services.

In general, health problems due to the crisis in the affected countries are not clearly identified. In Thailand, the incidence of underweight children increased from 7.9 percent in 1996 to 11.84 percent and 12.29 percent, respectively, in 1997 and 1998. Mental health problems have become more critical. The number of out-patients

increased from 778,457 in 1997 to 804,906 in 1998. In Indonesia, there has been a slight increase in the number of population with health problems. The *Susenas* data shows that the percentage of population with serious health problems increased from 12.8 percent in 1997 to 14.6 percent in 1998. The results from the 100 Village Survey data show a higher increase in the number of persons with health problems, from 19.4 percent in 1997 to 27.5 percent in 1998. Health problems in Malaysia and the Philippines were not mentioned in the respective country reports.

While the impact of the crisis on health was not clearly identified in the country reports, its possibility can be inferred from the widespread reductions in health expenditure and budgets and increasing costs of drugs and medical services. In Thailand, the budget of the Ministry of Public Health (MOPH) for 1998 was 9 percent less than the previous year's. In real terms, the 1999 MOPH budget was 23 percent lower than that of 1997 (Knowles *et al.* 1999: 28).

In Indonesia, the decline in government spending on health services led to a shortage of medical supplies in the rural and village health stations (*Puskesmas* and *Posyandu*). The budget cuts also reduced the subsidy for drugs and medical supplies and eventually led to the increase in costs and prices of health treatments. The IFLS (Indonesian Family Life Surveys) show that, in general, public facilities appear to have been adversely affected by the reduced availability of drugs and supplies. Unlike what the trend in the other affected countries, these surveys show a decrease in the use of public services. There are possible reasons for this. One is the crisis-induced quality deterioration in the public health services (Knowles *et al.* 1999: 29), and second, a shift toward traditional health services (Feridhanusetyawan 2000: 35).

In Malaysia, some aspects of health-care have been severely affected by the crisis. There was a decline in budget allocations for public health, despite rising federal health expenditure. Increased health service costs have also reduced access of low-income households to affordable health care, and as a result, there has been a shift away from using private to public health services. In turn, various government health service facilities have become overloaded and overcrowded. Furthermore, there has been an increase of 30 percent in the price of imported drugs which comprise 60 percent of pharmaceutical drugs used in the country.

In the Philippines, the impact of the crisis on health was apparent in the fiscal budget reduction and increased peso value of medicines and other medical goods. At the onset of the crisis, a 25 percent mandatory saving was applied for all government departments. The Health Department budget dropped from 4.31 percent of the total government spending in 1996 to 3.52 percent in 1998. Such a million-peso reduction would inevitably result in reduced health-care services and decreased medical supplies. The reduction in supply of important medical items such as vaccines meant a decline in the quality of medical services. The Department of Health

estimates more than 600,000 patients may not have been diagnosed for some illness and another 3.6 million may not have been provided laboratory services in one way or another.

Other social problems

Other social problems examined by the country studies include, food and nutrition (Philippines), housing and shelter (Philippines), environment (Thailand), community and family (Thailand), food security (Indonesia), and the disadvantaged (Thailand and Indonesia). By and large, these issues were broadly discussed, without clear identification of linkages to the crisis.

SOCIAL SAFETY NETS AND GOVERNMENT RESPONSES TO THE SOCIAL IMPACT

The crisis has resulted in a number of social problems and increasing need for social welfare. In general, the four Asian countries have not adequately developed formal “Western-style” social safety nets.⁷ Mostly, there is a limited mandatory compensation in the form of severance pay or other benefits for those who are laid off; there is no unemployment insurance, and other social security benefits for the unemployed are also very limited. Further, most of the social security benefits are not available to the self-employed or workers in the informal sector, who comprise the majority of the workforce in these countries. Thus, the vulnerable groups in these countries tend to rely primarily on informal and traditional safety nets provided through the family and/or community.

Current formal safety nets in Thailand include severance payment and a social security system. The severance payment, which is available only to those in the formal sector, amounts to 10 months of pay for those who have worked for at least three years. The present social security system covers private enterprises employing 10 workers or more, but not the self-employed, as erroneously reported in the Thai study. In fact, beginning April 1, 2001, the system will cover all establishments employing one person and more. As of September 1999, the beneficiaries of the social security system were 5.5 million workers (only about 15 percent of the total labor force). The Thai study’s review of the safety nets, particularly the existing programs prior to the crisis, was not exhaustive. There are, in fact, many more forms of safety nets provided both formally and informally. For example, for the public sector at least, there is a pension system for civil servants. The Ministry of Labour and Social Welfare also provides a number of welfare programs for the disadvantaged, such the elderly, the disabled, and the unemployed.

To cope with the crisis, the Thai government has adopted a number of rescue programs, which include the Asian Development Bank’s Social Sector Program Loans (SSPL) of US\$500 million aimed at supporting social

projects via the ministries of Education, Public Health, Labour and Social Welfare, and Agriculture, and the World Bank loans of US\$300 million, disbursed through the Social Investment Program (SIP), aimed at creating employment and capacity building in communities and local governments.

In Indonesia, the social safety net (SSN) programs have not been effective. The implementation of the SSN has been not only late but also in disarray and full of controversy. The bureaucracy lacked the capacity to manage the programs. It was not only demoralized during the rapid progression of the crisis and political turmoil, but also lacked the experience in designing and implementing the program. The problem was also complicated when the issues were politicized during the year of political turbulence in 1998.

The SSN programs were spelled explicitly in the IMF reform package in June 1998—almost one full year after the crisis started in August 1997. In September 1998, the *BAPPENAS* (the national planning agency) announced that a nationwide SSN program was being developed. The announced program consisted of four elements: first, a food security program to guarantee the availability and affordability of food across society; second, a public works program to absorb the recently unemployed; third, a social protection program to maintain the standard of the health and education facilities and, fourth, the promotion of small and medium enterprises. The total cost of implementing the program was estimated at around Rp. 17 trillion, smaller than the earlier drafted amount of Rp. 25.5 trillion. The SSN was widely criticized as a total failure—not reaching the poor and corruption-tainted. The World Bank had to delay the disbursement of the loan to Indonesia, partly because of some concern that the fund was not properly used. In Early 1999, the *Bappenas* admitted that the disbursement of the SSN fund had been very slow, and that the program did not run smoothly. It was also reported that only 30-40 percent of the fund was actually used.

One reason behind the failure was that the SSN was not properly designed but was an uncoordinated collection of programs submitted by various government departments. Another reason was the fact that the *Bappenas* did not have the full control and authority to channel the fund. Each department received its limited and partial budget from the Ministry of Finance, and there was no guarantee that the fund they received would be spent on SSN activities. Some government officials blamed on the late result of the social impact assessment, although this was not a good excuse. The main problem was bad implementation. In fact, several NGOs have asked foreign donors to stop their assistance for SSN programs.

The case of failure of the formal SSN in Indonesia points to the worthiness of the informal SSNs. First, the extended family is the most important source of the natural safety nets. Additionally, the agricultural sector and the informal sector also provided the other forms of natural safety nets. Further, considering the fact that

involuntary participation of women in the informal labor market has increased, the female member of the family could also be considered as the provider of natural SSN.

Malaysia has been lauded in the international development discourse for its success in providing public services, especially health and education. Many lower income households have enjoyed some government transfers and services, and have even become dependent on and continue to expect of government subsidies. Generally, therefore, the crisis and the consequent changes in government social expenditure tend to be felt more by lower-income households. In response to the crisis, the following specific programs and funds were designated for certain sectors or needy groups. Under the auspices of the Ministry of Health and the Ministry of Education, an additional RM200 million were set aside for rural social infrastructure facilities. The Fund for Food program, with a start up allocation of RM300 million, was established to increase food production through provision of low-interest loans to small farmers and Farmers' Associations. An additional allocation of RM100 million for the Hardcore Poverty Development Program was designed to provide loans to the hard-core poor for income-earning activities through Amanah Ikhtiar Malaysia (AIM). The Small-Scale Entrepreneur Fund (RM100 million) and the Economic Business Group Fund (RM150 million) were set up to provide assistance to petty traders, hawkers and small entrepreneurs—including women entrepreneurs—in urban areas. The Small and Medium-Scale Industry (SMI) Fund, with startup financing of RM750 million, was mandated to aid small and medium scale businesses in expanding production. Loans were mainly channeled for the purchase of equipment and machinery. The National Higher Education Fund, with an initial RM320 million allocation, is meant to provide financial assistance to students in local universities and colleges.

The implementation of these programs has, however, been considered disappointing. For example, the Fund for Food Program, which provides low-interest loans to farmers, saw only RM199 million—out of an allocated RM700 million—approved as loans. Similarly, the Special Scheme for Low and Medium Cost Housing approved only RM241 million (out of the available RM2,000 million), while the Small-Scale Entrepreneur Fund approved RM882 million out of RM1.5 billion available. Whatever the reasons, substantial proportions of the credit program allocations have not been taken up, when they could have generated the much-needed economic activity or boosted demand.

