Thailand

Northeast Economic Development Report

November 2005

Joint Report of

Thailand's National Economic and Social Development Board and the World Bank

Abbreviations and Acronyms

ADB	Asian Development Bank
ASEAN	Association of South East Asian Nations
ASEM	Asia-Europe Meetings
ATC	Agreement on Textiles and Clothing
BAAC	Bank for Agriculture and Agricultural Cooperatives
BOBThe	Bureau of the Budget
BOI	Board of Investment
Bt	Thai Baht
CEPT	Common Effective Preferential Tariff
CGD	Comptroller's General Department
DOA	Department of Agriculture
DOAE	Department of Agricultural Extension
DRC	Domestic Resource Cost
FTA	Free Trade Area
FY	Financial Year
GFMIS	Government Fiscal Management Information System
GMS	Greater Mekong Subregion
GPP	Gross Private Product
HSL	High Sensitive List
ICT	Information and Communication Technology
IEAT	The Industrial Estate Authority of Thailand
JBIC	Japan Bank For International Cooperation
JICA	Japan International Cooperation Agency
Lao PDR	Lao People's Democratic Republic
MP	Members of Parliament
MTEF	Medium-Term Expenditure Framework
NEED	North Eastern Economic Development
NEESO	Northeast Economic and Social Office
NESDB	National Economic and Social Development Board
NPC	Nominal Protection Coefficient
NSO	National Statistics Office
OPDC	Office of Public Sector Development Commission
OPM	Office of The Prime Minister
OTOP	One-Tambon-One-Product
PAO	Province Administration Organization
PDC	Public Sector Development Commission

PICS	Productivity and Investment Climate Survey
PNG	Papua New Guinea
PREM	Poverty Reduction and Economic Management
PSA	Public Service Agreement
RICM	Rice Integrated Crop Management System
RTG	Royal Thai Government
SDA	Service Delivery Agreement
SES	Socio-Economic Survey
SMEs	Small and Medium Enterprises
SML	Small, Medium, or Large
SOE	State Owned Enterprise
TAO	Tambon Administration Organization
TCI	Technological Capability Index
THAISEM	Thailand Spatial Equilibrium Model
THB	Thai Baht
WB	World Bank
WTO	World Trade Organization

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Foreword

Preface

Regional development is about promoting economic growth, to share the benefits of growth across regions and communities, and to connect regions within the country and with the rest of the world. This agenda has for a long time played a central role in Thailand's development model. There is little doubt that commitment to regional development by policymakers, firms and civil society has contributed to the enviable record of Thailand's regions on growth and poverty reduction. But there is also great interest in improving the effectiveness of economic policies in achieving balanced regional development, promoting backward communities and supporting private sector growth in poor areas.

Exploring these issues for Isan, the Northeast of Thailand, the country's most populous and poorest region, is the motivation for this joint study by the Northeastern Region Economic and Social Development Office (NEESO) and the World Bank. The report is organized around three basic topics: the economic record, the constraints to economic development and strategies to promote economic development. It is written for senior policymakers, development practitioners both within Thailand and the international community at large, and the Northeast population. It offers a systematic, policy-oriented analysis of Northeast economic development and draws lessons for balanced regional growth in Thailand.

The consultations in Khon Kaen and Bangkok have shown that Thai policymakers, civil servants, researchers, and civil society do not have to be convinced about the importance of balanced economic development. But they are keen to learn from specific experiences on how to do it better. We hope the reader will find that this report provides a refreshing and sometimes provocative look at familiar issues - and also sheds new light on the way forward.

This report is dedicated to the Isan people who for centuries carved out a modest living in difficult conditions from an austere, acidic soil that suffers from frequent floods and droughts. By learning to make do with what they have, they have developed an admirable resilience, and made much progress in improving their incomes and quality of life, while looking forward to a better future.

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Acknowledgements

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Finally, we also are indebted to the staff at NEESO, NESDB and the World Bank Resident Mission, and the many key informants and farmers who generously gave their time to teach us about their lives.

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Table 2: NEED Background Studies

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Thailand Spatial Equilibrium Model	Alessandro Alasia, Jason Skotheim and Tim Purcell
Northeast Business Case Studies	Sumeth Kaenmanee, Anongnuch Thienthong and Phumsith Mahasuweerachai
Northeast Development Strategy for Poverty Reduction	Sumeth Kaenmanee, Anongnuch Thienthong and Phumsith Mahasuweerachai
Regional Labor Markets	Patrick Paul Walsh and Frank Walsh
Regional Investment Climate	Kaspar Richter, Patrick Paul Walsh and Aphichoke Kotikula
Khon Kaen Doing Business Survey	Punthumadee Katawandee, Naoya Azegami, Nareenot Damrongchai, Dusita Krawanchit
Regional Public Expenditures	Kaspar Richter and Aphichoke Kotikula
Public Expenditure Reforms	Björn Dressel
Infrastructure in East Germany	Björn Dressel
Primate City - Literature Review	Erica Noda
Weather-indexed Insurance for Agriculture in Thailand	Ulrich C. Hess, Ornsaran Manuamorn, Hector Ibarra Pando

Table 3: Companies and Respondents of Khon Kaen Doing Business Survey 2005

Company	Respondents
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Taveesin Chanruchai Law Office	Taveesin Chanruchai, Kasemsant Pradapkarn
Khon Kaen Land Office, Department of Land	Itipol Kal-on-sil, Pitsanu Tultham, Krisada Hanchai, Wirasak Ukahad, Wanakorn Pupewkok, Tawatchai Darachalermkul, Pichai Pae-koa

Executive Summary

This report is about balanced economic development in the Northeast of Thailand. It is about growth and poverty reduction, cities and villages, enterprises and workers, skills and education, infrastructure and trade, and rice and silk. Northeast economic development is only part of Thailand's development challenge, but it is among the most important. We look back at how the Northeast has fared in terms of growth, poverty reduction and social capital over the last decades relative to other regions in Thailand.We examine today's challenges, analyze the constraints facing those who seek to meet these challenges, and then propose an agenda that both outlines a general strategy and the specific priority actions.

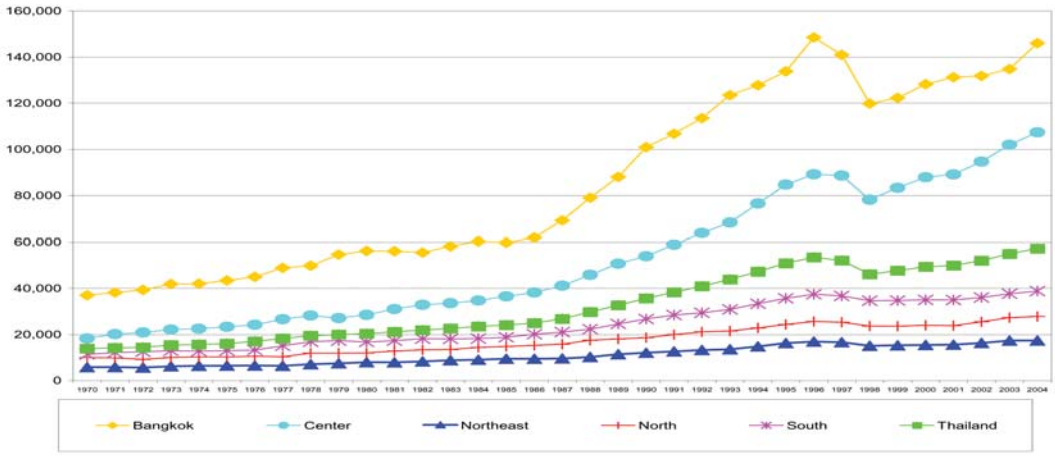
Record

The Northeast's image has seen little changes over the last decades. Isan has a reputation of being a tranquil and backward region, far distant from Thailand's economic hubs, for a life burdened by the toils of the field rather than the stresses of modernity. But the image is misleading; its economic record suggests a rather different reality. Aided by a dynamic and rapidly changing economy, the region has had three major accomplishments: it has grown quickly, it has noticeably reduced poverty, and it has still preserved its strong communities.

Stellar Growth

During the last 35 years, the Northeast was one of the fastest growing economies in the world. The Northeast's average per capita growth rate of 3.3 percent since 1970 has rivaled that of Latin America, South Asia or the group of high-income countries. Its economy is three times as large now than in 1970: GDP per capita in 2004, measured in 1988 prices, amounted to Bt34,000, compared to only Bt11,000 in 1970 (Figure 1). The rise is even more impressive in US Dollar terms due to the appreciation of the Baht vis-á-vis the US Dollar.The Northeast's GNI per capita reached US$740 in 2004, compared to US$94 in 1970. With economic growth came change in the composition of output. Agriculture accounts for just under one fifth of GDP, compared to close to two fifths in 1970. Industry increased from the early 1990s onwards and contributes now as much to GDP as agriculture. And the service sector recorded the largest gains: it provides today over three fifths of GDP, compared to over two fifths three and a half decades ago.

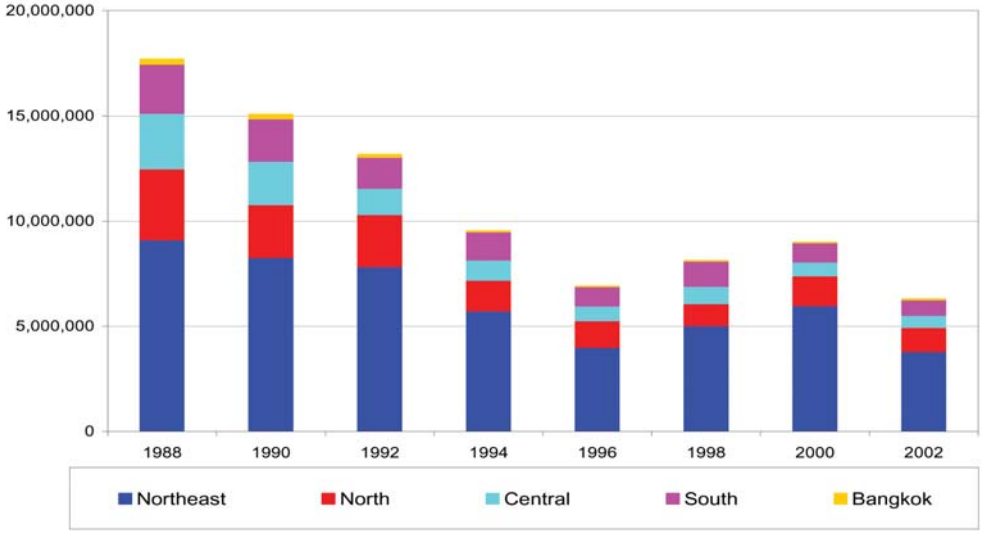
Figure 1: Regional Per Capita GDP, 1970 to 2004, 1988 Prices



Rapid Poverty Reduction

With value-added per person growing three-fold in the Northeast, household living standards improved dramatically. The poverty headcount fell from 48 percent in 1988 to 17 percent in 2002, and in spite of population growth, the number of poor dropped from 9 million to 4 million people (Figure 2). Thailand has made such impressive inroads into poverty that in the own assessment of poor people, lack of food is no longer an attribute of poverty. Rising living standards are visible in higher income and consumption as well as more durable goods. For example, over two thirds of Northeast households had refrigerators in 2002, compared to only one seventh in 1988. Almost all families own a television today, relative to only just over one in three in the late 1980s. Bicycle ownership went down over time, as households switched from bicycles to motorcycles or even cars.

Figure 2: Number of Poor, 1988 to 2002



Vibrant Communities

While economic forces have increased incomes and assets, the strength of community life remains one of the Northeast's hallmarks. Kinship networks of the extended family, widespread land ownership, low mobility (with the notable exception of the adolescents), and Buddhist values have created communities with strong social capital. Over nine in 10 Northeast households participate in local groups and the provision of social services.

The Need for Change

In spite of these admirable achievements, the Northeast is not known as an example to emulate. Perhaps one reason is that more has been expected of the Northeast, especially by the Isan people themselves. As they look to the North, South, Center and Bangkok, or across Thailand's borders, the Isan may rightly feel that Northeast development has not been rapid enough. Being home to a growing fraction of Thailand's poor provides harder evidence of this shortcoming. And not participating as much as other regions in Thailand's economic growth over the last decade makes more rapid economic development a pressing policy matter.

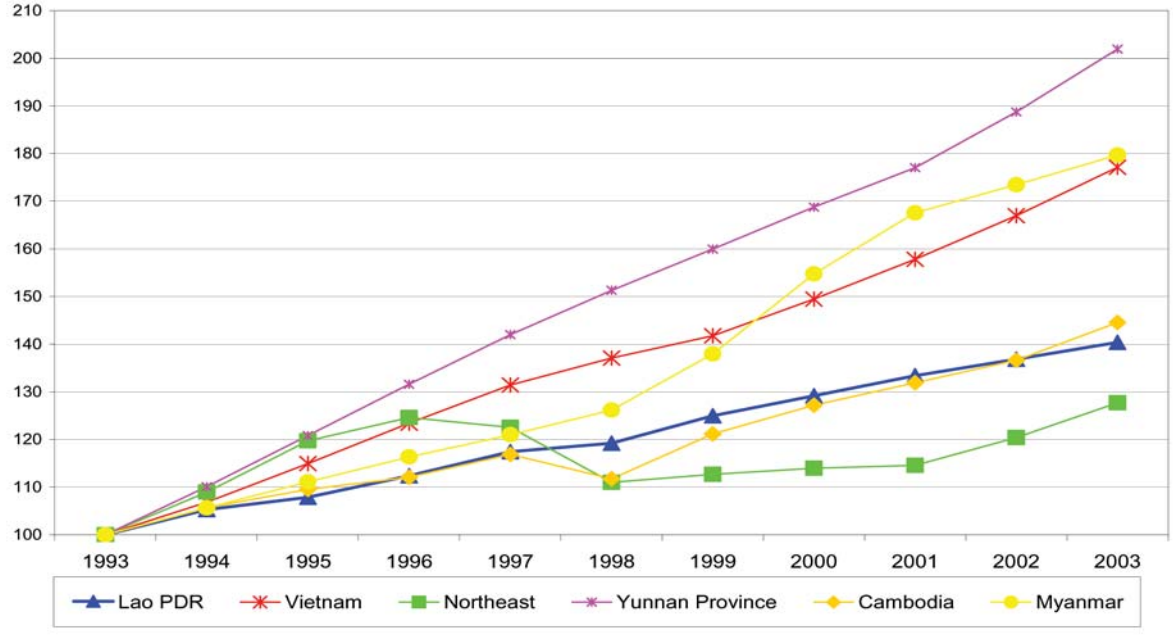
Low Growth and Productivity Relative to Other Thai Regions

Economic growth, while decent by international standards, lacks behind Thailand's other regions. Since 1970, annual economic growth fell short by one percentage point compared to the national average, and the Northeast's contribution to Thailand's GDP fell from 16 percent to only 9 percent even though the population share remained constant at around one third. The main factor behind lower economic growth is weak productivity gains. Much of the Northeast's human, physical and natural resources are absorbed in low-yielding activities. In 2004, the Northeast worker generated only one sixth of the value added of the average worker in Bangkok, Central, East and Vicinity, and just over two-thirds of the output of a worker in the North. And the gap to other regions is rising. Since 1990, labor productivity growth in the Northeast fell short by 0.4 percent compared to the North, by 0.5 compared to Thailand, and by a remarkable 7.7 percent compared to the East.

Low Growth Relative to its International Neighbors

Missed growth opportunities are also apparent from a look across the border. While the Northeast is poorer than other regions in Thailand, it traditionally has been richer than its GMS neighbors. Yet, differences in growth performance begin to unravel the basic income geography that had broadly remained unchanged for many decades. Excluding the rest of Thailand, the Northeast's share in GMS GDP dropped from close to one third in 1995 to just over one seventh in 2003, and the GNI per capita of China's Yunnan Province exceeded the one of the Northeast for the first time in 2004 (Figure 3).

Figure 3: Real Per Capita GDP Growth in Greater Mekong Region, 1993 to 2003



Growing Concentration of Thailand's Poor

The slower pace of change has held back poverty reduction. With poverty falling faster in other regions, poverty has become more concentrated in the Northeast. While one in two poor persons lived in the Northeast in 1988, three in five poor persons resided there in 2002. Poverty is about 60 percent higher in rural areas, where livelihood depends mostly on agriculture, than in urban areas, which offer jobs in industry and services. Northeast rice farmers alone account for over two fourths of Thailand's poor.

Growing Strain on Isan Communities

Faced with low agricultural yields and absence of off-farm jobs, about one in two Northeast families rely on migration and remittances to boost incomes and support the local economy. At the same time, almost one in two Northeast villages report many problems with migration. Migration separates family members and exposes migrants to great risks. While some get help from friends or family members who previously migrated, others who do not have such a social network end up in inhumane working conditions.