In the Philippines, there are two major formal social safety nets. One is the Social Security System (SSS) for the private sector and the other is the Government Service Insurance System (GSIS) for the public sector. Both systems have limited coverage and form. Only a small fraction of the systems will directly benefit people affected by the crisis as coverage for most people is limited to retirement. Benefits such as Sickness, Disability, and Hospitalization would not apply to the direct conse-

quences of the crisis. The help that they have been able to provide to crisis-affected people is limited to loans, making funds available to displaced workers, educational, calamity and housing loans, and emergency loans.

The government has tapped the SSS some more for other types of loans. For example, the SSS was asked to work with the Guarantee Fund for Small and Medium Enterprises (GFSME) in providing funds for the newly created Enterprise Stabilization Guarantee Fund (ESGF). This is an additional burden on the SSS as its funds are not sufficient even to cover unemployment or other benefits for displaced workers or provide a more comprehensive health coverage for its members.

A safety net that can directly help the people affected by the crisis is the Public Employment Service Office (PESO) under the Department of Labor and Employment. The agency was set up to monitor worker layoffs at the local level, provide job placements, distribute information on job vacancies and available programs for retraining, entrepreneurship and credit/livelihood assistance. In 1998, the PESOs conducted job and livelihood fairs nationwide, placed 114,302 job applicants, and assisted 141,122 students through their career guidance programs.

In response to the social impact of the crisis, the Philippine government has also taken other direct measures. In February 1998, the government organized the National Economic Summit (NES) in its effort to coordinate inter-sectoral cooperative responses to the crisis. Four clusters of proposals were formed to prioritize and concretize the proposed programs. Two of the four clusters involve protecting jobs and enhancing productivity, and protecting the vulnerable groups. The government also provides rice assistance, especially in the drought-affected areas. It also provided training for 1,229 displaced workers and 10,774 scholarships in technical programs that would run for one to three years. However, the government's assistance was small-scale.

SUMMARY AND CONCLUSION

The present study is a synthesis of four country studies on the social impact of the 1997 Asian crisis in four countries in Southeast Asia—Thailand, Indonesia, Malaysia, and the Philippines. The crisis started in Thailand, and spread quickly to Indonesia, Malaysia and the Philippines. The causes of the crisis differ across the four countries. The major causes include rapid financial liberalization with problems of corporate and good governance, of prudential regulation, poor macroeconomic management, and other policy and institutional failures. Depending on their socio-economic and political backgrounds, the four countries have been affected by the crisis to a different degree. Thailand and Indonesia have been much harder hit compared to Malaysia and the Philippines.

The social impacts commonly addressed in the four country studies are unemployment and

underemployment, poverty and income distribution, human development (education and health), and safety nets. Thailand and Indonesia encountered significantly increases in unemployment and underemployment. Malaysia was the least affected by unemployment; no underemployment was reported. In the Philippines, although unemployment went up slightly from the earlier trend, underemployment declined. During the crisis poverty in Thailand, Indonesia and Malaysia increased. The poverty incidence was not mentioned in the case of the Philippines. The crisis somewhat reduced income inequality in most countries since it affected the middle and higher income classes more. This does not mean, however, that the lower income classes were not affected.

In most countries, education was not significantly affected by the crisis, except in Thailand where the number of school dropouts was 126,000 in 1998 and school enrolment dropped 7.2 percent for private schools and 1.8 percent for public schools that same year. The Philippines also reported some increase in the dropout rate during the crisis. In Indonesia and Malaysia, the impact of the crisis on education was less dramatic or not significant. In the health sector, the most commonly found problems were the increase in the cost of imported medicine and medical equipment, and decreases in the health budget. In conclusion, the crisis has not affected the social sector in general, although some of the impacts may not be identifiable clearly or in the short run, while some of the problems have already been mitigated through government responses or by other social safety nets (SSNs).

In this study, SSNs are not clearly defined and most country studies apply the concept in the sense of social security and social welfare, except in the case of Indonesia where the SSN tends to be referred more strictly as emergency social funds which serve to protect individuals from falling below a defined minimum standard of living. By and large, the formal SSNs in the four countries are limited in coverage. In the case of Thailand, for example, only about 15 percent of the workforce are covered by the social security system and a handful of civil servants by the pension system. In Indonesia, SSNs (more strictly defined) have not been effective mainly because of poor implementation and partly due to corruption. In Malaysia, the basic social services which had been usually well provided were interrupted by the crisis and the consequent changes in the government expenditure tend to be felt more by the poor. The program measures by the government have been considered disappointing. The Philippine study mentions two major formal SSNs—the SSS and the GSIS. Both the systems have limited coverage. In addition, the PESO and women's increase labor participation, contributing to family income, were quoted as safety nets that have directly helped the people affected by the crisis.

In conclusion, the country studies have provided a broad review and examination of the causes and social consequences of the Asian financial crisis, as well as the existing SSNs and policy responses of the respective

governments. Generally, the reviews of the social impact have been done in terms of "deviations" from the previous period rather than a rigorous identification of the social consequences of the financial crisis. The studies have not attempted to make economic evaluation of the social impact or social change during the crisis nor offered any qualitative assessment of the same. It has been, however, noted that the full impact of the crisis is difficult to assess for several major reasons: first, various concurrent developments complicate assessment of the actual impact; second, a great deal of relevant data has not been made available to the public; and, third, the available data may be suspect. Nevertheless, in the final analysis, the studies have informed that many government responses and actions have not been effective, or are not reaching the poor and the crisis-affected people, mainly because of poor management or implementation of the programs. Hence, much more needs to be done both in terms of further research on social impact of the crisis and actions to ensure that the crisis-affected and needy are well taken care of, not only by the government but by society, in general.

ENDNOTES

- ¹ In integrated financial markets, portfolio investors (e.g., mutual funds, hedge funds) tend to look upon a region or a sub-region as a single market. The problems confronted in one country may prompt them to pull out of the whole region/sub-region in a herd reaction (Islam 2000).
- ² A simplified chronology of the Asian crisis can be found in Arndt and Hill (1999: 5).
- ³ More precisely, the floatation range was broadened.
- ⁴ The unemployment rate used here is a percentage of the total labor force which includes the seasonally inactive labor force. The rate as a percentage of the "current labor force" exclusive of the seasonally inactive labor force will be slightly higher.
- ⁵ In the Philippines, an employed person is considered underemployed if he/she is still actively looking for work. A person is "visibly underemployed" if he/she works less than 40 hours a week.
- ⁶ The official poverty lines based on the Kakwani approach were 8,736 baht for 1996 and 10,932 baht for 1998 (NESDB 1999: 2).
- ⁷ For definition, see Reddy (1998).

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Assessing Global E-Commerce Policies: A Perspective from Thailand*

Somkiat Tangkitvanich**

This article discusses e-commerce-related policy issues from a Thai perspective. Its objective is to assess certain global e-commerce policy proposals advanced by international bodies, governments and academics in developed countries. The assessment will be limited to five areas: liberalization of the telecommunications sector, taxation, trade negotiations under the GATS (General Agreement on Trade in Services), the harmonization of e-commerce-related commercial laws, and the protection of intellectual property rights. Although the analysis is largely based on case studies of Thailand, it is hoped that it also reflects the viewpoints of other developing countries. A brief overview of the status of e-commerce in Thailand is given in the next section.

1. THE STATUS OF E-COMMERCE IN THAILAND

E-commerce in Thailand is still in its infancy. On the consumer side, it is estimated that as of 1999, there were approximately one million Internet subscribers in the country. According to a survey, 57.5 percent of the users are in their 20s, 22.5 percent in their 30s, and 11 percent are teenagers (NECTEC 1999). The survey also found that more than 81.6 percent of the Internet population have no experience in buying online goods and services.

On the supply side, another survey conducted in May 1999 found that at least 383 companies have web presence (Somkiat 1999). However, about 53 percent of these web sites are merely for posting company information or advertising products. Only 32 percent offer online transaction, while 15 percent offer secured credit-card payment facilities. Among the goods offered for sales are electronic products, jewelry, books, handicraft items, etc. There are very few companies selling intellectual products, e.g., software, music and

information. Among the services provided online are hotel reservation and Internet access services. There are currently no web sites that provide online professional or business services.

Concerning business-to-business (B2B) e-commerce, very few companies have started to procure raw materials and provide customer service over the Internet. Recently, a few B2B exchanges have started emerging in some industries, e.g., food and oil.