The Constraints to More Rapid Development

Economic growth and trade integration are proceeding at a rapid pace all around the Northeast. Unless the Northeast responds to and shapes the changes taking place in Thailand and East Asia, its growth will continue to fall behind, poverty will remain high, and migration will continue to trouble communities. While much is at stake, the opportunities are even greater. Thailand can transform the Northeast's economy and spread prosperity to neighboring regions and countries alike.

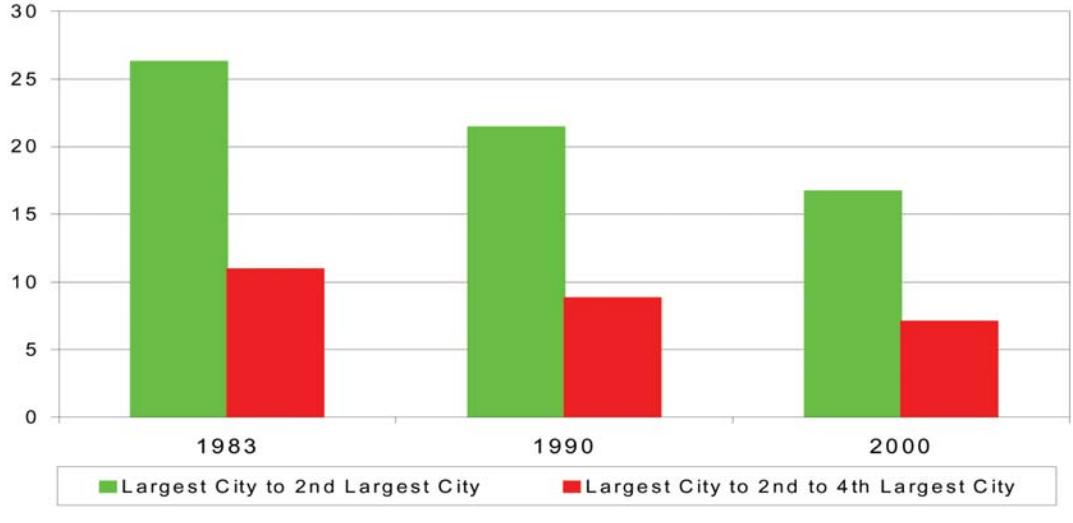
Overcoming growth differences presents an enormous challenge, since the Northeast lacks certain key drivers for change. The Center, and to a lesser degree the North, relies on manufacturing, the South on agriculture, and Bangkok on transport, communication and business services for economic transformation. By contrast, the Northeast's dominant activity is retail trade, a sector without cross-regional importance and sustained by household remittances from other regions. What prevents the Northeast from making the most of its opportunities?

A Dominant Primate City

Around the world, densely-populated urban areas have been a force behind economic concentration. They provide markets and allow firms to benefit from economies of scale, specialization and the rapid diffusion of knowledge and innovation. Bangkok, one of the world's most cosmopolitan cities, is the nation's big throbbing heart. It dominates Thailand's urban development like few cities in other countries. It had around 6.3 million inhabitants in 2000, which was about 17 times the number of residents of Thailand's second largest city. While the degree of Bangkok's primacy is unusual, the factors of primacy conform to experience elsewhere. Bangkok is the country's capital for a highly centralized government; has access to a major port; is a conduit for inter-regional traffic; is located above most of Thailand's groundwater and surrounded by fertile lands. Bangkok's primacy provides strong advantages for enterprises compared to outlying regions. They include easy access to export channels, lower transport costs, better utilities, higher labor productivity due to a skilled labor force, a more developed financial sector, close proximity to the public administration and policy makers, and strong forward and backward linkages to input and output markets.

Changes in the growth dynamics of secondary cities have widened the gulf between the extended Bangkok area and other regions even further. Mirroring trends elsewhere in East Asia, the largest population growth over the last two decades has taken place in Bangkok's peripheries. In the early 1980s, the second and third largest cities were Nakhon Ratchasima in the Northeast and Chiang Mai in the North. By 2000, they had dropped back to 5th and 8th place, respectively. They have been replaced by Samut Prakan and Nonthanburi, both cities in Bangkok's vicinity, which used to be ranked only as 12th and 25th largest city (Figure 4). Clearly, Bangkok's strong pull factor has undermined urban development in outlying regions. The Northeast's urbanization rate remains the lowest in the country at 18 percent, barely changed compared to the early 1990s.

Figure 4: Primary City Indicies, 1983 to 2000



The Inability to Attract Manufacturing

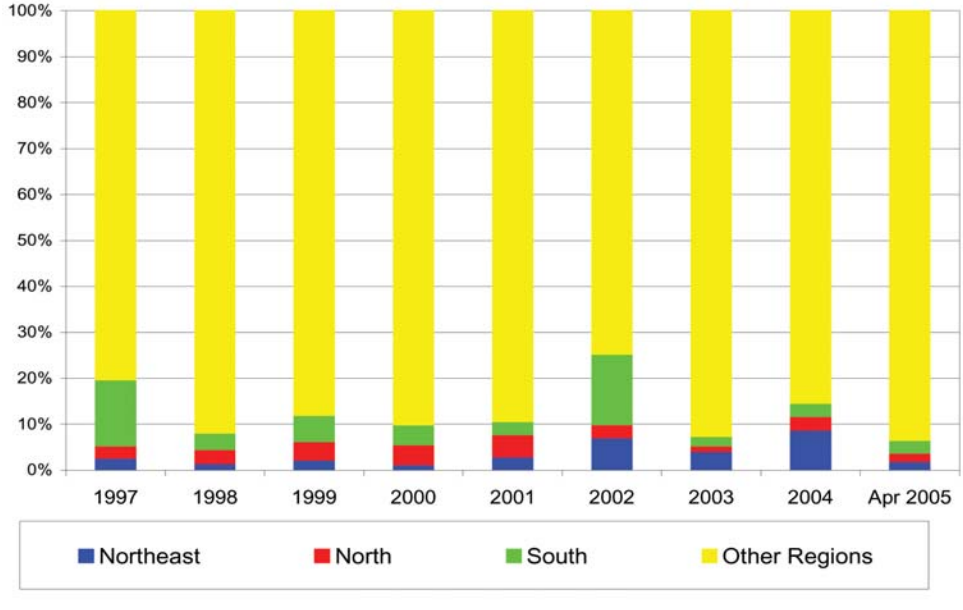
The trends in the pattern of urbanization are directly related to the dynamics of the manufacturing sector, the principal driver of Thailand's recovery from the Asian crisis. Manufacturing exports increased from less than 40 percent of GDP before the crisis to close to 60 percent of GDP as of today. As the importance of manufacturing has grown, the East and Central regions have taken off: their contributions to manufacturing GDP have exceeded Bangkok's since 1996 and 2003, respectively. Firms in need of a large plant site are attracted to the Bangkok fringe, as it shares some of the agglomeration advantages, such as proximity to export facilities and input supplies, but avoids some of the disadvantages, such as high land cost. However, congestion in Bangkok and Vicinity has not benefited the Northeast, North and South, even though they offer cheap land and labor (Figure 5). The Northeast contributes only 4 percent to the manufacturing sector's value added, the same fraction as in the early 1980s.

Figure 5: Spatial Distribution of Manufacturing Employment, 1996/7 and 2001/2

The differences in growth dynamics of manufacturing are linked to differences in the sectoral composition. Based on its comparative advantage, the Northeast specializes in labor-intensive and resource-intensive sectors, such as wearing apparel, textile and food processing, which have either contracted or grown modestly since the mid-1990s. The fast-expanding sectors are differentiated industries, such as electronic parts, machinery, and auto parts. These sectors rely on strong enterprises linkages and hence locate primarily around the Bangkok area. Northeast firms also lag behind in technological capabilities that are important for diffusion of knowledge and innovation. Low agglomeration and weak technological capabilities ultimately lead to low efficiency in combining capital and labor to generate output. According to the 2004/5 Productivity and Investment Climate Survey, the Northeast's total factor productivity is almost 30 percent less than Bangkok's.

The pull of the agglomeration in the extended Bangkok area is so strong that government policies to promote the regional spread of investment have had little success. Since 1987, the Board of Investment (BOI) has divided the country in three zones based on proximity to Bangkok, and offered higher incentives to outlying zones. Nevertheless, the Northeast's share in BOI promotions averaged only 4 percent since 1997 (Figure 6). Even those firms investing in Zone 3 locate typically as close as possible to Zone 1 in order to limit transport costs while maximizing investment incentives. For example, about one half to three quarters of Northeast investment promotions go to Nakhon Ratchasima, which is in the Southwest corner of Zone 3, and close to Bangkok. Similarly, supply driven infrastructure projects are unlikely to succeed without a clear market demand. Only four industrial estates or parks are located in the Northeast, compared to 26 in the East. In addition, industrial estates dilute the impact of the BOI zoning policy as they offer similar incentives as those presented by Zone 2 or Zone 3.

Figure 6: Regional Board of Investment Promotion Certificates, 1997 to 2005



The unitary structure of Thailand's rules and regulations reinforces the importance of agglomeration effects. The same business, bankruptcy and labor laws apply in Bangkok as in Khon Kaen. On paper, the costs of doing business are the same across the country, as outlying regions have no latitude to attract enterprises through adopting business friendly procedures. At the same time, firms in and around Bangkok benefit from lower shoe leather costs for obtaining investment promotions, permits and licenses through proximity to public institutions in Bangkok.

The concentration of enterprises in and around Thailand's capital leads to a similar clustering in finance. Bangkok alone accounts for two thirds of commercial domestic deposits and three quarters of credits, and Bangkok and Center are home to about two thirds of all branches of domestic banks. By contrast, the Northeast accounts for only 5 percent of both deposits and credits. This gap reflects low household income and lack of business demand rather than low access (13 percent of all branches are located in the Northeast) or high cost of borrowing (formal interest rates are similar to those charged in Bangkok). In addition, about one quarter of all credits are provided through the three main public financial institutions (Government Saving Bank, Government Housing Bank and Bank for Agriculture and Agricultural Cooperatives), which are adequately presented throughout the country.

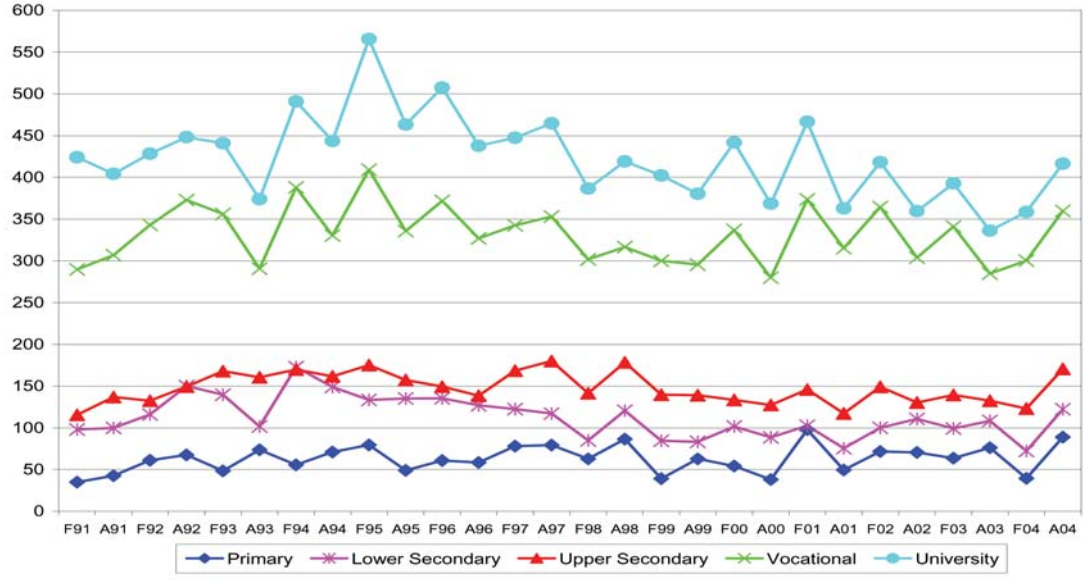
An Unfriendly Environment for Skilled Workers

Finding employment in the Northeast is not a problem. Even during the Asian crisis, the employment rate dropped by no more than 4 percent. This is due to two factors. First, wages are downward-flexible as labor unions are weak and minimum wage legislation is not effectively enforced. For example, wage earnings fell by 9 percent during the Asian crisis, and more than half of the daily wage workers received wages below the minimum wage in 2004. Second, when labor demand in industry and services falls short, workers become farm laborers either on the family farm or elsewhere. Although agricultural employment in the Northeast has declined by about 10 percent since the early 1990s, still almost one in two workers work in agriculture even during the slack season.

While getting a job in the Northeast is easy, receiving a good wage is harder. Less than two fifths of Northeast workers earned a wage at the age of 35, and just over one fifth earned a monthly wage. This compares to two thirds and one half in Bangkok, respectively. These differences in wage employment rates link back to occupation and education, as wage employment is more common outside of agriculture and among skilled workers. Among Northeast workers, about one third is employed in services and one fifth in industry. By contrast, for Northeast workers earning a monthly wage, these shares are four fifths for services and one seventh for industry. In the Northeast, almost one in two workers on a monthly payroll have vocational or university education, compared to only one in five among wage workers and no more than one in ten among all workers.

Wage employment is not only harder to come by, but it is also less well enumerated. Northeast wages, whether paid daily or monthly, are around 50 percent less than those in Bangkok. Since more Northeast than Bangkok workers receive daily wages and daily wages are only about 40 percent the level of monthly wages, the average wage received per month in Bangkok is twice as large as in the Northeast. Education is a strong determinant of wages, especially in the Northeast. For example, workers with university degrees earn about four times as much, and those with vocational training about three and a half times as much, than those without completed primary education (Figure 7). This compares to three times as much for university education, and one and a half times as much for vocational training in Bangkok. These wage premia have changed little over time, even though the workforce has become more educated. For example, the share of Northeast workers with at least primary education has increased by almost 20 percent since the early 1990s.

Figure 7: Returns to Education of Monthly Wage Earners Relative to Less than Primary in the Northeast, 1991 to 2004

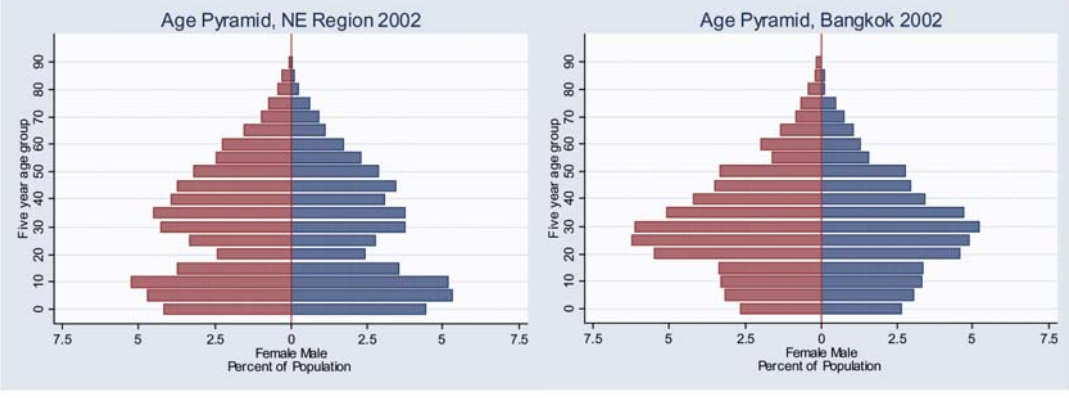


Jobs have a lot to do with education and training. The better educated are more likely to find wage employment and receive higher wages. Much of the improvement in labor market outcomes in the Northeast over the last 15 years is linked to the dramatic progress in education. School participation rates for 14-year old children in the Northeast increased from less than 40 percent in 1988 to over 80 percent in 2002. The enrollment gap to other regions has been eliminated for all age groups up to upper-secondary education. Among the 15 to 21 year-old, the share of Northeast students who attended upper secondary, vocation, or university education increased from 5 percent in 1988 to over one quarter in 2002. Since less than one in twenty Northeast students attend a private school, the bulk of this progress was achieved through the public education system. However, the transition to a modern, child-centered and participatory education system in the Northeast has only begun.

Northeast students fall behind in test scores at grade 9 and 12, partly because teachers have lower qualifications. In addition, school fees are a strong deterrent for students to attend private vocational and university education. Northeast household with students in private vocational institutions spend on average 14 percent of their income on fees. Yet, it is those degrees that fetch the highest premium in the labor market.

Given the lack of jobs and lower wages, workers turn to migration, especially among the young. This leads to a twin-peak population structure in the Northeast, with many children and adults of 30 years or older, and a single-peak structure in Bangkok, with a high concentration of 20 to 35 year-old (Figure 8). But perhaps the most important effect of migration is remittances. More than one in two Northeast households benefited from such payments in 2002, compared to around 45 percent in 1996. Among receiving households, these remittances amounted to around one third of household income, and they lowered poverty from 17 percent to 12 percent.

Figure 8: Population Pyramids in the Northeast and Bangkok, 2002

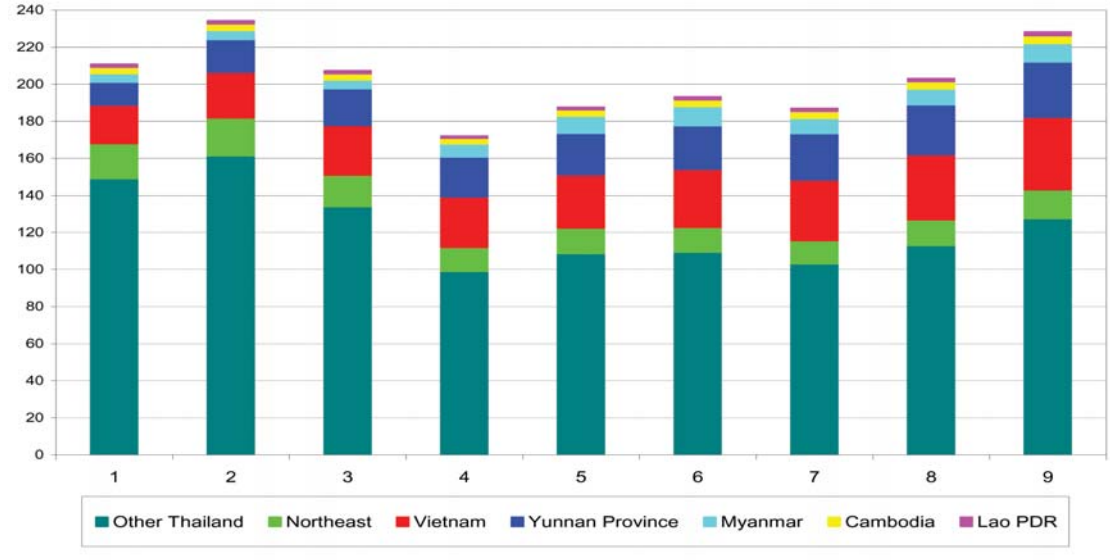


Adequate Infrastructure for Internal, Not Regional, Integration

When assessed relative to the rest of Thailand, the Northeast appears adequately endowed with transport infrastructure. Road length, unpaved and asphalt, was expanded continuously in the Northeast, as in the rest of the country. The Northeast has two railway lines and eight airports, which connect the region to Bangkok. Such infrastructure integrates the Northeast with other regions, but it also facilitates the supply of goods and services from the major urban growth centers to the Northeast. This is especially attractive if other infrastructure continues to lag behind. While progress was achieved in power - almost all Northeast households had electricity connections by 2002, Northeast firms in the 2004/5 PICS complain more often than other firms about power outages. The Northeast also compares poorly in terms of water, sanitation and communication investment. For example, only one in seven Northeast business establishments have access to computers, and just over one third of them have internet connections. While the rural fixed telephone net remains patchy, mobile phones make up to some degree for the low coverage.

Strong economic growth in the GMS region raises the benefits from close ties among its member countries. The economy of the Northeast is only half the size of China's Yunnan Province and two fifths the size of Vietnam (Figure 9). While informal cross-border trade has always taken place, but subregional integration in formal trade is a more recent development. Since 1980, Thailand's exports increased in real terms annually by 1 percent to Lao PDR, by 13 percent to Cambodia, by 24 percent to Vietnam, and by 23 percent to Myanmar. These are encouraging developments but the direct benefits from trade integration to the Northeast remain small. Less than one percent of the around 13,500 Thai export companies are located in the Northeast. While the bulk of exports and imports with Lao PDR go through customs in the Northeast, trade with Vietnam, which accounts for the largest part of exports to the Mekong region, takes place mostly through the sea-route, by-passing the Northeast. The Northeast will only capture a greater share of the expanding trade among GMS countries if trade through the land route becomes less cumbersome. This requires improvements of infrastructure and custom regulations not just in the Northeast but also in other GMS countries.

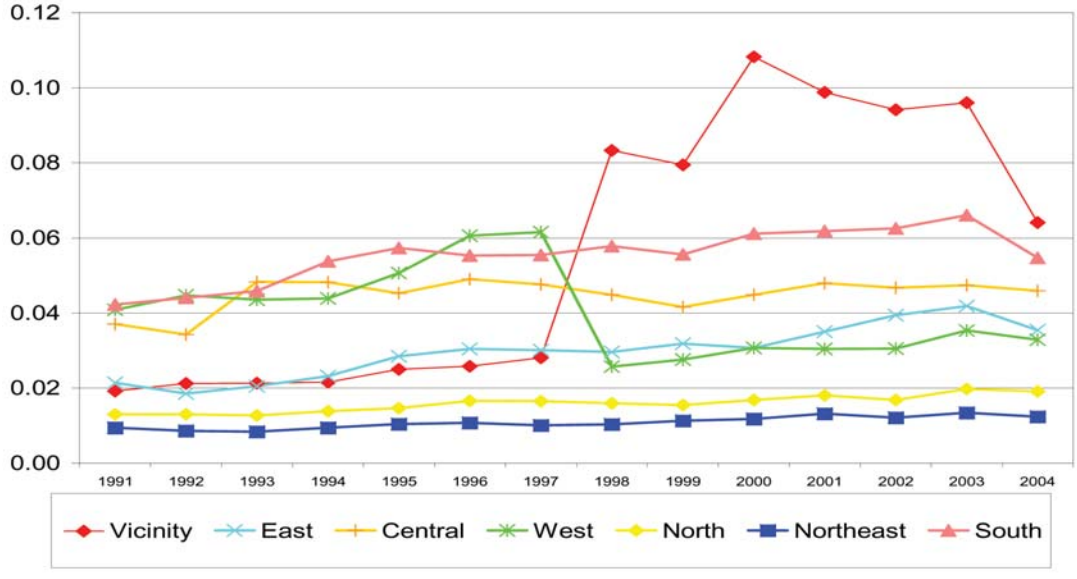
Figure 9: GMS GDP (Current Dollar Billion), 1995 to 2003



Low Productivity in Agriculture, the Principal Activity of the Poor

While cities are important growth drivers, the bulk of the Northeast population resides in villages. Over four in five families live in rural areas. The need for higher income is perhaps nowhere greater than in agriculture. The Northeast generates just over one fifth of Thailand's agricultural GDP, even though the region accounts for one half of the farms and two fifths of the agricultural land (Figure 10). Low agricultural productivity is linked to factors like small farm size, low market power of farmers, limited irrigation and lack of fertilizers and pesticides use. But perhaps the most important reasons are weak natural resources and the focus on rice production, a water-intensive crop. The Northeast has a long dry season as well as porous and highly saline soils which retain water poorly.

Figure 10: Agricultural Value Added by Agricultural Worker, 1991 to 2004

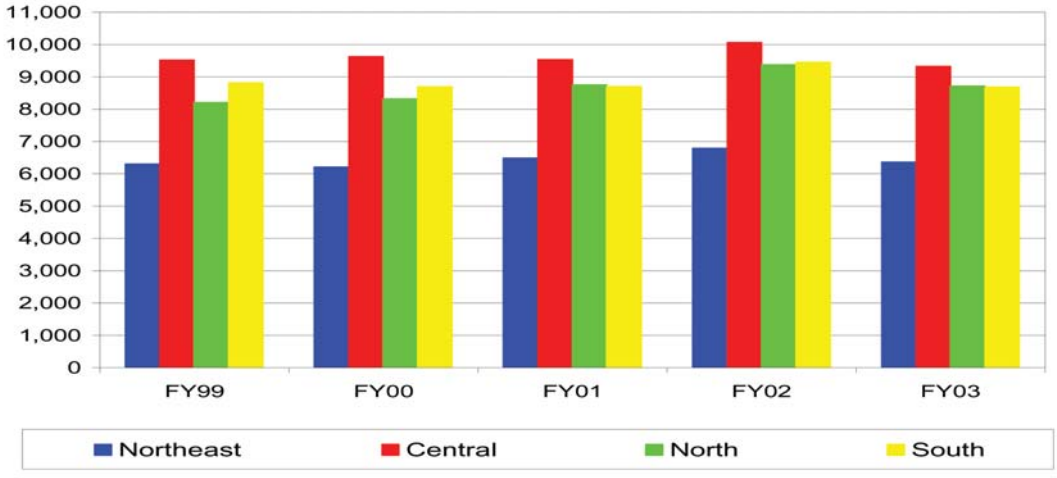


Over nine in ten Northeast farmers produce rice, but lack of water limits most of them to wet-season cropping. A large group of subsistence rice farmers exist alongside a small group of commercial farmers. The first group tends to produce glutinous rice for own consumption through rain fed main season cropping, while the second group applies irrigation to produce non-glutinous varieties destined for urban and export markets. Similarly, there is a duality in the production of silk with coexistence of subsistence oriented farmers with more commercial farmers, differentiated by the type of sericulture practiced (polyvoltine, poly-bivoltine and bivoltine). The immediate challenge is to raise productivity of subsistence farmers and integrate them into value chains. While efficiency gains through reforming production, processing and trade systems are still possible, the focus should be on increasing revenues by identifying highly processed and transformed rice and silk products that fetch a high value. In the medium term, improvements in rural living standards hinge on on-farm and off-farm diversification.

A Noticeable Shortfall in Public Spending

Regional economic development depends, among other factors, on how key sectors are funded with public resources. Channeling public resources to disadvantaged regions, if done well, can be a powerful way of promoting convergence in living standards. Yet, the Northeast receives fewer public resources than any other region and the expenditure gap with other region has remained fairly constant last five years (Figure 11). The Northeast obtained in FY 2003 Bt6,400 per capita (1999 Prices; US$160), which was one third less than the Center and 27 percent less than the North and the South. The spending shortfall compared to these three regions was close to around 30 percent in FY 1999 and FY 2003.

Figure 11: Government Spending, FY 1999 to FY 2003 (Baht Per Capital, 1999 Prices)



The Northeast is disadvantaged especially with regard to capital spending. Relative to the non-Bangkok average in FY 2003, capital expenditures were 48 percent lower and recurrent expenditures 17 percent lower. Lower spending overall translates into lower spending by function. Among the 11 main functions, the gap in FY 2003 was 8 percent for education, 33 percent for social security, 39 percent for transport and housing, and 43 percent for agriculture. The low per capita shortfall for education is related to the importance of spending on teacher's wages which are normalized across the country. This evidence is consistent with a systematic bias arising from a rigid budget allocation system that preserves existing differences in staffing and facilities by applying fixed budget norms with little regard towards performance and new spending priorities. Such norms have a larger bearing on recurrent spending, especially salaries, whereas capital spending is by its very nature more discretionary and affected by political bargaining.

The concentration of the economic sector in and around Bangkok is reinforced by the organization of Thailand's public sector. The highly centralized fiscal system grants only limited autonomy to lower government levels in terms of functions, area, staffing, funding and decision making. The central government appoints the chief local officials, determines local salaries, and approves local budgets. Even local utilization of the restricted funding is to a large part centrally mandated. For example, staffing levels and staff appointments of local governments are now centrally controlled. Local authorities are required to hire personnel and pay salaries, wages, and benefits in accordance with central regulations that often result in overstaffing and overspending. A second issue is local administrative capacity. The Northeast has the lowest number of government staff per person. Northeast public wages are from 5 percent to 56 percent lower than in other regions, as government staff is less qualified than in other regions.

The Agenda: General Principles and Priority Measures

Economic affluence is associated with prosperous enterprises, and enterprises locate where they expect the highest profitability. Firms will only invest in the Northeast if resources, business climate and markets are as or more favorable for their products than in other regions: economic development of the Northeast is connected to economic development in the country as a whole. Thailand has also thus far connected with its neighbors through Bangkok. While this has worked well for the country in general, this strategy may now have become a constraint for Northeast growth. The time may be right to augment the strong regional links through Bangkok and proximate areas with equally strong subregional international links through other parts of Thailand, especially the Northeast. But the success of these shifts in strategy in helping Northeast living standards converge with those of other Thai regions will depend on how well-prepared the Isan population is to compete. Fostering such a conducive climate will require government actions to upgrade services and institutions centered on three pillars: Thailand, the poor and the Greater Mekong Subregion.

What is Good for Thailand is Good for the Northeast

In the foreseeable future, the Northeast economy is dependent on the dynamism of the national economy. In the absence of weather shocks, growth in the Northeast tracks growth in Thailand closely, and jobs in the extended Bangkok area provide employment to Northeast workers whose remittances support a large service sector in the Northeast. To sustain Thailand's economic expansion requires a focus on the new growth locations. Peri-urban areas in Bangkok's neighborhood have attracted population inflows and have become the core of the manufacturing sector, Thailands most important growth driver. The specific priorities are:

- First, improving the business environment in the manufacturing in Central and East will be essential to ensure that these companies improve their productivity and continue sustaining Thailand's export boom. This entails addressing deficits in infrastructure and business services,such as improvements in the logistics system and the provision of one-stop government centers.
- Second, prosperity in Bangkok depends not so much on large scale industries but more on high quality business and producer services as well as high amenity and sophisticated cultural products. These activities require dense, high transaction business environments with easy accessibility and flourish through the low cost of doing business, the - by international standards - low costs of living, and the cosmopolitan flair. This implies a focus on urban mass transit infrastructure and communication.

What is Good for its Poor is Good for the Northeast

In the longer term, economic convergence will depend on how well Thai policymakers meet three challenges–improved skills, service delivery to rural areas, and general government.

- First, the skills of Northeast workers have to improve to allow them to compete on par with workers from other regions for decent jobs: what is good for Northeast workers is good for the Northeast. While the Northeast has succeeded in closing the enrollment gap up to upper-secondary education, access to vocational education is still lagging and test scores are lower at higher grades. Employers reward vocational and university education, but not upper secondary education.
- Second, the prospects for rural livelihoods have to be made better. Growth has helped to lower poverty, but the duality of commercial and subsistence farmers has reduced the impact. Grass-root initiatives support rural areas but they do not differentiate between poor and non-poor villages. While this makes these programs politically more sustainable, it dilutes the effect on poverty. By exploiting the overlap of high poverty incidence and large number of poor in the Northeast, geographical targeting of public programs can help to eliminate poverty by the end of the decade. Such programs should allow for community level monitoring and bottom-up inputs through community plans. These changes should be integrated in public expenditure reforms that emphasize results-orientation, area allocations and monitoring and evaluation. However, the main channel for poverty eradication will not be government programs but improvements of rural incomes. Reducing costs, improving productivity and on- and off-farm diversification will go some way. These efforts should be complemented by measures to raise the value-added of products and reduce the vulnerability to weather shocks.
- Third, strengthening and empowering public administrations from villages to provinces will enable them to provide effectively the services demanded by enterprises. Zoning policies and industrial estates have failed to promote investment in outlying regions due to off-setting incentives as well as institutional weaknesses. Government officials should have the mandate and funds to improve the local business climate to attract investment. Increased responsibilities of province-level officials should facilitate the coordination between tambon administrations and municipalities, while more power for revenue collection and decision making in munici palities should support the development of secondary cities.

What is Good for the Greater Mekong Subregion is Good for the Northeast

Finally, promoting and integrating with a prosperous Greater Mekong Subregion can turn the Northeast from a land-locked into a land-linked region. This will require reducing structural and institutional impediments to the movements of goods, people, and capital. Lowering transaction costs should also help GMS to follow the example of ASEAN, which was transformed through stable macroeconomic environments, reliable and transparent investment rules, and foreign investment in internationally integrated production systems. The priority measures are:

- First, overcoming inadequate transport and communication linkages and promote common networks in transport, power distribution, trade and commerce will help to boost competitiveness by integrating markets and exploiting scale economies.
- Second, to allow the integration of markets for products and services as well as for inputs such as finance, labor and energy, physical investments should be accompanied by investments in easing processes and building capacity. This includes the harmonization of legal and regulatory frameworks and the facilitation of cross-border flows.

Introduction

Convergence

During the last 35 years, the Northeast was one of the fastest growing economies in the world. The Northeast's long-run growth rate has rivaled that of Latin America, South Asia or the group of high-income countries. Strong growth also led to a steep fall in poverty, dropping from close to one in two people in the late 1980s to less than one in five today. Nevertheless, the Northeast is not widely known as an example to emulate. Perhaps one reason is that more has been expected of the Northeast, especially by the people of Isan themselves. After all, the country is blessed with an energetic populace. Perhaps the population compares itself with Malaysia, Singapore, Taiwan and Korea, and other countries in the region that are universally praised as stellar performer. Or it may be that this economic growth performance has been accompanied by high inequality and social costs, thus diminishing the quality of growth in the eyes of some observers. But the most likely reason is the Northeast's performance compared to Thailand's other regions. During the last four decades, growth in the Northeast has not kept track with Thailand's growth pole in the Central region and Bangkok. And the gap is increasing: the growth divergence doubled over the last 17 years compared to the previous 17 years.