2. DIGITAL DIVIDES

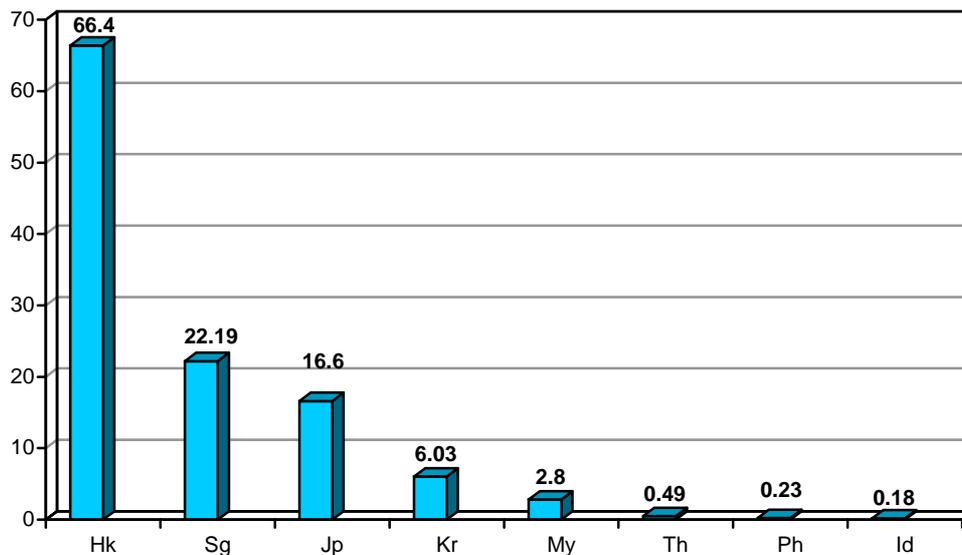
It is broadly known that e-commerce infrastructure and e-commerce-related activities are highly concentrated in a few developed countries, especially the US. Such lop-sided development is feared to create a 'digital divide.' The main reason for the emergence of a divide is that Internet penetration is generally correlated with the level of development of a country, measured by income per capita. Thus, the US, which has less than 5 percent of the world's population, is home to over 25 percent of all Internet users. This 'access divide' inevitably translates into differences in the use of e-commerce, the 'commerce divide.' Currently, approximately 85 percent of the world's e-commerce web sites are US-based, with Western Europe and Asia making up almost all of the rest.

There are also great disparities among Asian countries. In terms of the Internet host penetration, for example, Thailand is considered less wired than Hong Kong, Singapore, Japan, South Korea and Malaysia, but more advanced than the Philippines and Indonesia (See Figure 1).

Due to the disparities mentioned above, global e-commerce policies proposed by developed countries may not necessarily be appropriate for developing countries. It is important for us to assess these proposals carefully from our own perspectives.

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Figure 1 Number of Internet Hosts per 1,000 People in Selected Asian Countries in 1999

Source: Network Wizard (www.nw.com).

3. THE US-CENTRIC PROPOSALS

The US is the most active nation in advocating its policies on global e-commerce. Its vision on developing the global platform for e-commerce is articulated in “The Framework for Global Electronic Commerce” (White House 1997). The framework laid down the following principles:

1. The private sector should lead.
2. Governments should avoid undue restrictions on e-commerce.
3. Where governmental involvement is needed, its aim should be to support and enforce a

predictable, minimalist, consistent and simple legal environment for e-commerce.

4. Governments should recognize the unique qualities of the Internet.
5. Electronic commerce over the Internet should be facilitated on a global basis.

In addition to the above principles, the framework also discussed certain key policies and provided concrete strategic directions. Among other things, it proposed that the telecommunications market be liberalized, that the Internet be a tariff-free environment for trade in goods and services, that the commercial code be harmonized and that intellectual property rights be strongly protected (see Box 1 for more details).

Box 1 Issues Deliberated in the US Framework for Global Electronic Commerce

Financial Issues

- Customs and taxation: The US will advocate in the World Trade Organization (WTO) and other international fora that the Internet be declared a tariff-free environment whenever it is used to deliver products or services.
- Electronic payments: As electronic payment systems develop, governments should work closely with the private sector to ensure that governmental activities flexibly accommodate the needs of the emerging marketplace.

Legal Issues

- ‘Uniform Commercial Code’ for electronic commerce: The US supports

the adoption of an international set of uniform commercial principles for electronic commerce through international fora including the UNCITRAL.

- Intellectual property protection: The US supports the adoption of international agreements that establish clear and effective copyright, patent, and trademark protection.
- Privacy: The US will engage its key trading partners in discussions to build support for industry-developed solutions to privacy problems.
- Security: The US will encourage the development of a voluntary, market-driven key management infrastructure that will support authentication, integrity and confidentiality.

Market Access Issues

- Telecommunications infrastructure and information technology (IT): The US will seek effective implementation of the WTO’s Basic Telecommunications Agreement and the Information Technology Agreement to ensure global competition in the provision of basic telecommunications services and removal of tariffs on IT products.
- Content: The US supports the broadest possible free flow of information across international borders.
- Technical standards: The US urges industry-driven multilateral fora to consider technical standards.

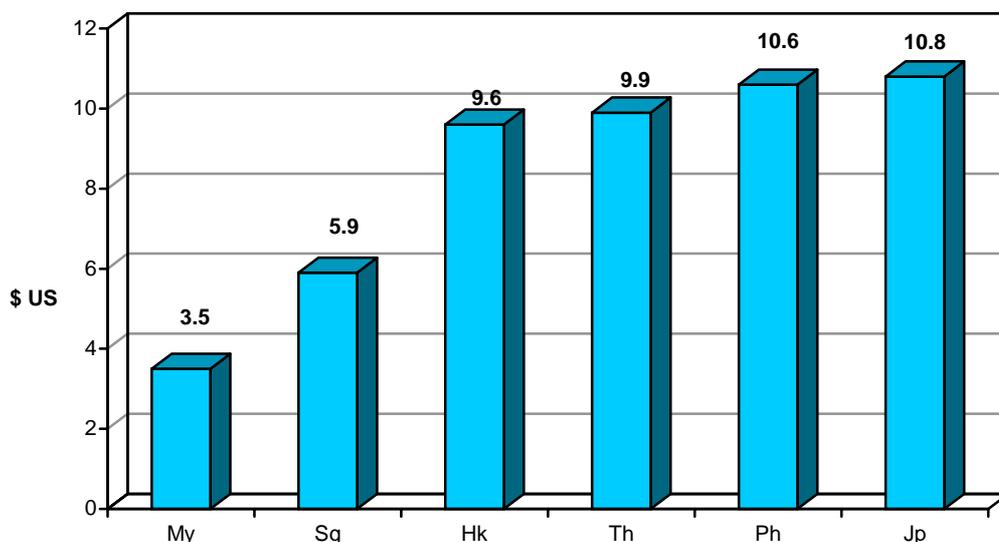
4. LIBERALIZING THE TELECOMMUNICATIONS MARKETS

Telecommunications is an indispensable infrastructure for e-commerce. In many developing countries, monopolization of the sector has retarded the countries' entry into the cyberspace. In Thailand, for example, although the retail Internet access market is quite competitive with 18 companies operating as Internet service providers (ISPs), the wholesale market (for international access) is still monopolized by the Communications Authority of Thailand (CAT). The state

monopoly adversely affects a wider adoption of the Internet in the country in many ways.

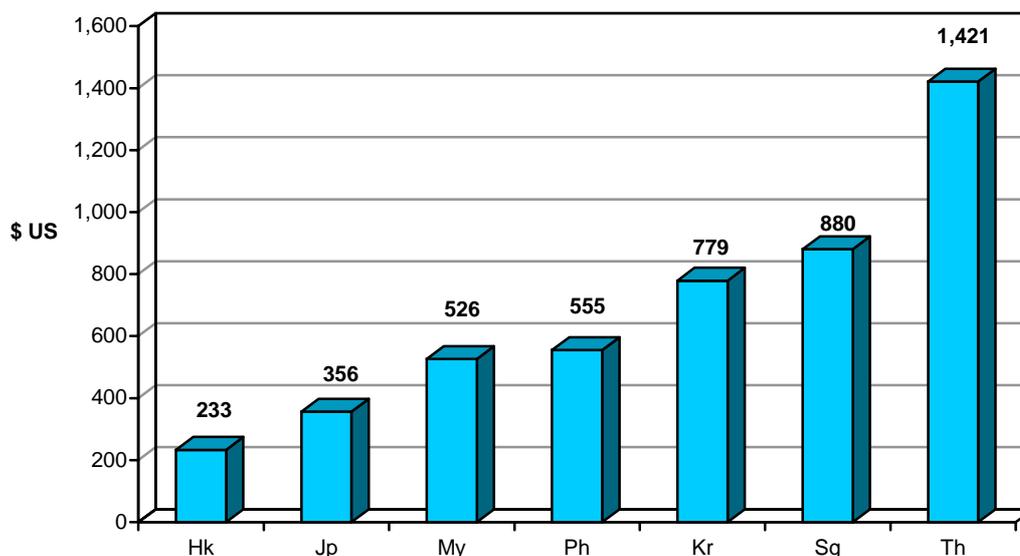
Firstly, the cost of Internet access in Thailand is significantly higher than in many other Asian countries. Figure 2 compares the price of Internet access among the selected Asian countries. It can be seen that while the price of a 20-hour dial-up Internet service in Thailand is comparable to most other Asian countries, a 64-Kbps leased line costs significantly more in Thailand. It is about six times as expensive as in Hong Kong, four times that of Japan, 2.7 times that of Malaysia and 2.6 times that of the Philippines.