This study is about the Northeast of Thailand, and it is about balanced regional development. It is about growth and poverty, cities and villages, enterprises and workers, skills and education, infrastructure and trade, and rice and silk. Regional economic convergence is only one part of the development challenge, but it is in Thailand among the most important. This study shows why.We look back at how the Northeast has fared in terms of growth and poverty reduction over the last 35 years relative to other regions in Thailand. We look at the resources and institutions available today for Northeast economic development. And we look ahead at what the challenges are for the future, and how to think of approaching them.

Much of Thailand continues to grow rapidly, driven to a considerable extent by the growth pole of the extended Bangkok area. Urbanization is proceeding, but from a lower level and slower than in other countries in the region. Urban centers look for improved competitiveness, peri-urban areas to upgrading of services, and rural areas for off-farm diversification and farm productivity growth. Economic policies have to strike a balance between supporting lagging regions to reduce poverty and achieve economic integration one the one hand, and tackling growth constraints in prosperous regions that provide the underpinning for the country's economic growth on the other hand.

The complexity of responding to these demands is greater than ever, and the cost of getting things wrong very high. Failing to improve the competitiveness of the urban centers today would have

a huge economic and social impact – and highly expensive to fix later. Neglecting the needs of people remaining in the poor areas and villages would be costly in human, economic and political terms.

Agglomeration

Many developing countries have well-recognized areas where poverty has been persistently high and economic growth has not kept up with other regions. The western provinces of China, the Northeast of India, the Southern States of Mexico, the West of Argentina, and the Northeast of Brazil are just few examples of such "lagging regions". Similarly, developed nations, such as the Canada, Italy, or the US also have regions with chronically low incomes compared to national averages. The Northeast of Thailand, the country's most populous region, is also an example for a lagging region.

The challenge of such regions is to grow and converge with the other regions in the country. Economic geography, a branch in economics developed in the 1990s, is all about where economic activity takes place. It offers two concepts that are important in understanding lagging regions (Krugman 1998). One part of the literature argues that differences in economic development across locations can emerge from underlying, inherent differences in those locations, such as climate, sea access and geography. Another part of the literature explores how such initial disadvantages embedded in geography, climate, policy biases or cumulative outcomes of historic accidents, can lead to regions failing to develop a self-enforcing economic dynamism. Thin markets with little backward and forward linkages, low purchasing power, weak skills of the labor force and of local administrations combine to make them unattractive for business.

In many ways, Thailand is a prime example for the relevance of these ideas. Perhaps due to inherent geographical weaknesses and population pressures, the Northeast was historically a poor region. The region was populated predominantly by Lao families who resettled there in various waves from the 14th century up until the mid 19th century. The region formed for centuries a buffer zone between the Lao and Siamese kingdoms. Towards the end of the 19th century, Thailand started administrative reforms to transform a loosely integrated kingdom into a nation state governed from Bangkok, a location with sea access surrounded by fertile lands. While Bangkok became quickly the undisputed political, economic, and financial center of Thailand and well integrated through trade with other countries and continents, the Northeast economy continued to be dominated by subsistence farming with little trade relations to surrounding areas up until the mid 20th century (Gustafson 1994). The dramatic modernization process, which transformed the country from a poor rural nation into a fast growing economy, has not benefited all regions equally. A high-wage, high-income economy in Bangkok and surrounding areas, driven by dynamic industrial and service sectors, coexists with a much less developed and more rural economy in the rest of the country.

Scope

The main message of this report is that in order to promote growth convergence of the Northeast with the rest of the country, Thailand needs to create an environment conducive to productivity growth in outlying regions. Thailand's regional economic convergence agenda entails overcoming location disadvantages, integrating markets within the Mekong region, improving local institutions, aligning investment incentives, and increasing social stability by improving skills and lowing poverty.

The report is about regional economic convergence. We look at human, physical, social and natural resources and ask whether they contributed or hindered economic convergence. Of course, gains from, say, improvements in education and health or natural resource management should not be seen only in this light. Income is only one factor in public welfare and social outcomes contribute to human capabilities that are ends in themselves. There are many drivers for regional economic convergence. Only some of them are dealt with comprehensively, and some are not covered at all. This restriction reflects the emphasis recommended by NESDB and peer reviewers at the concept stage, the desire to avoid duplication with existing literature, data constraints, and, last but not least, the need to keep the task manageable.

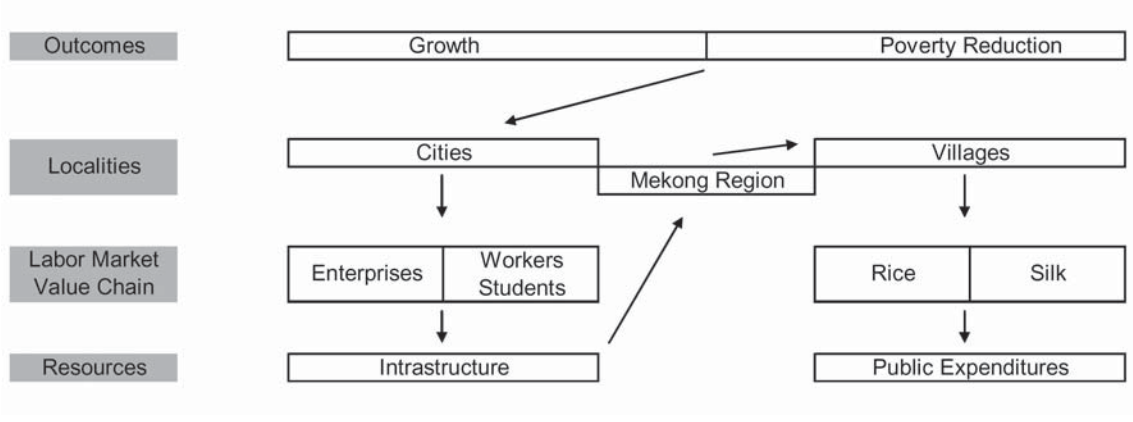
One such decision was to emphasize selectivity over comprehensiveness. This report does not propose a comprehensive Northeast development strategy but elaborates a set of issues relevant to Northeast development. Cursory treatment is given to topics such as natural resource management; on-the-job training, the service sector, small-and-median enterprises and social outcomes. Some issues are not covered at all, such as health, gender equality, and inequality; as well as topics that are important to Thailand's economic success but do not explain differences in regional performances, such as national fiscal, monetary and exchange rate policies. The report also does not deal with the issue of province clusters, as Thailand's public sector reform agenda quickly evolved beyond this ultimately stalled initiative.

The report varies greatly in terms of the level of detail, and this limitation alone would make this report unfit to be a fully-fledged strategy. Many sections focus on the big picture to capture how the Northeast as a region stands out compared to the North, South, Center and Bangkok. Only some parts look also at province level differences, and even fewer sections talk about variations across districts (amphoe), sub-districts (tambons), or villages. Rice and silk are the two sectors analyzed most carefully, although only a fraction of this work could be integrated into this synthesis report. These sections build on original field work involving a participatory value chain survey. In addition to training two government staff during the survey period, NESDB funded a two-week value-chain training course, held by Agrifood Consulting International which conducted these surveys. The detailed findings from this project, in addition to the simulations run with the especially developed Thailand Spatial Equilibrium Model (THAISEM), are provided in electronic format together with this report.

Approach and Content

Based on the work commissioned for this report and the contributions of other researchers in Thailand and elsewhere, this report reviews the Northeast's economic convergence with the rest of Thailand and proposes selective policies to support balanced regional development in Thailand. It is organized in three sections (Figure 12). The first part lays out the Northeast's record on growth and poverty reduction. While the Northeast has a good performance on both scores, it is nevertheless worse than in the rest of Thailand. The second part tries to account for the slower pace of growth and poverty reduction. In the spirit of the methodology proposed in Rodrik (2004) and Hausmann et al (2004), it attempts to identify the main binding constraints for economic convergence. This approach emphasizes looking at trends in quantities as well as prices in search of idiosyncrasies that set the Northeast apart from Thailand's other regions and hence could account for differences in economic performance.[1] It investigates in detail how the Bangkok growth pole has interplayed with the economic convergence of the Northeast across different domains. It starts with Thailand's urbanization, moves on to labor markets, both from the demand side (enterprises, with a focus on manufacturing) and the supply side (current and future workforce); turns to infrastructure within the Northeast and across the border in the Greater Mekong Subregion (GMS); then looks at villages in general and at rice and silk value chains specifically; and finally considers public expenditure allocations and reforms. The final part pulls together the findings and attempts to prioritize policies.

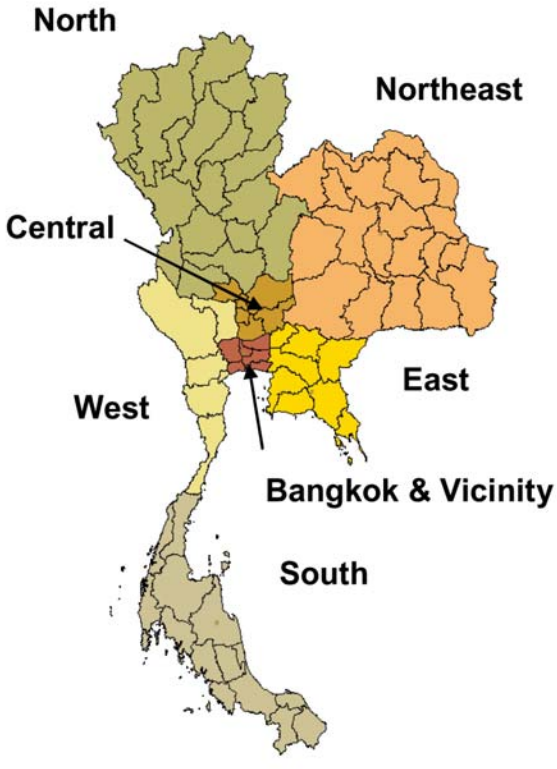
Figure 12: Report Content



[1] At the most aggregate level, Hausmann et al (2004) distinguish three types of binding constraints: high cost of finance, low private appropriability of social returns and low social returns. The second part of this report can be viewed as an exploration of why social returns to investment are lower in the Northeast than in other regions. The other two candidate constraints are considered only briefly, as they are unlikely to vary across Thailand's regions.

Box 1: Thailand's Regions

Since the Royal Thai Government (RTG) does not have any regional level representation, there are different ways of grouping Thailand's 76 provinces into regions. The 8-way breakdown consists of Bangkok municipality, Vicinity (5 provinces), Central (6 provinces), East (8 provinces), West (6 provinces), North (17 provinces), Northeast (19 provinces) and the South (14 provinces). For most of the report, we will use a 5-way breakdown, where Vicinity, Central, East and West are grouped into one region called "Center". Occasionally, such as for the analysis of the 2004/5 Thailand Productivity and Investment Survey, we will lump Bangkok and Vicinity together, in which case Center will refer to the collection of Central, East and West only.



I. Record

Growth

Growth Gap

The Northeast's economy expanded greatly over the last four decades. GDP per capita in 2004, measured in 1988 prices, amounted to Bt34,000, compared to only Bt11,000 in 1970. The rise is even more impressive in US Dollar terms due to the appreciation of the Baht vis-à-vis the US Dollar. The Northeast's GNI per capita reached US$740 in 2004, compared to US$94 in 1970.[2] In spite of this strong performance, the Northeast's progress is barely visible in Figure 13.A when plotted relative to Thailand's other regions. The Northeast was the poorest region in 1970, and has remained the poorest region until today. Indeed, Northeast's 2004 GNI per capita is no more than 30 percent of Thailand's income level. As a country, the Northeast would be the only region Thailand's to be classified as a low income country. While the North and South expanded at a comparable speed, although from higher levels, growth in Bangkok and especially the Center was clearly faster.

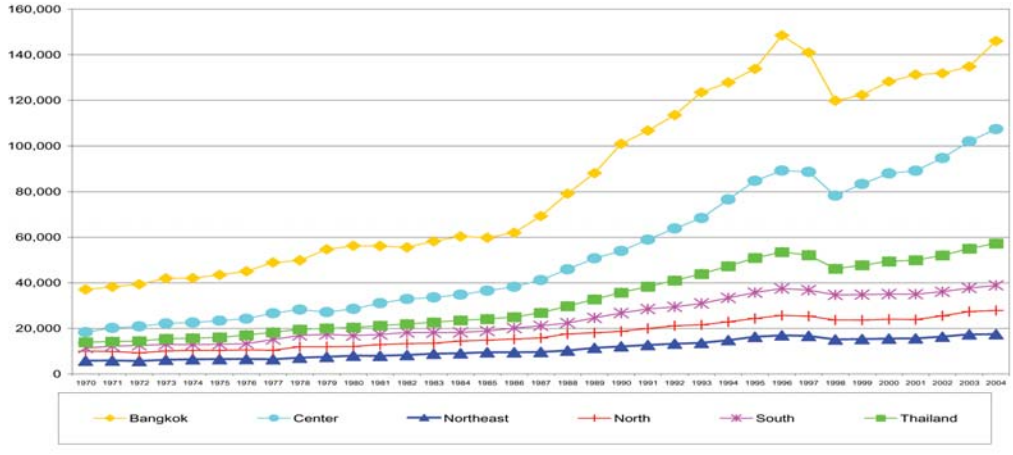
Figure 13.B takes the data from Figure 13.A, but displays it differently, as regional GDP per capita relative to the Northeast. The Northeast's income gap is constant relative to the North; increases moderately since the mid 1980s compared to the South; rises continuously, and at a higher rate since the mid 1980s, relative to the Center; and increases between the mid 1980s and 1993, before declining to about the same level as in 1990, compared to Bangkok. Average annual real per capital GDP growth of the Northeast over the entire period equaled 3.3 percent, which is slightly above the North (3.1 percent) and somewhat below the South (3.7 percent). It lagged compared to Bangkok, which expanded by around 4.1 percent, and to the Center, which grew by 5.3 percent. Overall, between 1970 and 2004, the Northeast growth gap compared to Thailand amounts to one percentage point.

The Northeast's growth gap increased over the last 35 years. From the early 1970s to mid 1980s, the period which marked the transition from import substitution to export orientation, Northeast income dropped from 45 percent to around 40 percent of the Thai average (Figure 13.C). From the mid-1980 to mid-1990s, a twin export and investment boom increased national growth more than Northeast growth, and the relative income level dropped to one third. The growth miracle was unsustainable and sowed the seeds of the subsequent collapse. While the Asian crisis hit the Northeast slightly less than the Thai economy, the recovery since 1999 has also been weaker. Overall, the growth gap since 1987 amounts to 1.5 percent, about double the number from the previous 17 years.

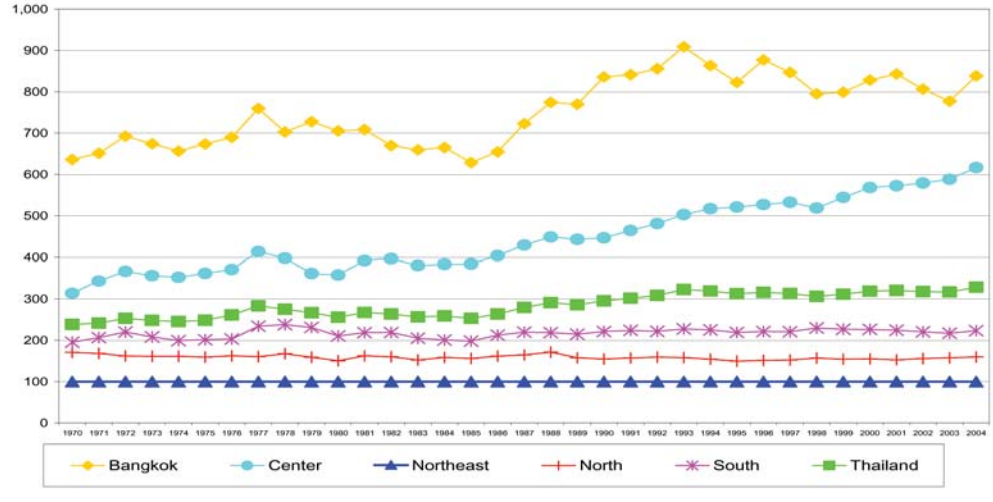
[2] The World Bank uses 2003 GNI per capita, adjusted by smoothing the exchange rate with the Atlas conversion factor, to group countries into four categories: low income, $765 or less; lower middle income, $766 - $3,035; upper middle income, $3,036 - $9,385; and high income, $9,386 or more.

Figure 13: Regional Growth in Thailand

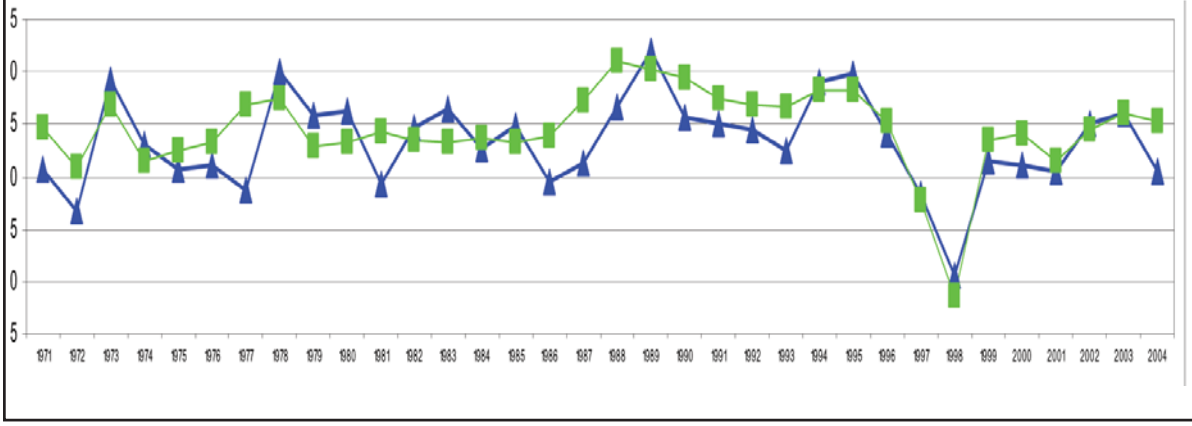
A. Regional Per Capita GDP, 1970 to 2004, 1988 Prices



B. Regional GDP Per Capita Relative to Northeast, 1970 to 2004, Northeast=100



C. GDP Per Capita Growth of the Northeast (Blue) and Thailand (Green), 1970 to 2004, Percentage Points



GDP Shares

GDP per capita measures the output of goods and services produced in a country, divided by the population. The Isan population totaled 12 million in 1970 and 21 million in 2004, implying an annual population growth rate of 1.7 percent. By contrast, the Thai population increased from 34 million to 64 million over the same period, equivalent to an annual population growth rate of 1.8 percent (Figure 14.A). Overall, the economic and population growth rates imply that the Northeast GDP share fell from 16 percent in 1970 to 10 percent in 2004 (Figure 14.B). The North's share contracted from 16 percent to 9 percent and the South's share from 11 percent to 9 percent. The joint share of these three regions in Thailand's value added fell from 43 percent in 1970 to no more than 28 percent in 2004. In other words, two thirds of the population contributes less than one third of the nation's value added.

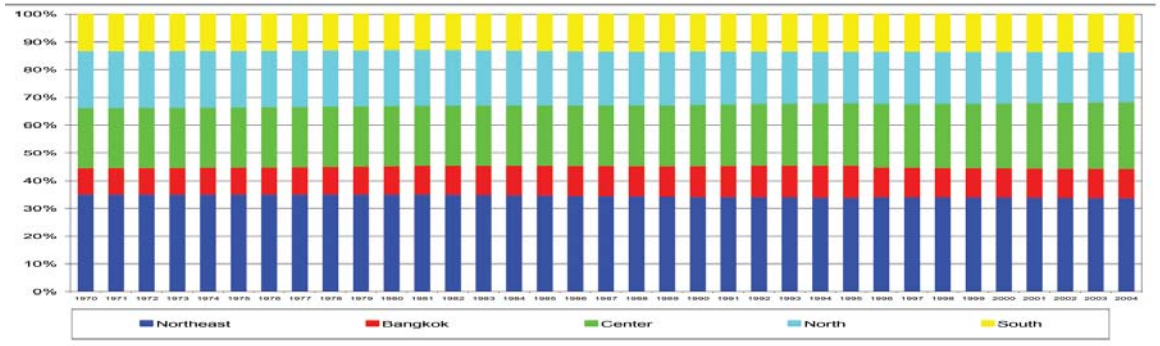
The Thai economy is more and more concentrated around Bangkok and the Center. Their GDP shares rose more or less continuously during the 1970s and 1980s. Bangkok's share peaked in 1993, even prior to the Asian Crisis, and declined to around 27 percent in 2004, the same level as of 1970. By contrast, the Center's share continued to rise in the 1990s up to now. It accounted for 45 percent of Thai GDP in 2004, compared to 35 percent in 1990 and 30 percent in 1970. Clearly, in the last decade or so the dynamism of the Thai economy spread from Bangkok to surrounding regions.[3]

A simple way of visualizing the differences in regional contributions to the population and value added per capita is through circle maps. Figure 14.C displays province-level population and GDP per capita numbers, where the radius of the circle is proportional to size. Northeast provinces are depicted in yellow and other provinces in green - with the exception of outliers shown in red: these are provinces whose values exceed the 75th percentile value by three times the range between the 25th and the 75th percentile. In terms of population size, the only outlier is Bangkok, an issue that we will return to later. In terms of GDP per capita, there are six outliers, all located in and around Bangkok. Moving from the left to the right figure, the Northeast region shrinks in size, indicating that its economic potential does not match its population potential.

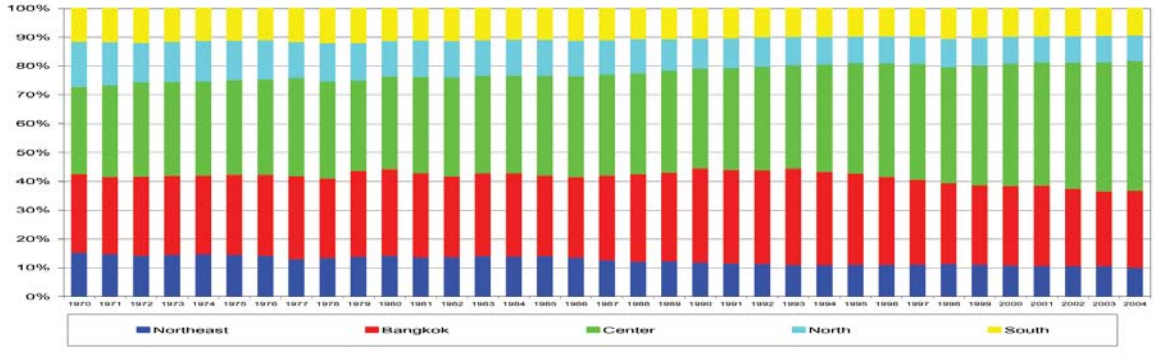
[3] Bangkok posted strong growth in 2004, the first year since 1993 in which its GDP share rose. It is too early to tell whether this marks a turnaround in the trends.

Figure 14: Regional population and GDP shares, 1970 to 2004

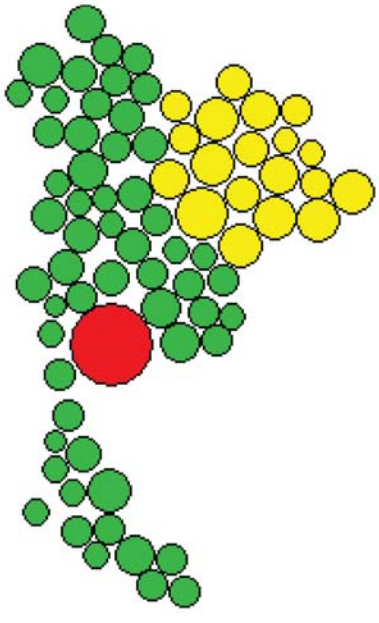
A. Regional Population Shares, 1970 to 2004



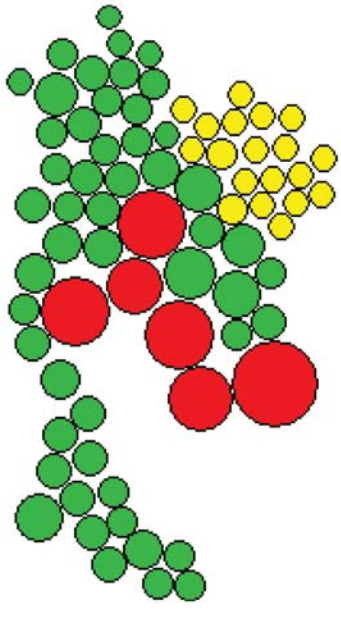
B. Regional GDP Shares, 1970 to 2004, 1988 Prices



C. Population Circle Map, 2002



D. GDP Per Capita Circle Map, 2002



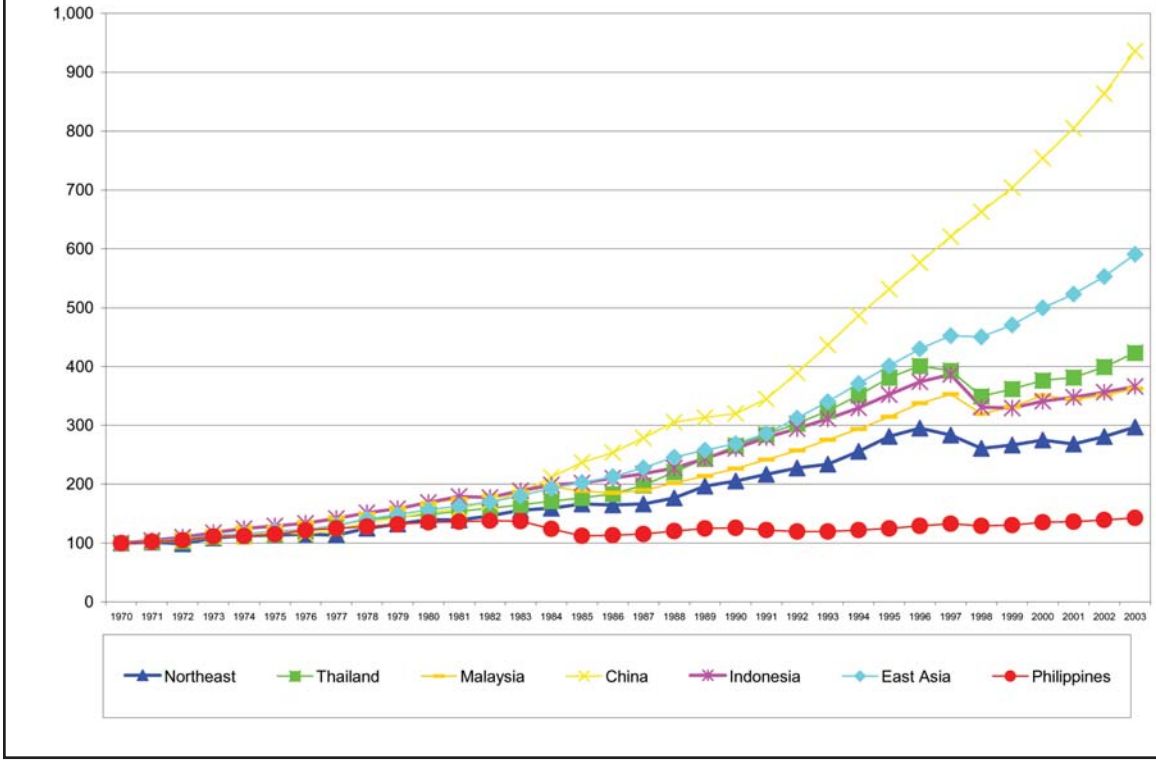
International Comparison

In spite of the strong record, the Northeast's progress seems modest when plotted against the trend of the main middle income countries in East Asia. The region as a whole grew by 5.5 in real per capita terms from 1970 to 2003, pulled up by an annual average per capita growth rate of 7 percent in China (Figure 15). Thailand's annual growth average is 4.3 percent, and Malaysia's and Indonesia's 4.0 percent. Only the Philippines (1.1 percent) grew slower than the Northeast after losing the growth momentum from the early 1980s onwards. Overall, the Northeast grew solidly since 1970 by world standards, but the record looks less impressive when contrasted with its dynamic neighbors and Thailand's regional competitors.

In the global context, the Northeast growth looks very healthy by almost any measure. The Northeast grew on average in real per capita terms by 3.3 percent every year since 1970, compared to 2.2 percent for OECD countries, 1.3 percent for upper middle income countries, 2.6 percent for lower middle income countries, and 1.6 percent for low income countries. These differences matter hugely. Growing at the pace of the Northeast implies a tripling of per capita income within 35 years. Growth at OECD speed would have led to only a doubling, and expansion at low income country pace to only a 75 percent rise of per capita income.

Figure 15: Growth in Northeast and East Asia

Northeast, Thailand and East Asian countries: Real Per Capita GDP Growth, 1970 to 2003,1970=100



Growth Divergence

Time to take stock: The Northeast is not a stagnating but a lagging region. Its economy is three times the size now than it was in 1970, a respectable performance by almost any benchmark. But Thai standards are taxing: The Northeast grew slightly faster than the North, but somewhat slower than the South, significantly slower than Bangkok, and much slower than the Center. Thailand's per capita GDP more than quadrupled, so that the Northeast's per capita income level dropped from 45 percent to 30 percent of the national average. The Northeast people, representing one third of the population, contribute no more than one tenth to the national value added, and the recent performance is worse than past performance, in spite of the Asian crisis. The average annual growth shortfall relative to Thailand overall increased to 1.5 percent since 1986, compared to 0.7 percent from 1970 to 1986.

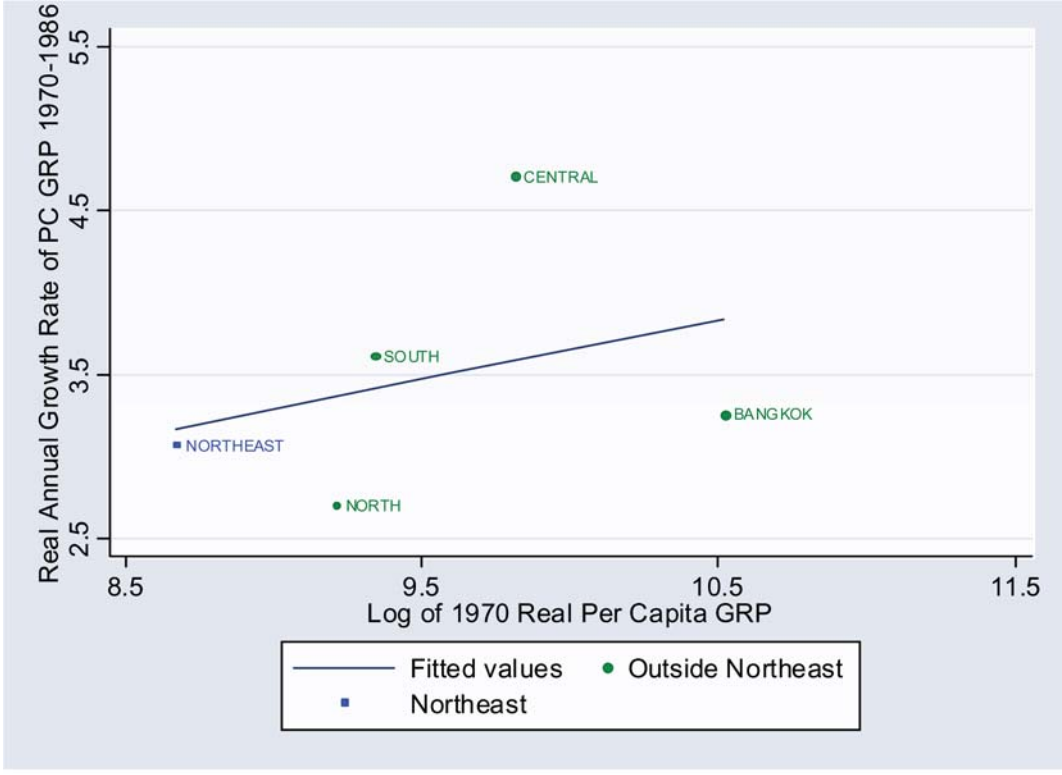
Figure 16 displays the convergence challenge. The figure at the top plots the real per capita regional GDP average growth rate for the five regions from 1970 to 1986 against the log of real per capita regional GDP in 1970. The Northeast ranks lowest relative to the horizontal axis, as it was the poorest region in terms of per capita income in 1970, followed by the North, South, the Center and Bangkok. By contrast, the North ranks lower than the Northeast relative to the vertical axis, as the Northeast grew faster (3.3 percent compared to 2.7 percent) over this period. Remarkably, growth in Bangkok was only moderately faster (3.3 percent). Overall, the period was marked by regional divergence as indicated by the upward-sloping regression line. The average growth rate increased with the initial income level of a region.[4]