Figure 2a Charges for 20 Hour Dial up Internet Access in Selected Asian Countries (as of September, 2000)



Source: Thailand Development Research Institute.

Figure 2b Monthly Charges for a 64-Kbps Internet Leased Line in Selected Asian Countries (as of September, 2000)



Source: Thailand Development Research Institute.

A previous study showed that, due to the monopoly, the number of Internet hosts—the computers connected to the Internet—in Thailand is significantly lower than other countries with comparable gross domestic product (GDP). More generally, econometric analysis showed that, on average, there will be 557 more Internet hosts for every billion dollar of GDP in a country with a competitive international telecommunications market than in a country with a monopolistic one (Somkiat and Deunden 1997).

Other state interventions also impose higher costs to the users. In particular, CAT requires that every ISP hand over one-third of its shares free of charge to CAT in return for the concession to operate. The above study also showed that for an ISP that expects an annual internal rate of return (IRR) of 30 percent, the equity handout requires an additional 20 percent price markup.

To promote the use of the Internet and e-commerce, Thailand needs to develop a competitive market and a more reasonable regulatory regime. One way to achieve the goal is to liberalize the market to allow more competition from new entrants, domestic as well as foreign, and to set up an independent regulatory body that works in the interests of consumers. In particular, we need to ensure an effective implementation of the WTO's Basic Telecommunications Agreement, as advocated by the US proposal in the Framework for Global Electronic Commerce.

5. CREATING A TARIFF-FREE ENVIRONMENT

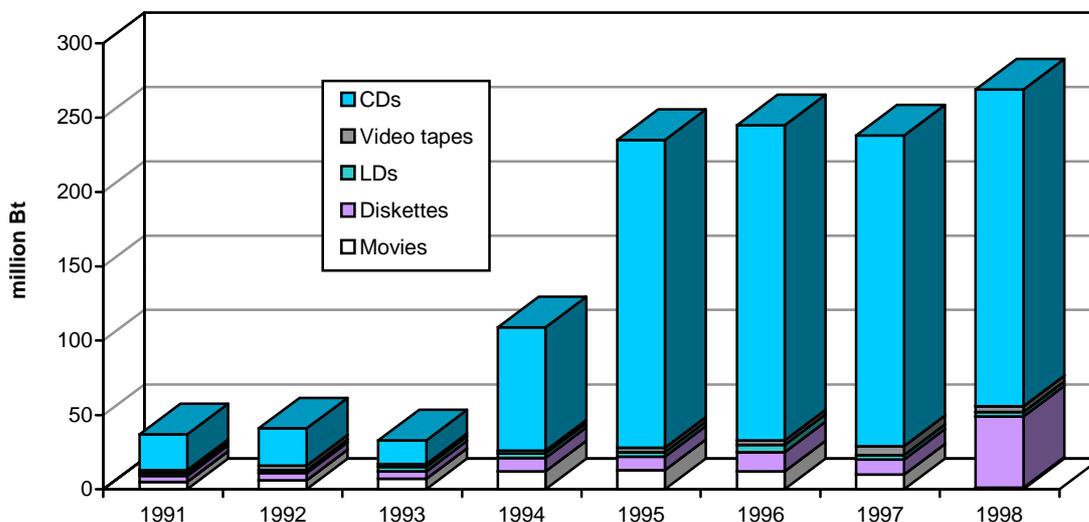
The spread of e-commerce will pose serious problems for the collection of income tax, consumption tax and tariffs. This is due to the difficulties in identifying the parties involved in the transaction, the tax jurisdiction and the content of the transaction itself. Disintermediation and monitoring costs also impose a

greater burden on revenue authorities. Transactions that are most problematic in terms of tax collection are those that involve trade in intangible goods, i.e., software, music, movies and online services.

Let us assess the impact of exempting tariffs on digital goods delivered online, as proposed in a WTO Ministerial Conference by the US government, on government revenue collection. Potentially, digital goods would include all the 'information products' that can be digitized, i.e., books, CD-ROMs, diskettes, videotapes and movie films. A previous work showed that tariff revenue that could potentially be lost would be on average less than 1 percent of the total tariff revenue and 0.06 percent of the total government revenue (UNCTAD 2000). In the case of Thailand, Somkiat (2000) found that tariffs collected from information goods constituted only US\$ 6.6 million in 1998, or 0.03 percent of the total government revenue (See Figure 3). Thus, tariff exemption seemed to have a negligible impact on government income. Considering the difficulty in collecting tariffs for digitized products, it would seem logical to conclude that imposing tariffs on international transmission is hardly worth the cost of collection.¹

Since the potential loss in terms of uncollected taxes, particularly, consumption tax, from trade in digital goods can be significant, academicians in the OECD countries suggest a shift toward alternative tax regimes to compensate for the forgone revenue. For example, some advocate an increase in the tax on labor compensation since labor wages are probably least affected by e-commerce (e.g., Mann *et al.* 2000; Bishop 2000). Others have recommended a reform of consumption tax to a system called a 'broad-based consumption tax'—consumption tax based on the difference between a person's income and savings (Varian 2000). Still others advocate adopting an origin-based taxation instead of the current destination-based taxation in taxing consumption (Office of Tax Policy 1996).

Figure 3 Tariff Revenues from Information Goods



Source: Thailand Development Research Institute.

The argument in this article is that, in the case of Thailand, and probably other Asian countries, the solutions proposed by developed countries may not be applicable due to different tax structures. In most Asian countries, the government would need to widen the tax base by being more frugal in handing out tax privileges for the promotion of investment, cracking down on tax evasion and making the informal sector taxable. A previous study showed that about 81 percent of the tax incentives given by the Thai government to attract foreign investment were redundant (FIAS 1999). Offshore diesel smuggling alone contributed to an estimated loss of Baht 386-1,285 million to the Thai government in 1997 as evaded tax (TDRI 2000).

6. LIBERALIZING ONLINE SERVICES

E-commerce poses many puzzling questions to the organizing framework of WTO. Traditionally, cross-border transactions are dealt within the classification of either the General Agreement on Tariffs and Trade (GATT) or the GATS. If this classification is maintained, should digital products be dealt under the GATT or the GATS? If e-commerce is classified as a service, which mode of supply would it fall under? To study these issues, the General Council of WTO established a work program for the relevant specialized bodies in 1998. Examples of issues examined by the bodies are shown in Table 1.

Due to limitation of space, it is impossible to discuss all of these issues. Here, I will focus on an issue that is central to the negotiation on e-commerce in GATS: should online service provision, i.e., professional and financial services, be considered as Mode 1 (cross-border supply), Mode 2 (overseas consumption) or Mode 5 (a new mode service)?²

A Mode 1 service is a service delivered across the national border from a service provider in one country to a consumer in another country. For example, a law firm may deliver a legal consulting service via telephone to a client in a foreign country. Mode 2 describes services consumed overseas. For example, a client may travel to another country to obtain legal consulting services (See Box 2 for more detailed definitions of the modes of supply under the GATS). The problem concerning online service provision is that nobody knows where the consumer and the service provider meet in cyberspace.

Many proposals have been advanced to solve the difficulties in assigning the appropriate mode of service for on-line services. Tinawi and Berkey (1999) analyzed several options. One of them is to combine Mode 1 and Mode 2 services. This would solve the classification problem since online services would be covered in the new combined mode. However, this solution creates a more difficult problem of reconciling the differences in the previous commitments made under each of the two modes.

Table 1 WTO Work Program on Electronic Commerce

Relevant Body	Examples of Issues Examined
The Council for Trade in Services	Modes of services, market-access commitments on electronic supply of services, customs duties and classification issues
The Council for Trade in Goods	Market access for and access to products related to electronic commerce, valuation issues, customs duties and other charges, standards in relation to electronic commerce, 'rules of origin' issues and classification issues
The Council for TRIPS	Protection and enforcement of copyright and related rights, protection and enforcement of trademarks, new technologies and access to technology
The Committee on Trade and Development	Effects of electronic commerce on the trade and economic prospects of developing countries, challenges to and ways of enhancing the participation of developing countries in electronic commerce

Source: WTO.

Box 2 GATS Classification of Modes of Supply of Services

Mode 1 (Cross-border): Delivery "from the territory of one member state into the territory of another member state." An example of cross border delivery is a legal consultation provided by a US lawyer to a client in Thailand over the phone.

Mode 2 (Consumption Abroad): Delivery "in the territory of one member state to service the consumer of any other mem-

ber state." This includes all services that a citizen of a country obtains while in another country. For example, a Thai client who travels from home to obtain legal consulting in the US.

Mode 3 (Commercial Presence): Delivery "by a service supplier of one member state through the commercial presence in the territory of any other member state." For example, a US law firm may provide

legal services in Thailand through a subsidiary located in Bangkok.

Mode 4 (Movement of Natural Persons): Delivery "by a service supplier of one member state through the presence of natural persons of the member state, in the territory of any other member state." For example, a US law firm may send its lawyer to provide a legal consultation to a Thai client.

Another idea is to create a new mode for on-line services (Mode 5). This will avoid the classification dilemma and it does not complicate existing commitments. However, the problem of this approach is that it is still not clear whether an online service should be classified in Mode 1, Mode 2 or Mode 5? For example, if a medical practitioner delivers his/her advice over the phone, would this service be classified as Mode 1 or Mode 5? Would the classification change if he/she instead delivers it over the Internet?

Yet another solution is to classify all online services as Mode 2 services, as suggested by some US scholars. The classification will automatically result in a very liberal trade regime for e-commerce. This is because in the Uruguay Round, commitments in Mode 2 were clearly more liberal than those in Mode 1 for most countries. For example, Table 2 shows parts of the commitments of Thailand for some professional service sectors. It can be seen that while Thailand imposes no restrictions on overseas consumption of services for all Mode 2 services except management consulting, it does not commit to liberalize any of the Mode 1 services.

Bringing all online services under Mode 2 will mostly benefit service-exporting countries, most notably the US. Of course, consumers in developed and developing countries will also gain from a more liberal regime. However, we argue that such liberalization will bring about a more open trade regime than that foreseen by member states at the time when commitments are made during the Uruguay Round negotiations. Instead, we suggest that online services be classified as Mode 1 services and that additional commitments be made through further negotiations. This can be achieved by redefining Mode 2 to require physical presence, as suggested by Drake and Nicholaidis (1999). To ensure that all participating countries fully gain, negotiations to increase Mode 1 commitments should be implemented on a cross-sectoral basis.

7. HARMONIZING COMMERCIAL CODES

The expansion of global electronic commerce depends on the participants' ability to achieve a reasonable degree of certainty regarding their exposure to liability for any damage that might result from their actions. Inconsistent local tort laws, coupled with uncertainties regarding jurisdiction, could substantially increase litigation and create unnecessary costs that ultimately will be borne by consumers. The US advocates the adoption of an international set of uniform commercial principles for e-commerce through international fora including the United Nations Commission on International Trade Law (UNCITRAL).

The UNCITRAL has completed a Model Law for e-commerce, that supports commercial use of international contracts in e-commerce. The law establishes rules and norms that validate and recognize contracts formed through electronic means and sets default rules for contract formation. It also defines the characteristics of a valid electronic writing and an original document, provides for the acceptability of electronic signatures for legal and commercial purposes, and supports the admission of computer evidence in courts and arbitration proceedings.

Also of particular importance is the development of trusted certification services that support the use of electronic signatures which will permit users to know who they are communicating with on the Internet. To promote the growth of a trusted electronic commerce environment, the law that governs the use of electronic signature needs to be harmonized. The UNCITRAL is in the process of developing uniform rules for electronic signature. The rules would lay a framework for determining duties and liabilities of related parties: signature holders, relying parties and signature issuers. They will also set a standard for recognizing signatures issued overseas, to avoid discriminatory practices.

Table 2 Examples of Thailand's Commitments to Liberalize Service Sectors

Service	Sub-Service	Mode 1		Mode 2	
		Market Access	National Treatment	Market Access	National Treatment
Legal service		Unbound	Unbound	None	None
Accounting, auditing and book keeping services		Unbound	Unbound	None	None
Architectural services		Unbound	Unbound	None	None
Engineering services		Unbound	Unbound	None	None
Computer and related services	(a) Consultancy related to the installation of computer hardware	Unbound	Unbound	None	None
	(b) Software implementation services (part 842)	Unbound	Unbound	None	None
	(c) Data processing services (part 843)	Unbound	Unbound	None	None
	(d) Database services (part 844)	Unbound	Unbound	None	None
Advertising services		Unbound	Unbound	None	None
Market research (part 864)		Unbound	Unbound	None	None
Management consultancy services		None	None	None	None

Unbound = No commitments to liberalize.

None = No restrictions.

Source: WTO.

Recognizing the need to harmonize commercial codes for e-commerce, the Thai government has begun the process of drafting the Electronic Transaction Act and the Electronic Signature Act, based on the UNCITRAL laws.³

8. PROTECTING INTELLECTUAL PROPERTY RIGHTS

I will now discuss the problem of intellectual property right protection in the context of e-commerce. In particular, I will analyze the problems of copyright protection for digital products, the conflicts between domain names and trademarks, and the problems of extending patentable subject matters under the patent law to cover business methods.

The US is advocating a worldwide adoption of the World Intellectual Property Organization (WIPO) Copyright Treaty (WCT), which is believed to be the solution to the protection of copyrighted digital works. The treaty not only confirms and clarifies existing rights of copyright holders under the trade-related aspects of intellectual property rights (TRIPS) agreement as well as the Berne Convention, but also provides new measures to fight against piracy of digital works.

Firstly, the WCT provides for the protection of the 'right of communication' or 'right of making available' a copyrighted work to combat its unauthorized 'uploading' on to a server which would enable its subsequent unauthorized downloading. Secondly, it provides for the protection of 'technological measures' to prevent the cracking of passwords, keys, hard locks, etc. Thirdly, the treaty also protects against the removal or alteration of 'rights management information,' i.e., information, numbers or codes identifying the work, author, right owner, or terms and conditions of use, etc. Currently, only 17 member countries of WIPO have ratified the treaty. The number is still short of the required 30 to bring the treaty into effect.

Thailand has yet to signify the treaty. However, the current Thai copyright law, the Copyright Act, 1992, already provides for most of the protections granted by the treaty. The protections include, among other things, the right of reproduction, the right of rental and the right of communication to the public. The only unprotected rights are the protection of technological measures and the protection of rights management information. Thus, there is no immediate need for Thailand to become a signatory to the treaty.

Concerning domain names, the problem of "cyber squatting" or "abusive domain name registration" appears to be the most imminent problem. It has brought about conflicts between domain name holders and trademark holders. The US and the WIPO are advocating the provision of privileges to famous mark holders with respect to domain name registration and dispute settlement. In theory, such a provision would alleviate the

problem of cyber squatting. In fact, the current conflict resolution mechanism under the Internet Corporation for Assigned Names and Number's (ICANN) Rules for Uniform Domain Name Dispute Resolution Policy has implicitly provided these privileges. As of May 2000, about 75 percent of the 327 cases settled under the rules were in favor of well-known mark holders.⁴

It is important to recognize the increasing number of abuses by mark holders. For example, McDonald's, the global fast food company, has sued a number of companies including McWellness (a Swiss health care company), McAllen (a Danish sausage store), McMunchies (an English sandwich retailer) and McCaughey (a Californian coffee shop), claiming that its mark is contaminated by these confusingly similar marks (Economist 2000).

Thus, such privileges should be granted in a fair and transparent manner. Stakeholders need to have an opportunity to voice their concerns. Governments of developing countries should be urged to follow closely future policy developments in international fora, especially in the ICANN, an international organization that manages domain names.

Let us now turn to the issue of business method patents. A business method patent is a patent granted to protect a certain way of conducting business. Examples of such patents that have been granted in the US are shown in Table 3. From the table, it can be seen that most business method patents are related to the execution of e-commerce activities on the Internet. As a result, their impact reaches across national borders more rapidly than that of traditional patents.

Traditionally, a patent applies only within the country where it was granted. For example, although a US company has obtained a US patent on an invention, it is still possible for a Thai company to independently develop and manufacture similar product and sell it within Thailand without violating the patent holder's rights. However, in the age of the Internet, the situation is different. When a US company obtains a US patent for an Internet-related service, consumers from all over the world can use the service over the Internet. If a Thai company starts providing a similar service, some US consumers may switch to it. This will mean a loss of business for the US company. The US company may claim that its patent is violated and may take legal action against the Thai company.

We argue that a business method patent works against the benefits of all related parties except patent holders. It may result in a wider 'digital divide' between developed and developing countries. Developing countries will lose opportunities to gain benefits from imitating developed countries' method of conducting business on the Internet. Such patents therefore should be abolished. However, if granting such patents proves inevitable, the process should be more prudent and the protection period should be lowered from a typical 20 years to three to five years.