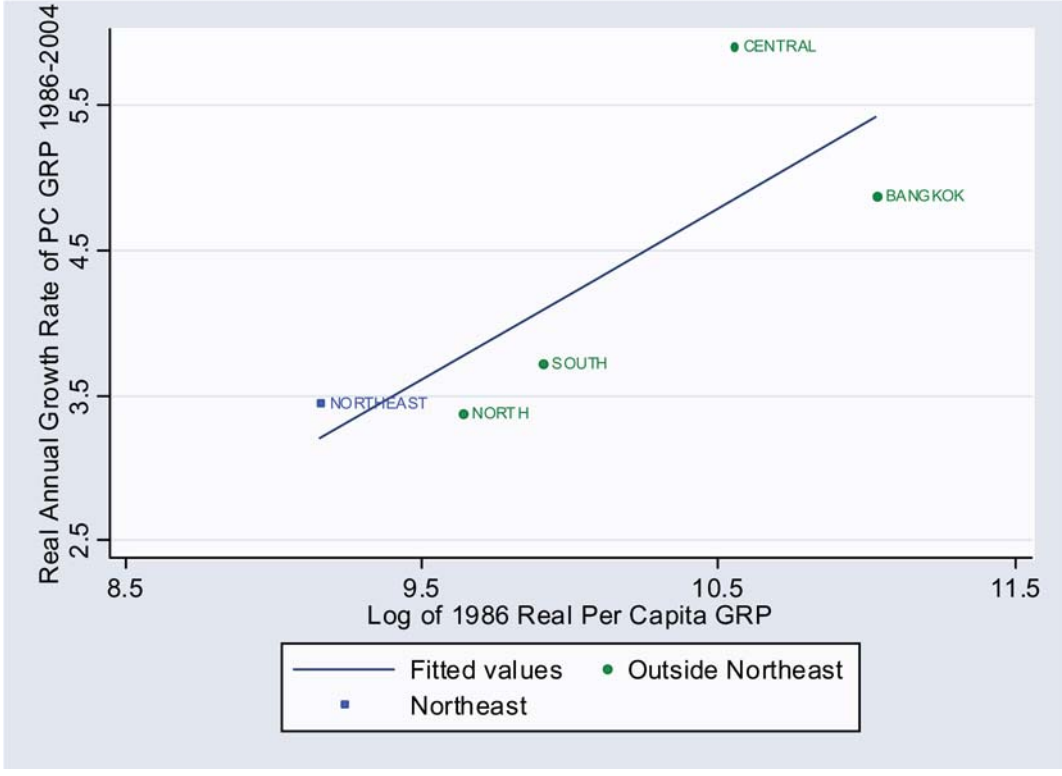
The figure at the bottom shows the same plot for the period from 1986 to 2004. Relative to the figure above, the data points move towards the northeast, as the regions have higher initial incomes and higher growth rates post-1986 than pre-1986. The ranking vis-à-vis the horizontal axis remains unchanged, as the differences in growth rates between 1970 and 1986 were not large enough for any region to overtake another region. The increase in the growth rates of the less well-off regions is small compared to rise for Bangkok and the Center. In turn, the slope of the regression line remains positive and higher than before.[5] Regional income levels diverged even more post-1986 than pre-1986. The neoclassical growth model predicts that low income regions grow faster than high income regions. Yet, the Northeast, Thailand's poorest region, grew slower than Thailand since 1970. And the growth gap increased since 1986. However, there is one important caveat: the Northeast growth rate was higher (3.3 percent) in the second than in the first phase (3.1 percent).

[4] Formally, the regression slope is equivalent to a test of unconditional convergence. Assuming each region has the same steady-state output, the slope of the regression line is equal to β, which captures the speed of convergence to the steady-state. A positive β signifies divergence, a negative β convergence (Barro and Sala-I-Martin 1991).

[5] The speed of divergence increases from 0.36 percent during 1970 to 1986 to 0.76 percent during 1986 to 2004. This calculation is only illustrative, as the number of regions is too low for a statistical analysis.

Figure 16: Regional Economic Growth Divergence, 1970 to 1986 and 1986 to 2004





BOX 2：International Experience on Lagging Regions

Mexico, Brazil, and China all have regions whose per capita GDP levels are lower and poverty incidence higher than the national averages. The southern part of Mexico, traditionally the poorest region in the nation, grew during the 1990s at less than half of the national per capita growth rate of 3.5 percent. The economy of the Northeast of Brazil almost stagnated during the second half of the 1980s, leading to a 1.5 percent per capita growth gap to Brazil as a whole. Yunnan, the poorest province in the Southwestern region of China, reached only just over half the national growth rate of 12 percent during 1999 to 2003. Different factors have hindered economic activity in these regions. In spite of abundant natural resources, growth in southern Mexico is held back by a complicated tax and property right system as well as latent ethnic conflicts. In the Northeast of Brazil, difficult weather conditions reduce agricultural productivity, leading to large migration to metropolitan areas. Economic reforms in China focused on urban development, while rural-urban mobility is discouraged through regulations.

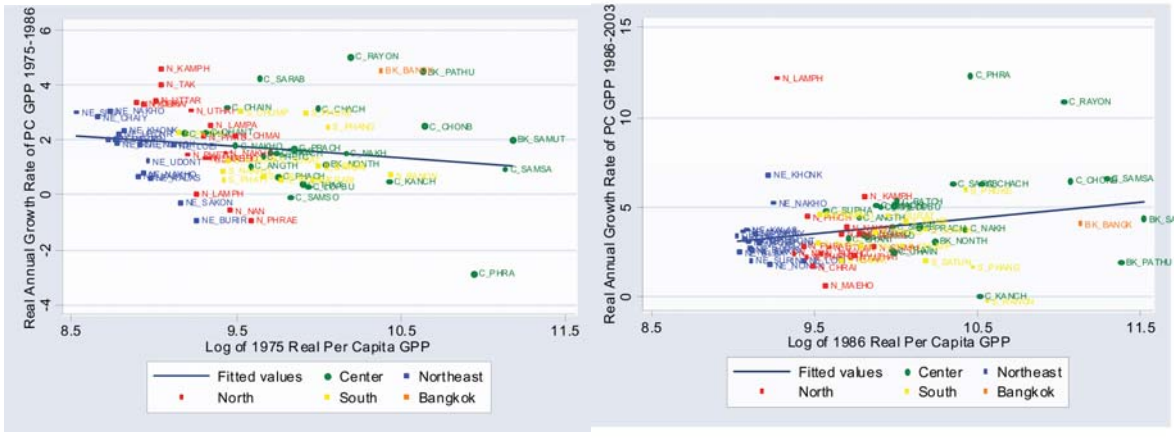
In the late 1980s, Mexico launched the Oportunidades program to provide a social safety net for the poor, and increased federal and state resources to resolve land conflicts, improved highway linkages, and promote manufacturing. Nevertheless, poverty in the rural South fell only by 2 percent compared a nationwide reduction of 18 percent. In the Northeast of Brazil, the government focused on providing education and training for the poor. Perhaps aided by such programs, Northeast per capita growth reached 2.7 percent during 1990 to 1998, about 0.2 percent in excess of the national growth rate. China launched a rural development initiative in early 2001. It includes educational reform, infrastructure improvement, and agricultural development, while the restrictions on labor mobility remain in place. The initiative focuses on Yunnan, Sichuan, Guangxi, and Guizhou, which are four poor states in the South and Southwest.

Provincial Growth Divergence

The convergence discussion focused on regional differences. But regions are broad aggregates, comprising poor and rich areas. We can bring out some of this variation by taking provinces as unit of analysis. That way, the number of observations increases from 5 regions to 76 provinces, 19 out of which are located in the Northeast. Figure 17 modifies Figure 4 in two ways. It looks at growth convergence among provinces rather than regions, and refers to the period 1975 to 2003 rather than 1970 to 2004, reflecting data availability at the province level.[6]

Starting with the 1975 to 1986 period, Northeast provinces, marked in blue, are clustered to the left on the horizontal axis. Moving to the right, we come across Northern provinces (in red), then Southern provinces (in yellow) and finally Central provinces (in green) and Bangkok. This reflects the 1975 income distribution. Looking at each region separately, two features stand out. First, differences in 1975 income levels within the Northeast and within the North are much smaller than among the South and especially the Center. Second, provinces within the Northeast and the North show strong convergence, with less well-off provinces have higher per capita growth rates, while the picture for the South and Center is more blurred. At the national level, the period from 1975 to 1986 was marked by province convergence, as shown by the downward-sloping regression line. The convergence among Northeast provinces implies that they are stacked more closely to each other in 1986. In contrast to 1975 to 1986, the regression line is upward-sloping for 1986 to 2003, and there is little evidence for convergence either within regions or nationwide.[7]

Figure 17: Growth Convergence among Provinces, 1975 to 1986 and 1986 to 2003



[6] Southichack, (1998) uses province-level data to study regional convergence in Thailand between 1975-1995 period. He finds evidence for inter-provincial conditional divergence. The level of human capital, measured in a number of years of formal education, had a positive and significant impact on regional growth rates, while physical infrastructure, defined as per capita expenditure on public infrastructure, was insignificant. Provinces with a higher share of agriculture in GPP grew less fast.

[7] During 1975 to 1986, provinces converge at a rate of 0.39 percent per year. During 1986 to 2003, provinces diverge at a rate of 0.85 percent.

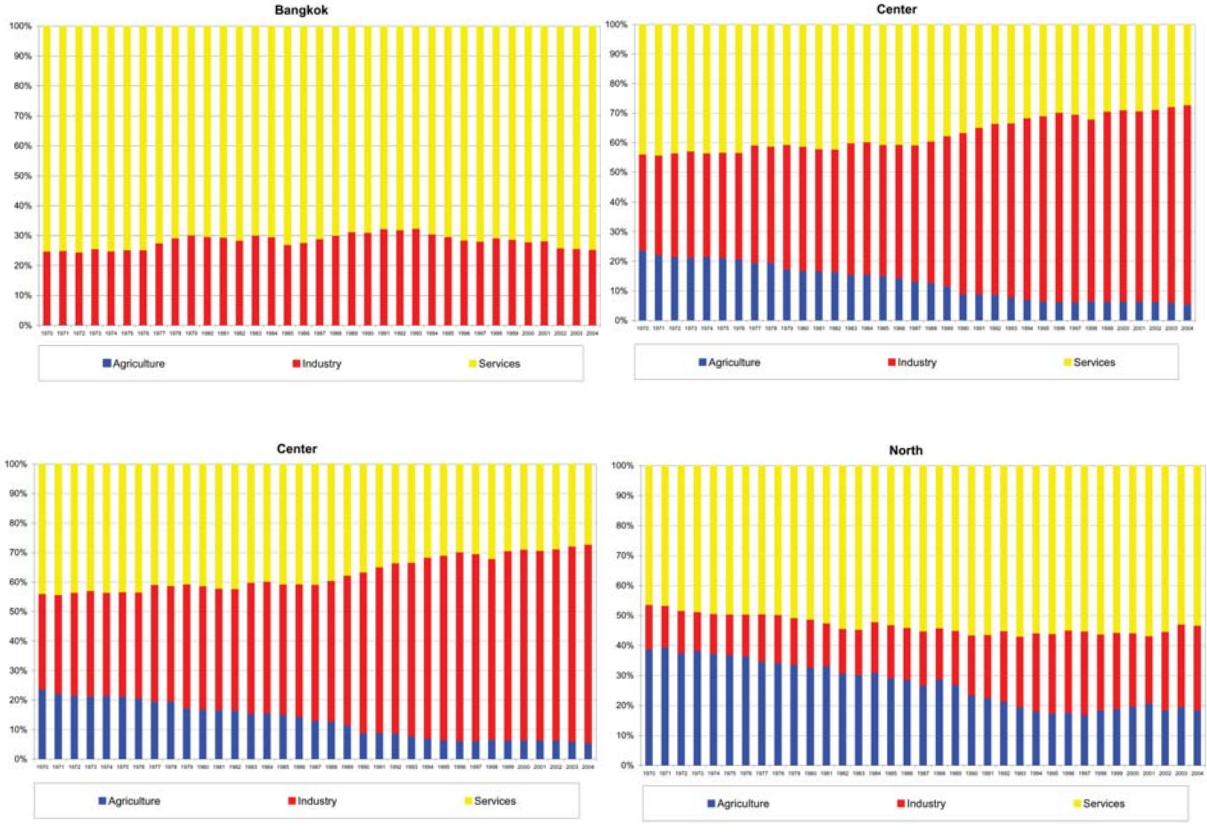
Structural Change – the Long Haul

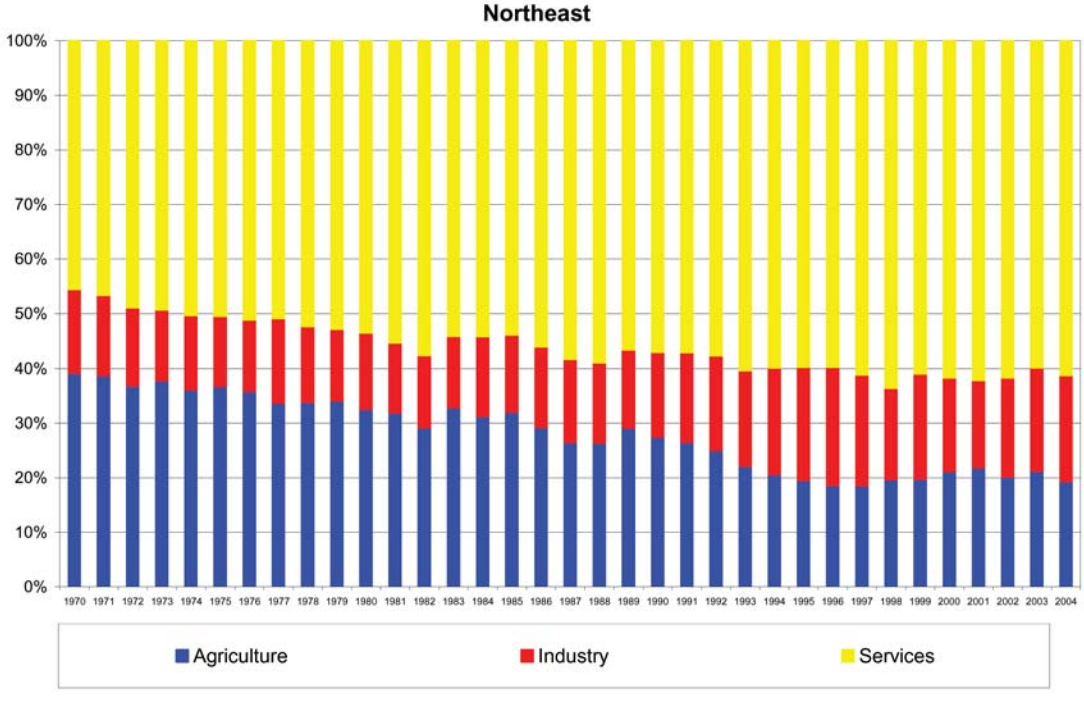
Economic growth typically brings about structural change in the sectoral compositions of output. One of the stylized facts of development, postulated as far back as 1939 (Fisher 1939 and Clark 1940), is that it comes with shifts in output from the primary (agriculture) to the secondary (manufacturing, mining, and construction) and the tertiary sectors (services). On the basis of comparative advantage, Thailand's leading sectors should be agriculture and related processing industries. Yet, during the 1960s and 1970s, protection of capital-intensive manufactures and export taxes on rice and other commodities suppressed the size of the agricultural sector. While these policies were abandoned during the 1980s, economic development brought about a shift away from agriculture. This sector fell as a share of GDP from one quarter in 1970 to less than 10 percent in 2004, whereas industry increased from less than a quarter to 46 percent, and services increased from just over 50 percent to 45 percent as of today.

Agriculture underwent a larger contraction in the Northeast than in other regions, although from a higher level. The share dropped from close to two fifths to just under one fifth of GDP (Figure 18). Industry increased only from the early 1990s onwards, rising from around 15 percent to around one fifth. The service sector expanded by more than 15 percent since 1970 and accounted in 2004 for over three fifths of GDP. While Northeast development was focused more on services than on industry, the North expanded more the industrial than the service sector. The North had the same three-sector breakdown of value added in 1970 as the Northeast. By 2004, agriculture had declined by 20 percent, which matches the contraction in the Northeast. Yet, while the share of the Northeast industry increased just 4 percent, the share of the North industry increased by three times as much. Furthermore, the growth acceleration of the North since the mid-1980s coincided with a faster pace of industrialization. The South grew faster from a higher income level than both the North and the Northeast. While the sectoral trends look similar between the South and the Northeast up to the mid-1980s, the South has managed to reverse the decline in the agricultural share since then. The sector contributed in 2004 more than one third to regional value added, the highest share of any region. The Center stands for manufacturing. Industry contributed more than two third of regional GDP in 2004, compared to less than one third in 1970. The industrialization accelerated since the mid-1980s. Finally, Bangkok, at this aggregated level, experienced the smallest change. Services accounted in 2004 three quarter of value added, as they did in 1970. The residual is contributed by industry, which has declined since the mid-1980s.

Thailand's regions took different development routes. The Northeast stands out for a growing service sector; the North for a growing industrial sector; the South for the resilience of agriculture; the Center represents the classic case of economic growth through industrialization; and Bangkok generates income foremost through services. The most important changes since the mid-1980s are the accelerated pace of industrialization outside of Bangkok and the revival of agriculture in the South.

Figure 18: Regional GDP Composition, 1970 to 2004





Structural Change – the Short Haul

The last section looked at long-term changes in sectoral composition of value added. But the growth dynamics in the next few years will reflect foremost recent structural changes. How did the Asian crisis affect GDP composition? Which sectors are driving the recovery in the last years?

The 1997/98 Asian crisis hit both the Thai and Northeast economies hard, but within two years the recovery was under way helped by supportive macroeconomic policies and increases in external demand. In the last decade, real per capita growth rates of the Northeast tracked Thai growth rates closely (Figure 13.C). This includes the periods of negative growth during the Asian crisis and the recovery over the last five years. However, the growth of the Northeast economy is more volatile and occasionally derailed by weather-related shocks on agriculture. Most recently, the Northeast fell behind Thai growth in 2000 and 2004 by 3 and 5 percent, respectively.

The Asian crisis led to important changes in the Northeast. Construction, finance, and retail trade contracted as a share of regional GDP by 6 percent, 3 percent and 2 percent, respectively (Figure 19). The same holds in other regions: the shares of construction, finance and retail fell across the country. The differences emerge in what sectors led the recovery. In the Northeast, the upturn focused on manufacturing and transport and communication, which expanded by 4 percent and 2 percent. In the North and the Center, it centered almost entirely on manufacturing (rising by 7 percent and 6 percent, respectively); in the South on agriculture (rising by 4 percent); and in Bangkok on transport and communication and on other services (rising by 5 percent and 3 percent, respectively). The largest sectors of the Northeast economy in 2004 were retail (26 percent), agriculture (19 percent), manufacturing (15 percent), transport (8 percent) and education (7 percent). This is similar to the North apart from a shift from retail to manufacturing, both of which account for 20 percent. The South is more centered on crops and forestry and fishing (26 percent and 9 percent, respectively), at the expense of retail (15 percent) and manufacturing (14 percent), while transport is of similar importance (7 percent). The Center stands out for its high concentration in one subsector. Manufacturing alone accounts for 62 percent of the value added, followed by retail with only 8 percent. Finally, Bangkok's manufacturing sector adds only 23 percent, while transport and communication contribute almost as much (21 percent), followed by retail (16 percent) and finance (8 percent).

These regional differences point to an important development challenge for the Northeast. In contrast to other regions, the Northeast lacks a key driver for economic change. The North and the Center are ahead of the Northeast in terms of manufacturing, the South in terms of agriculture, and Bangkok in terms of transport, communication and other services. The Northeast is dominated by the retail sector, which lacks strategic or cross-regional importance and is largely supported through household remittances from other regions. This pattern is a sign of lack of specialization in and deepening of alternative sectors.

Figure 19: Regional GDP Composition, 1996 to 2004

Poverty

Incidence and Numbers

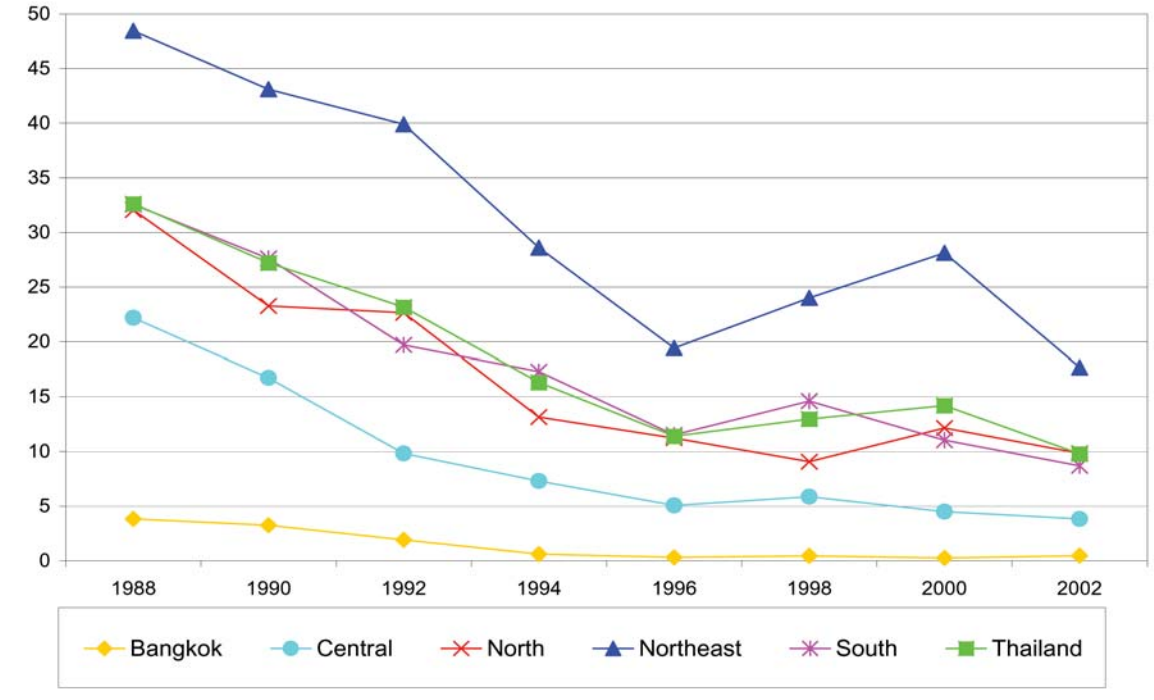
With value-added per person growing four-fold in Thailand and three-fold in the Northeast, we would expect dramatic improvements in household living standards. Using the series of cross-sectional Socio-Economic Surveys (SES), we can trace poverty from 1988 to 2002 at the provincial, regional, and national levels. The national poverty headcount, defined as the share of people living in households with income below the poverty line, fell from 32.6 percent in 1988 to 9.8 percent in 2002 (Figure 20.A). In spite of population growth and Asian crisis, the number of poor dropped from 17.7 million to 6.2 million over this period. Thailand has already reached its MDG poverty target of halving the poverty headcount between 1990 and 2015. In addition, the Royal Thai Government (RTG)'s 9th National Economic and Social Development Plan target of poverty incidence under 12 percent has been met. Both targets were achieved ahead of time.

Poverty reduction was not limited to Bangkok and surrounding areas but extended to all regions in the country. If we take reductions in percentage points, progress in the Northeast was fastest. Between 1988 and 2002, the poverty headcount fell 31 percentage points in the Northeast, compared to 24 percentage points in the South, 22 percentage points in the North, 18 percentage points in Center and 3 percentage points in Bangkok. However, poverty reduction becomes more difficult the lower the level of poverty, so percentage changes relative to the initial level is a more accurate performance indicator. Compared to the 1988 levels, the proportional reduction in poverty was largest in Bangkok, followed by the Center, South, and North, and slowest in the Northeast.

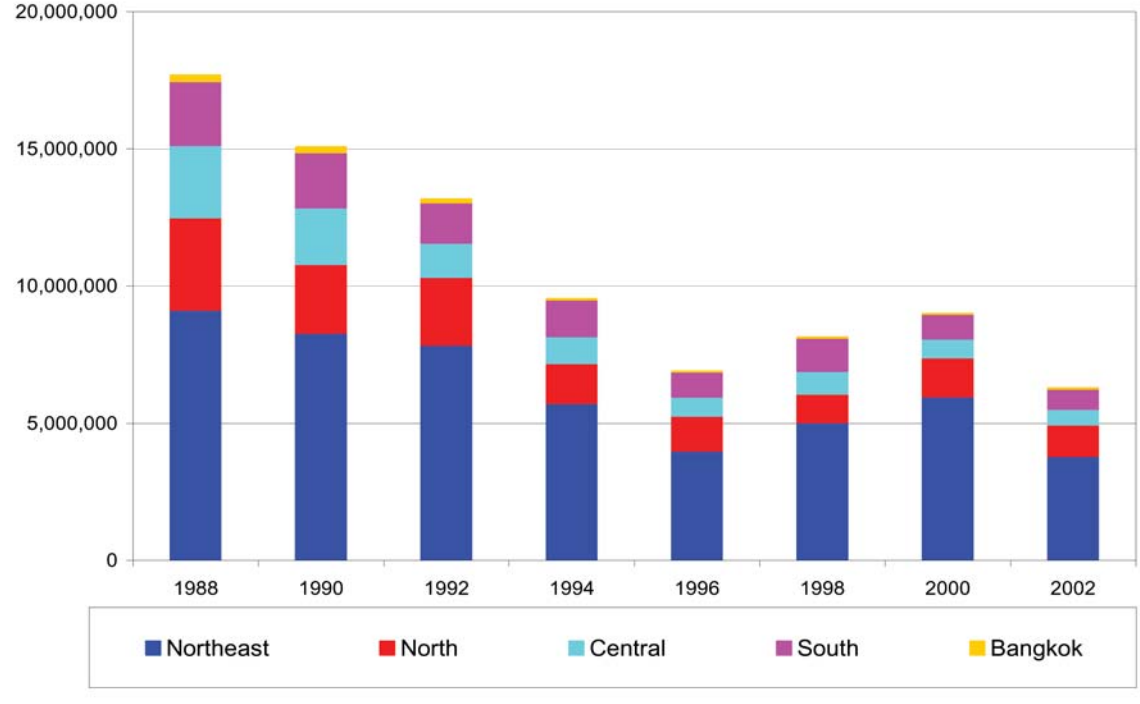
With poverty falling faster in other regions, poverty becomes more and more concentrated in the Northeast. One in two poor persons lived in the Northeast in 1988, compared to one in three of the total population (Figure 20.B). The Northeast still accounted for roughly one third of the total population in 2002, but the share of poor had increased to 60 percent. This translates into 3.8 million poor living in the Northeast, and 2.3 million in the rest of the country.

Figure 20: Regional Poverty Trends, 1988 to 2002

A. Poverty Headcount



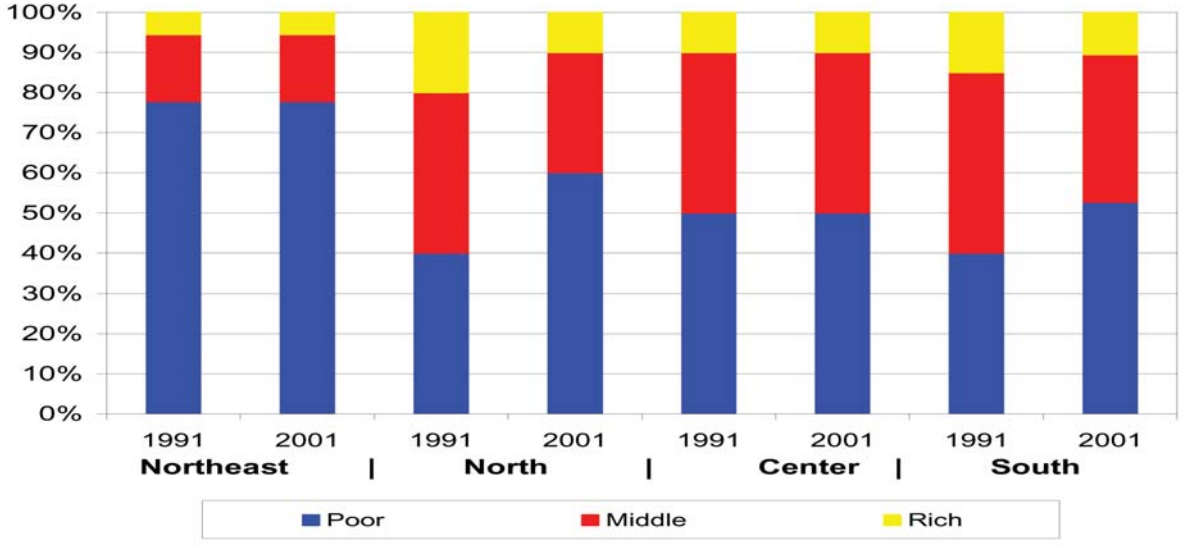
B. Number of Poor



Self-assessment

Poverty means different things to different people. The poverty statistics shown in the previous section are based on objective measures of household income and the consumption basket. The advantage of this approach is comparability across time and space. But the concept has also important weaknesses. The most important is perhaps that it ignores the people's own perception on poverty. While statistics may tell us that economic growth has made the population better-off, the people may actually feel worse due to the many changes that come along with economic development.One important source on community well-being is the NRD2C data set of the Ministry of Interior. It collects information on a range of economic, social, institutional and happiness indicators. Since the evaluations are provided by village committees, it can be thought of as a hybrid between objective and subjective data. NRD2C confirms the concentration of poor villages in the Northeast. Out of the almost 65,000 villages in 2001, almost 25 percent are esteemed to be poor according to the information provided by the Community Development Department of the Ministry of Interior. Two thirds of these villages are located in the Northeast. A 2001 conference, organized by the Community Organization Development Institute and the Thailand Development Research Institute, provided an alternative evaluation of regional poverty. Representatives of the poor assessed the shares of poor, middle-income and rich populations in 1991 and in 2001 (Jitsuchon 2001). The Northeast is estimated to have 70 percent poor in both 1991 and 2001. This matches with SES in that it is the highest number across regions, but the share of poor is much higher. This could reflect that the subjective notion of poverty at the community level is more encompassing than just economic well-being. The assessment provided also causes of poverty, which included lack of land, jobs, and credit access, degraded natural resources, poor health, old age, bad luck, and bad behavior (gambling, greed, laziness, and alcohol). Even more interesting were the responses on the issues not linked to poverty, such as lack of food, access to utility and education; insecure tenure; and indebtedness.

Figure 21: Self-Assessed Poverty of Communities in 1991 and 2001



Spatial View – Provinces

Provincial variations in living standards are even more pronounced than regional differences. Provinces with low poverty exist alongside provinces with high poverty. While the Northeast and the South include the very poorest provinces, these regions also comprise provinces in the lowest poverty bracket where the poverty incidence is less than 7.5 percent (Figure 22.A).

Provinces with high poverty headcounts also tend to have large populations and hence a large number of poor people. A high concentration of poor people is found in the Northeast and the very South, the provinces with the highest incidence of poverty. For example, the five provinces who contribute most to poverty in Thailand are all located in the Northeast and have poverty headcounts more than twice the national average. They alone account for three-tenths of all the poor in Thailand. Similarly, out of the poorest 12 provinces that accounted for close to three-fifths of all the poor in Thailand in 2002, 11 come from the Northeast (Figure 22.B).

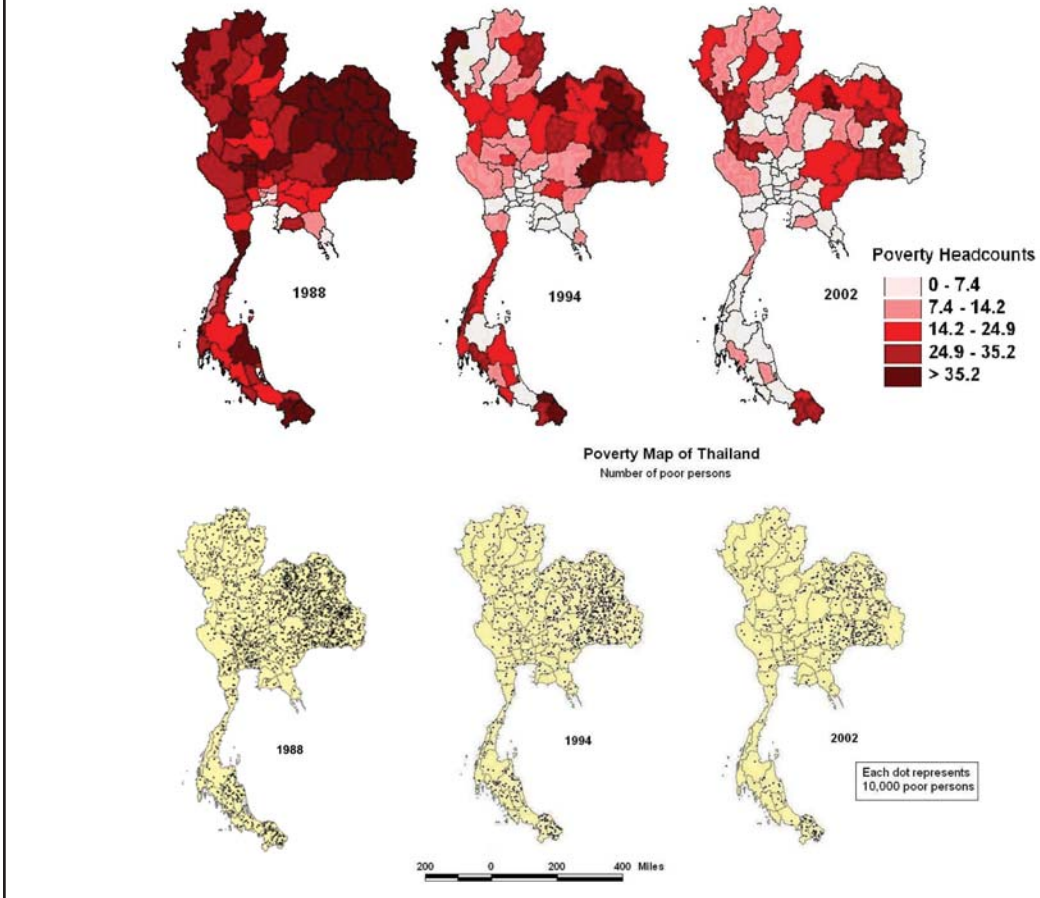
While the Northeast includes provinces with little poverty such as Ubon Ratchathani, Nong Khai or Chaiyaphum, it also comprises the poorest provinces with the largest number of the poor, such as Surin, Sisaket and Buriram. This is an importance difference with the North, the second poorest region in Thailand. In the North, the provinces with the highest poverty incidence, such as Tak, Uthai Thani or Mae Hong Son, tend to be remote and sparsely populated. Hence, they contribute only moderately to national poverty due to low population density.