Table 3 Examples of US Business Method Patents

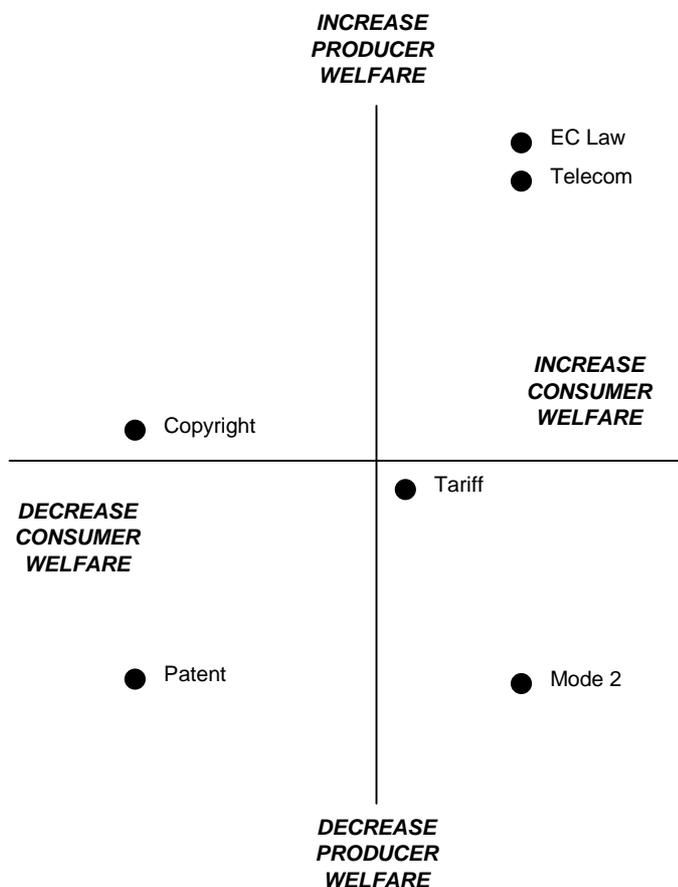
Patent Number	Invention	Patent Holder
5,715,314	Network sales system	Open Market Inc.
5,724,424	Digital active advertising	Open Market Inc.
5,774,870	Fully integrated, on-line interactive frequency and award redemption program	Netcentives Inc.
5,794,210/5,855,008	Attention brokerage	Cybergold Inc.
5,794,219	Method of conducting on-line auctions with bid pooling	Health Hero Network Inc.
5,797,127	Reverse auction	Walker Asset Management L.P.
5,798,508	Postpaid traveler's checks	Walker Asset Management L.P.
5,802,497	Method and apparatus for conducting computerized commerce	Digital Equipment Corporation
5,862,223	Selling professional advice over the Internet	Walker Asset Management L.P.
5,897,620	Method and apparatus for the sale of airline-specified flight tickets	Priceline.Com Inc.
5,960,411	One-click buying	Amazon.Com Inc.
6,029,141	Internet-based customer referral system	Amazon.Com Inc.

Source: TDRI, from US Patent and Trademark Office data.

9. CONCLUSION

To assess the US-centric proposals, they are classified according to their impact on consumers and e-commerce producers in developing countries. According to the classification, there are four categories of

proposals: those that increase both consumer as well as producer welfare, those that increase consumer welfare but decrease producer welfare, those that decrease consumer welfare but increase producer welfare and those that decrease both consumer and producer welfare (See Figure 4).

Figure 4 Assessment of the US-Centric Proposals

Proposal	Impacts
Telecom: Telecommunications liberalization	Liberalization reduces access cost for consumers and e-commerce business.
EC Law: Harmonizing e-commerce laws	Harmonized laws will facilitate electronic transactions.
Tariff: Making the Internet a tariff-free zone for on-line trade in digital goods	Exempting tariff will make imported digital goods cheaper.
Famous mark: Giving privileged protection for famous marks in domain name disputes	Similar marks of other companies will be unfairly treated in domain name disputes.
Copyright: Signifying WIPO Copyright Treaty	Signifying the treaty will create higher cost for consumers.
Mode 2: Treating on-line services as the GATS's Mode 2 services	Service sectors will become more liberal than agreed under the GATS.
Patent: Extending patentable subject matters to include business methods	Companies in developing countries will face constraints to participate in e-commerce as producers.

Source: Thailand Development Research Institute.

Proposals that increase consumer and producer welfare

Examples of proposals that increase both consumer and producer welfare are the harmonization of e-commerce laws and the liberalization of the telecommunications market. The former will facilitate electronic transaction and will benefit both consumers and producers due to lower transaction cost. The latter will reduce the cost of access to Internet to users (consumers) and e-commerce related business operators (producers), e.g., ISPs, web hosting service providers, application service providers (ASPs), etc.

Proposals that increase consumer welfare but decrease producer welfare

Protection for famous marks in domain name disputes is an example of a proposal that increases consumer welfare but decreases producer welfare, at least in the short term. While the protection helps reduce potential confusion arising from identical or similar marks and thus increase consumer welfare, most producers in developing countries with less known marks are prone to be unfairly treated in domain name disputes. Another example is the proposal to make the Internet a tariff-free zone for digital goods. Lowering the tariff barriers induces more competition that will benefit consumers but make life more difficult for domestic producers. However, the extent of the welfare effected on consumers and producers in this case is relatively small since digital goods are already tariff-free in practice. Similarly, treating online services as the GATS's Mode 2 services is also classified in this category since a more liberal regime will increase consumer choice while imposing greater competitive pressure on domestic producers.

Proposals that decrease consumer welfare but increase producer welfare

An example of proposals that decrease consumer welfare but increase producer welfare is the world-wide adoption of the WIPO Copyright Treaty. The adoption will bring about stronger protection for local software producers hence increase their welfare. However, as most developing countries are software-consuming countries, the benefit from stronger protection is unlikely to offset the loss in consumer welfare due to the monopoly granted by the copyright protection.

Proposals that decrease both consumer and producer welfare

Extending patentable subject matters to include business methods will decrease welfare of consumers and producers in developing countries. This is because the producers will not be able to exploit the patented business methods freely. As a result, they may be forced to

use less efficient methods in providing their services. Part of the cost will be passed on to their consumers.

Proposals that increase consumer and producer welfare should be implemented with no hesitation. Proposals that increase consumer welfare but decrease producer welfare should also be implemented in most cases. However, developing countries need to ensure that global e-commerce policies in these areas are sufficiently well balanced. For example, famous marks must not be given unreasonably privileged protection. To achieve that, developing countries must take more active roles when participating in international fora, e.g., the ICANN. On the contrary, proposals that significantly decrease consumer welfare but trivially increase producer welfare like adopting the WCT should not be implemented unless developing countries are compensated fairly by the developed countries that are likely to gain considerably from the implementation. The 'compensation' could be in the form of liberalization of certain markets in developed countries that will bring about significant benefits to developing countries, e.g., the agricultural sector.

Asian countries should form alliances with one another to tackle critical policy issues; those that clearly decrease the welfare of consumers as well as producers in our countries. In some cases, the alliances should be extended to parties in developed countries with similar stances. Concerning business method patents, for example, many not-for-profit organizations and even some business leaders in the US also advocate the abolition of such patents. These groups of people can be powerful allies.

ENDNOTES

- ¹ For consumption tax collected from trade in digital goods, however, the potential loss is significantly greater. The issues need to be addressed more carefully and are beyond the scope of this article.
- ² E-commerce will also impact other modes of services. For example, laws and regulations that require commercial presence will limit activities of 'pure' online service operators. Again, due to space limitation, these issues are not discussed here.
- ³ Apart from these laws, the National Information Technology Committee (NITC) is also drafting other 'cyber laws,' viz., the law on data privacy, the law to fight against computer crimes and the law to facilitate electronic fund transfer.
- ⁴ See ICANN's web site (www.icann.org) for more information concerning the rules and the cases settled.

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Crop Price Analysis and Dry-Season Land Use Changes: Can It Help Improve Agricultural Planning?*

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Agricultural planning for the dry-season cultivated area in the Chao Phraya basin is at present based mainly on water supply availability and water demand by non-agricultural sectors, and is carried out through the cooperation of the relevant government agencies. But the actual area under cultivation during the dry season is usually much larger than that considered under the plan. As a result, water conflicts are common in the basin. This tends to suggest that some lacunae may exist in the present agricultural planning system due to incomplete information. When taking a decision regarding the choice of crop, the farmer considers not only the input factors, but also the price factors, including the anticipated prices of the output. The objective of the present study is to forecast changes in the land use and cropping patterns in response to rice-price change in the next five and 10 years. The methodology used in this study involves modeling a system of crop share equations with the area share of the crop groups as the dependent variable and output prices, input prices and other factors as the independent variables. The results of the system of crop share equations for the upper part of the Chao Phraya irrigation project indicate a positive effect of the crop's own price. Cross-price effects, on the other hand, can be either positive or negative depending on the substitutability or complementarity with the other crop/s. Based on the World Bank estimates of the world rice prices, the forecasted rice area in the Chao Phraya basin in the dry season shows no noticeable trend of land use change as it tends to change basically in response to the change in the price of rice. It is predicted that the rice area in the basin will reach its largest expanse of 4.56 million *rai* in 2006, which is beyond the maximum potential in the dry season as estimated by the Royal

Irrigation Department (RID). Besides rice prices, changes in rice farming technology, such as the use of the combined-harvester, new planting methods and short-maturity and non-photosensitive varieties, as well as changes in land and water regimes and resource availability can influence the farmer's decision about the crop choice and farming pattern. For instance, these factors can induce the potentiality of growing more than one rice crop in the dry season. Since different outcomes are obtained when the impacts of crop price changes on land use and cropping patterns are taken into account than when they are ignored, as in the present planning system, we feel that price effects do have an important bearing on changes in land use and cropping patterns. Therefore, policy makers should consider incorporating the effects of crop price movements on land use and cropping pattern changes use together with water supply availability and water demand by other sectors in the dry-season agricultural planning system so as to make it more rational and effective.

INTRODUCTION

The Chao Phraya basin covers approximately one-third of Thailand's land area. The Chao Phraya river and its tributaries support Bangkok, which is situated right at the deltaic mouth of the river, and depends on the basin for its dry-season watersupply. In the Chao Phraya basin, water from the two dams, Bhumipol and Sirikit, is regulated to ensure sufficient supply for electricity, agriculture and urban and industrial use, as well as for protection against salinity and seawater intrusion. The explosive growth of Bangkok and its adjacent provinces

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in the last two decades has led to the need for inter-basin water transfer.¹ As water shortages in the dry season have become routine, inter-sectoral water conflicts have intensified: conflicts between upstream and downstream farmers, between the agricultural sector and non-agricultural sectors and even between government agencies. Even though the main water use is for agricultural purposes, the present planning process for the dry season cultivated area is essentially supply-oriented, since it is based mainly on water supply availability. Little consideration is given to other factors that may also affect the change in land use. The objective of this paper is to consider the price effects on land use change, and to forecast land use and cropping patterns in the Chao Phraya basin in the dry season occurring in response to the changes in rice prices in the next five and 10 years. Additionally, the results are compared with similar projections of land use by other studies that do not consider price effects.

The paper is organized in three parts. Part one describes the water resource allocation system in the Chao Phraya basin. Projections of the land use and cropping patterns in the irrigation project areas by considering the impact of rice-price changes is presented in part two. The last section concludes.

WATER RESOURCE ALLOCATION IN THE DRY SEASON

In the Chao Phraya basin, water from the two dams, Bhumipol and Sirikit, is regulated to ensure sufficient supply for all activities in the basin. The supply availability for the dry season (January to June) relies on the water storage behind these two dams at the end of the previous (calendar) year as a result of the water inflow into the two reservoirs and the water use in the wet season.

Supply assessment of surface water is the responsibility of the Electricity Generating Authority of Thailand (EGAT), which controls these two dams. The collection and analysis of hydrological data for the rivers and the two reservoirs that belong to the RID are the responsibility of the Hydrology Division of the RID. The Water Management Branch of the Operations and Maintenance Section of the RID estimates the water budget using, 1) the information on water supply situation given by the irrigation projects in the area; 2) the data given by the EGAT on water budgets of the reservoirs of the two hydropower dams; 3) the estimates on the water requirement for the dry-season agricultural production provided by the Ministry of Agriculture and Cooperatives (MOAC); and, 4) the estimated water use for domestic and industrial purposes as well as for navigation and protection from saltwater intrusion. Then, the RID estimates water uses for inter-sectoral activities during the dry season.

In the years when water demand exceeds supply, solutions—ranging from engineering to political—are sought for reallocating water (by priority or rationing) among the users. For example, a limited amount of water will be distributed to the rice farmers (Table 1). Contrary to the expectation, the actual area under rice cultivation is always higher than the planned area.

In the past decade, the demarcation of the planned rice cultivation area was done through the cooperation of the relevant government institutions concerned with dry-season crop planning. The failure of the command and control system in water resource management can be observed from the fact that the actual rice area and the water release are higher than planned. One of the major reasons for the overuse of water in agriculture is that there is, in effect, open access to irrigation water supplied from the two dams and groundwater. Furthermore, social and economic factors induce the intensity of rice

Table 1a Dry Season Water Allocation in the Chao Phraya Basin, 1994-2000

	Unit: Million cubic meters							
Year	1994	1995	1996	1997	1998	1999	2000	
Water availability on 1 Jan.	2,048	12,733	14,582	12,107	8,200	3,879	11,930	
1. Domestic water use	700	1,100	1,800	1,650	1,600	700	1,600	
2. Dry season crops	500	3,300	4,950	4,200	3,400	1,900	3,000	
3. Navigation	0	300	400	300	300	0	300	
4. Piped water production	550	700	750	750	750	650	750	
5. Protection against salinity & seawater intrusion	250	600	600	500	450	350	350	
Planned water release	2,000	6,000	8,500	7,400	6,500	3,600	6,000	
Actual water release	1,894	7,216	9,643	8,556	6,656	2,575	6,513	
6. Pasak Dam								
Planned water release								500
Actual water release								762

Source: RID.

Table 1b Planned and Actual Dry-season Rice Area in the Chao Phraya Basin, 1994-2000

	Unit: Million rai							
Year	1994	1995	1996	1997	1998	1999	2000	
Planned rice area in Phitsanulok & Chao Phraya basin	0.00	2.80	3.50	3.30	2.70	1.90	3.10	
Actual rice area	1.77	3.19	4.15	4.06	3.79	3.49	4.90	

Source: RID.

cultivation in the dry season. The farmer’s decisions about his/her farm activities depend not only on the water distribution from the irrigation projects, but also on other factors, such as expectations of the prices of rice and other crops.

LAND USE PROJECTION

As there are differences in the irrigation systems, the organization of the systems, cropping patterns and data availability, it is not possible to apply the same methodology in forecasting the land use for the whole area of the Chao Phraya basin. Instead, the basin can be divided into four areas, namely, 1) the lower Ping river basin, 2) the lower Nan river basin, 3) the upper part and 4) the lower part of the Chao Phraya irrigation project. Due to data constraints, some assumptions and estimates have been employed (see Table 2). Only the methodology for estimating a system of crop area share equations will be presented in this paper.

We applied the econometric method pioneered by the Rotterdam school (Theil 1980, cited in TDRI 1988) that was used by the TDRI in its study of the “Dynamics of Thai Agriculture, 1961-1985.” In the present study, a system of crop area share equations was applied to the 14 sub-projects with a gravity irrigation system in the upper part of the Chao Phraya irrigation project. The model is applied for dry season crops in three groups, namely, rice, field crops, and vegetables. Fruit-tree areas are excluded due to their low flexibility in changing to other crops. It is assumed that the crop area share is a function of the crop’s own price, of the prices of the other crops, of the prices of the inputs and the irrigated area.

$$S_j = a_j + \sum_i a_{ij} \cdot \ln(p_j/p_{na}) + \sum_k a_{kj} \cdot \ln(p_k/p_a) + \sum_h a_{hj} \cdot \ln z_h, j = 1..3$$

- Where; S_j = the area share of the crop j
- p_j = the price of the output j
- p_k = the price of inputs (fertilizers, wages)
- z_h = the other variables
- p_a = price of the agricultural sector
- p_{na} = price of non-agricultural sector

To be consistent with the economic theory, a few cross-equation restrictions have to be imposed, namely:

$$\begin{aligned} \sum_j S_j &= 1 \\ \sum_i a_{ij} &= \sum_j a_{kj} = 0 && \text{for all } i \text{ and } k, \\ a_{ij} &= a_{ji} && \text{for all } i \text{ and } j. \end{aligned}$$

The first two sets of restriction are to ensure that the shares s_j always sum up to one, and the last symmetry requirements flow ultimately from the symmetry of the bordered Hessian matrix which is obtained at one step in the derivation of the optimal supply functions. This last condition means that the share of each product supplied is homogeneous degree zero in the prices of the variables.

Since a contemporaneous correlation occurs in the error terms for the equations for these crop area shares, a seemingly unrelated regression technique is used to estimate the relationship with two restrictions, namely, the adding-up and the symmetry conditions. Own- and cross-price elasticities (ϵ_{ij}) can be estimated from the following formula:

$$\epsilon_{ij} = a_{ij}/S_j$$

The data used in estimating the system of crop area share equations is pooled from the 14 irrigation sub-projects in the Chao Phraya irrigation project for the period 1987-1999. All price factors are based on the wholesale prices in the Bangkok area. Projection of the land use is based on the information of world rice prices forecasted by the World Bank (2000) for the next five and 10 years (Table 3).

The share of the crop area is assumed to depend on the anticipated crop price, variable input prices and other variables that affect the area share. The crop’s own price affects the area share since revenue is a function of price so that a change in price causes a proportional change in the farmer’s revenue; also, price motivates the farmer to increase the area share. Prices of other crops also have a considerable impact, as their extent show the substitution and complementarity effect in crop area share or crop production. We assumed that the farmers’ decisions follow a nested structure. First, the farmers make crop choices by allocating resources among the three crop categories (i.e., rice, field crops, vegetables); then they choose the crops within each category.

Table 2 Methodology Used in Projecting the Land Use in the Chao Phraya Basin

Location	Irrigation projects	Remarks
Lower Ping river basin	- small-scale irrigation projects and pumping irrigation projects	- using previous land use information
Lower Nan river basin	- Phitsanulok irrigation project - Naresuan dam and pumping irrigation projects	- estimating rice area supply function because rice is a major crop - using previous land use information
Upper part of the Chao Phraya project	- Gravity irrigation distribution system	- estimating a system of crop area share equations
Lower part of the Chao Phraya project	- Conservation irrigation distribution system	- using previous land use information, with a maximum area of 1.3 million <i>rai</i> for rice

Note: For more details see the final report (TDRI 2001).

Table 3 Wholesale Rice Prices Forecasted by the World Bank

Year	Rice prices (US\$/ton)	
	Current	Constant 1990
1997*	303.5	280.0
1998*	304.2	291.9
1999*	248.4	239.9
2000	250.0	235.5
2001	260.0	239.0
2002	270.0	241.8
2005	315.0	263.6
2010	345.0	255.4

Notes: Prices are for Thai 5% broken WR, milled, f.o.b. Bangkok in calendar years.

* Actual prices.

Source: World Bank 2000.

The results of the system of crop area share equations for the upper part of the Chao Phraya irrigation project indicate, as expected, a positive effect of the crop's own price (Table 4). Cross-price effects, on the other hand, can be either positive or negative depending on the two crops' substitutability or complementarity. In this case, a substitutability exists between rice and field crops and between rice and vegetables, while a complementarity exists between field crops and vegetables. The own-price elasticity for the rice area is more than one (Table 5). It is quite reasonable that in the irrigated area farmers tend to grow rice as a commercial venture, making use of the accessibility to the modern technology used in rice cultivation. The own-

price elasticity for the field crop area share by considering sugarcane prices shows a quick response to the change in prices, since field crops generally need less water.

The cross-price elasticity for the rice area tends to be higher than for the field crops area. If the price of rice increases by 1 percent the reduction of the field crops area is about 2.5 percent, while for 1 percent increase in the price of sugarcane the corresponding reduction in the rice area is only 0.8 percent. This is understandable since the technology used in rice cultivation can reduce labor use, water use and time; moreover, the deep alluvial soils in the Chao Phraya basin are more suitable for rice farming.

Table 4 Results of the System of Crop Area Share Equations for the Upper Part of the Chao Phraya Irrigation Project

Variables	Rice area share (0.71259)		Field crops area share (0.2307)	
	Coefficient	t-statistics	Coefficient	t-statistics
Dependent variable: area share				
Independent variables				
Rice price (t-1)	0.8423	5.927***	-0.5688	-4.732***
Sugarcane price (t-1)	-0.5688	-4.732***	0.2649	2.000**
Groundnut price (t-1)	0.5593	1.368	-0.5692	-1.549
Mango price (t-1)	1.1891	6.695***	-1.0010	-6.370***
Cabbage price (t-1)	-0.0175	-0.797	-0.0175	-0.797
Chinese kale price (t-1)	-0.3405	-3.766***	0.3060	3.857***
Wage rate (t)	-0.6861	-3.945***	0.5482	3.499***
Fertilizer price (t)	-0.1479	-1.321*	0.2239	2.171**
Ratio of the planned area to the total irrigated area	0.0325	2.499**	-0.0206	-1.780*
Dummy variable for the western part of the area	0.1679	2.373**	-0.0895	-1.437
Adjusted R ²	0.5504		0.5524	
Durbin-Watson statistics	1.9509		1.9754	
Log-likelihood	208.4960		208.4960	
N	145		145	

Note: *** significant at 0.01, ** at 0.05, and * at 0.10.

Source: TDRI 2001.

Table 5 Own and Cross-price Elasticities

Crop area	Crop prices		
	Rice	Sugarcane	Chinese kale
Rice	1.182	-0.798	-0.478
Field crops	-2.466	1.148	1.327

Source: TDRI 2001.

The above results show positive effects of fertilizer price and the wage rate on the field crop area but negative effects on the rice area. The ratio of the planned area to the total irrigated area in the dry season has a positive impact on the rice area but negative effect on the field crops area. This is because growing rice requires more water than the field crops. This indicates the possibility of the actual rice area being higher than the planned area, as the RID experiences each year. The experimental data suggests that the water requirement for rice is less than 2,000 cubic meter/*rai*; however, the RID uses a fixed water requirement of 2,000 cubic meter/*rai* along with the water supply availability to estimate the planned rice area (also taking into consideration the water demand by other sectors). Moreover, some farmers have open access to groundwater supply that might influence their decision to go for rice cultivation.

The land under rice in 1997 was about 95.2 percent as a result of higher rice prices in the recent years. Applying the World Bank estimates on the world rice prices, the land use under different crops can be estimated using the system of crop area share equations described above. The results indicate that the change in the land use and crop types is in response to the change in rice prices; for example in 1997 the rice area was 4.47 million *rai* and is expected to shrink to 4.02 million *rai* in 2001 (Table 6). In the year 2006 the rice area will be the largest, at 4.56 million *rai*. The rice area tends to be smaller in the year 2016, because the impact of the change in rice prices is relatively less than the impact of the other crop prices. We predict the rice area to be as high as 4.56 million *rai*, which is beyond the RID-estimated maximum potential of 4 million *rai* (pers. comm. the RID staff) for the dry season in the Chao Phraya basin. However, it might be possible if farmers grew rice twice in the dry season. As the farm surveys in 2000 revealed, this practice is not uncommon (TDRI 2001). It can be concluded that there is no noticeable trend in the change in the rice area in the Chao Phraya basin during the dry season in the next five to 10 years as the area change is in response to the changes in the rice prices.

Various other studies have projected the future land use and cropping pattern in the Chao Phraya basin,

sometimes using simple assumptions, but none considering the impact of price changes in agricultural commodities. For instance, Binnie & Partners (1997) assumed a fixed irrigated area and cropping pattern for the next 30 years using the average land use in 1994/95. This assumption does not seem to have any rational basis. Moreover, the demand and supply for individual crops were not taken into account. While Pal Consultants and Panya Consultants (1999) reported an increasing trend for the crop area by applying a fixed growth rate and taking into account future irrigation projects. When compared with the TDRI estimates, it is evident that applying different approaches and assumptions can produce different outcomes. Such a comparison might provide a significant insight for policy makers that may help identify the missing elements in the current process of agricultural planning and water management for the dry season. Eventually, the process can be improved further to reflect more and more closely the ground reality.

CONCLUSION

Agricultural planning for the dry season in the Chao Phraya basin currently depends mainly on water availability. Ignoring the impact of price changes on the structural change in the land use and cropping pattern might lead to inefficient agricultural planning and water allocation management. However, crop prices are not the sole factor affecting land use and cropping patterns; other factors, such as farming technology may also matter. Taking the price effects together with other factors into consideration may provide more accurate information and thus help further improve agricultural and water allocation planning for the dry season.

ENDNOTE

- ¹ The inter-basin water transfer project, currently under construction, involves transferring water from the Mae Klong river basin to the Chao Phraya basin for producing piped water by the Metropolitan Waterworks Authority.

Table 6 Comparison of Dry-season Land Use Projections by Various Studies for the Chao Phraya Basin

Unit: *rai*

Year	Binnie & Partners (1997)	Pal Consultants & Panya Consultants (1999)				TDRI estimate			
	1996-2026	1996	2001	2006	2016	1997	2001	2006	2016
Rice	2,822,331	3,374,789	3,429,021	3,525,225	3,646,252	4,466,293	4,016,459	4,556,238	3,980,259
Field crops	765,078	219,931	240,868	263,229	301,828	178,742	172,770	152,987	189,221
Vegetables	134,740	104,897	106,685	107,974	110,721	47,640	44,232	32,525	45,561
Total	3,722,149	3,699,616	3,776,573	3,896,427	4,058,801	4,692,675	4,233,461	4,741,750	4,215,041

Sources: Binnie & Partners 1997; Pal Consultants & Panya Consultants 1999; TDRI 2001.

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