In comparison to other regions in East Asia, the overlap of high poverty incidence with large number of poor, as in the Northeast, is rather unusual (Figure 22.C and Figure 22.D). For example, areas with high poverty incidence and low population density include the western provinces of China (Xinjiang and Tibet), the Northern Mountains areas of Vietnam, the upland areas of Laos and the eastern provinces of Indonesia and PNG. Low-incidence and high-density areas include the Mekong River and Red River delta areas in Vietnam, Vientiane plain and Mekong River Corridor in Lao PDR, and the Luzon island in the Philippines. Only a few areas are characterized by high poverty incidence and a large number of poor. Poverty incidence and number of poor overlap in the eastern provinces of the Philippines, on Java Island in Indonesia, and in the Yunnan province of China.

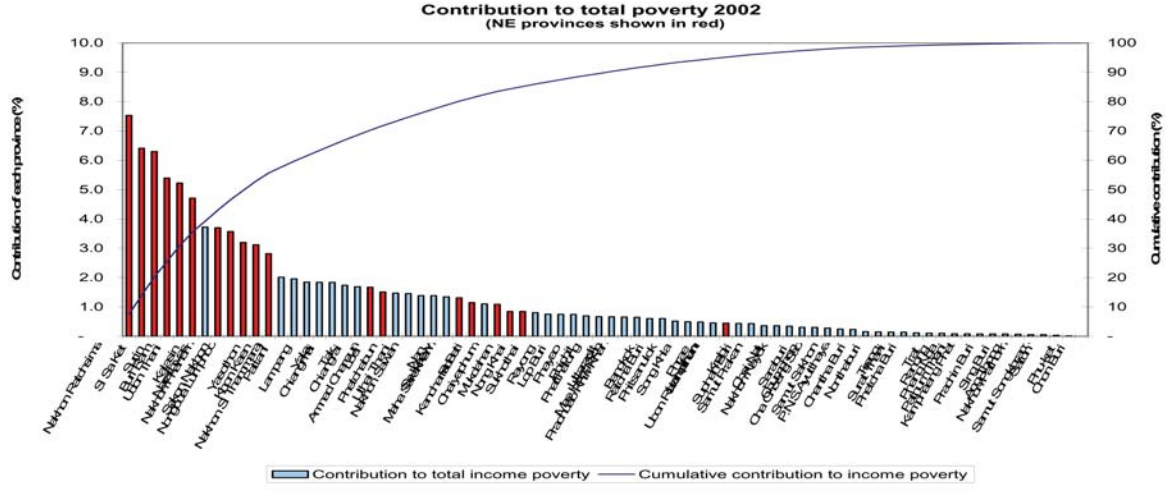
Poverty transcends national borders. Localities with high poverty on one side of the border tend to have high poverty also on the other side of the border. The area with the most significant cross-border spillovers of poverty incidence is the Greater Mekong sub-region. This suggests an important role of geography in determining poverty, which goes beyond the influence of national history, policies and institutions.

Figure 22: Poverty Maps, 1988 to 1994 and 2002

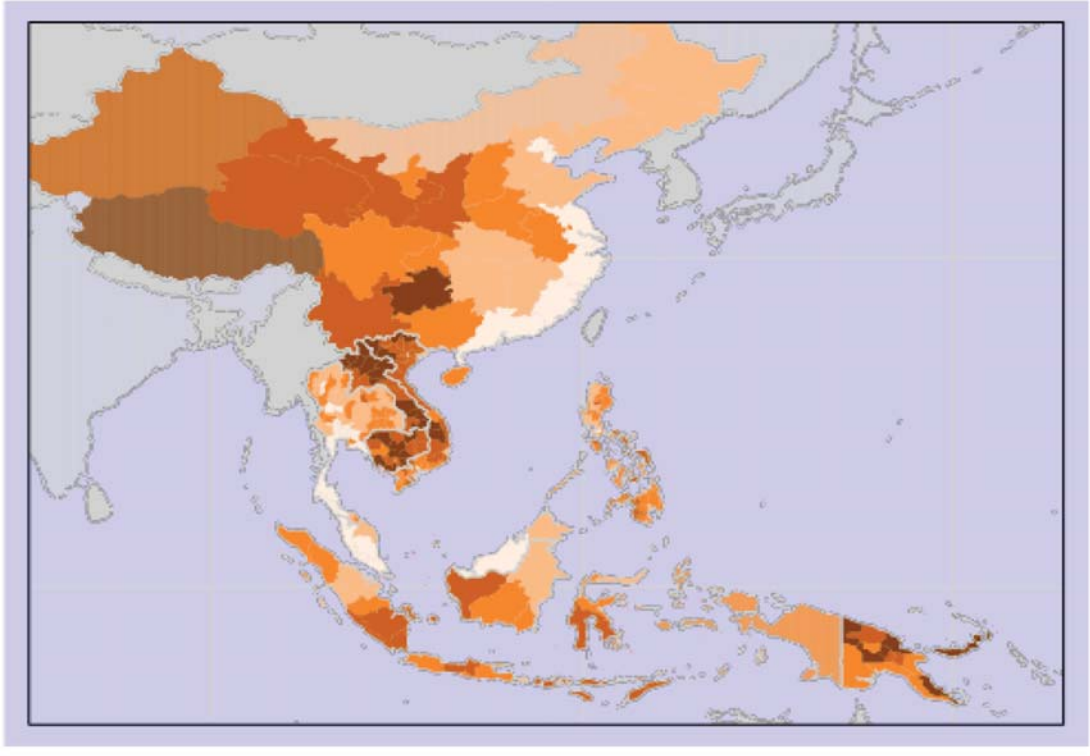
A. Poverty Headcount and Number of Poor People



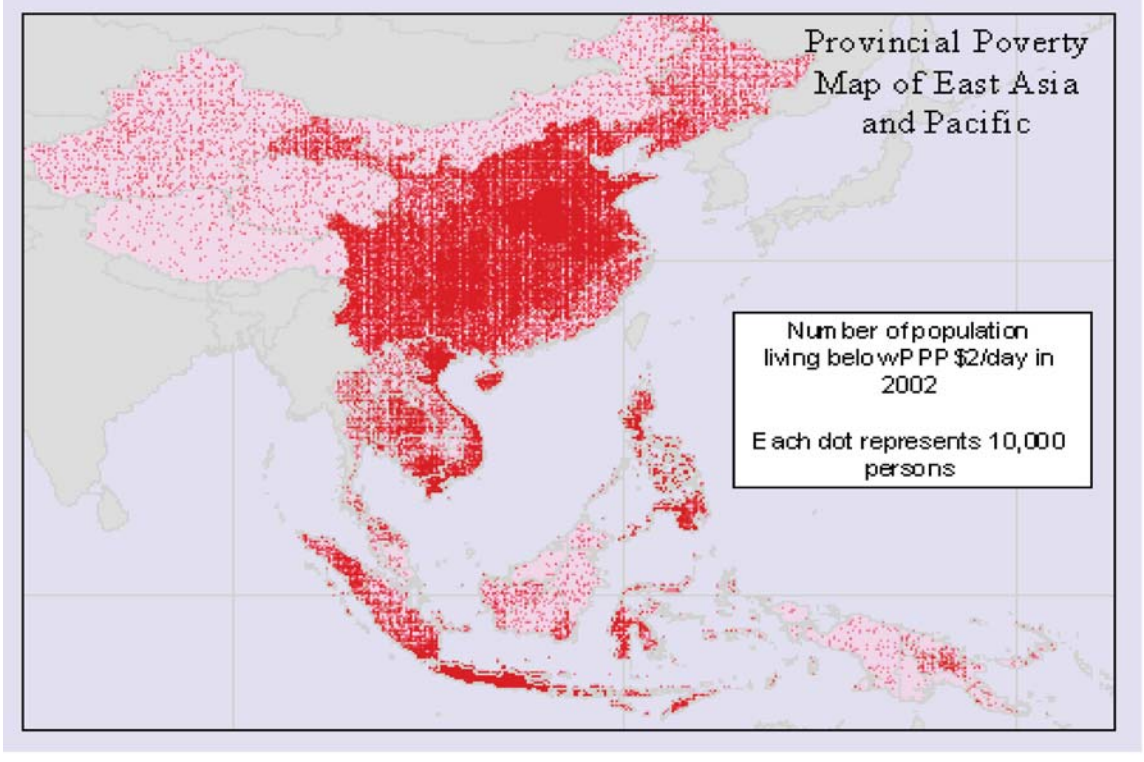
B. Contribution to Total Poverty by Province (Northeast Provinces in red), 2002



C. Provincial Poverty Headcount Map of East Asia and Pacific, PPP$2/day, 2002



D. Provincial Number-of-Poor Map of East Asia and Pacific, PPP$2/day, 2002



Spatial View – Tambons

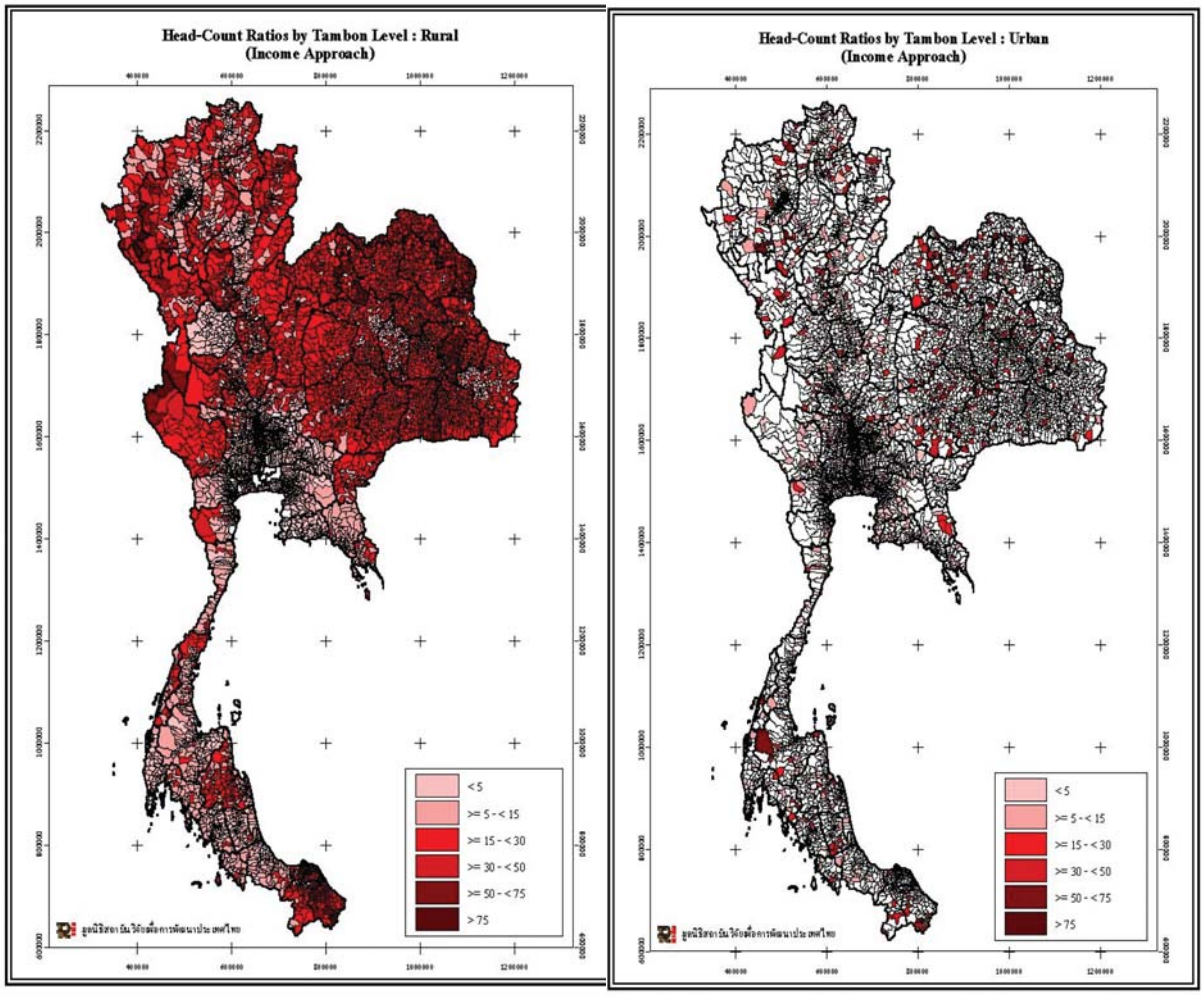
Even within provinces, there are large differences between poor and non-poor communities. Combining household survey data with census data, we can obtain poverty estimates at the tambon (sub-district) level across the whole of Thailand. While there are other data sources for local information on living standards such as NRD2C, this approach has one key advantage: it gives the same poverty measure at the district level as is used at the national level. This consistency makes this method appealing to policymakers. It provides confidence that we are measuring the same thing, whether we are talking about districts, provinces, regions, or the nation.

The 2000 poverty mapping results show that deprivation is concentrated in a relatively small number of tambons (Healy and Jitsuchon 2002). For example, the poorest third (34 percent) of all tambons, and the poorest sixth (16 percent) of all villages and urban blocks, accounted for more than two thirds (70 percent) of all poor in Thailand (Figure 23). Over two thirds (71 percent) of the tambons, and over half of all villages and urban blocks (53 percent), in the Northeast had a poverty incidence at least 50 percent in excess of the national average.

This analysis shows that poverty in Thailand varies among regions, cities, and villages. There are large differences in the abilities of families to cover basic needs not just among regions, say the Northeast relative to the Center, and provinces, like Nongbua Lumphu compared to Ubon Ratchathani, but also within provinces and within districts.

Why is this insight important? Thailand is aspiring to eradicate poverty nationwide. The poverty map can aid to reach this objective. It helps to make visible those poor who are otherwise hidden behind the averages of large regional aggregations. First, the knowledge of poverty incidence at a detailed spatial scale can improve the geographical targeting of interventions to improve people's lives. Policymakers can draw on this information when planning public investments in education, health, sanitation, water, transport, and other sectors. Further, poverty maps can be combined with other available geographically disaggregated data – e.g. geographic databases of transport infrastructure, public service centers, access to input and output markets, information on natural resources quality and natural disasters – to yield a rich array of information relevant for poverty analysis and policy making. Finally, it can assist communities in the development of local poverty reduction strategies. It provides local stakeholders with the facts that are required for local decision making and for negotiation with government agencies. Poverty maps thus become an important instrument for local empowerment.

Figure 23: Tambon-Level Poverty Map of Thailand, 2000



Eradicating Poverty

The RTG has embraced the objective of eradicating mass poverty by the end of this decade. In order to reach this goal, the RTG has adopted a number of grassroot policies, such as Village Fund, People's Bank, Asset capitalization and 30 baht health care scheme. The extent of the RTG's poverty effort can be gauged by the volume of resources spent on all anti-poverty programs. Total expenditure on all anti-poverty programs was approximately Bt35 billion in FY1999, which constituted 4.2 percent of total public expenditure and 0.74 percent of GDP. It increased substantially to 10.4 percent of public expenditure and 2.3 percent of GDP in FY2002. However, many of these programs have low levels of coverage and high leakages of benefits to the non-poor as they cover large populations. Improved targeting by defining better criteria for allocating resources will be essential to reduce the population of poor people. For example, the village fund is a revolving fund of Bt1 million (about US$23,000), distributed nationwide to the about 70,000 villages over a three-year horizon launched in 2001.A key characteristic of this program is that it covers every single village in the country, regardless of whether the village is poor or non-poor. In addition, the bulk of the beneficiaries of the program are non-poor households. For the same resources, the poverty impact of the village fund could be increased by allocating more funds to poor villages or providing loans at more favorable terms to low-income households.

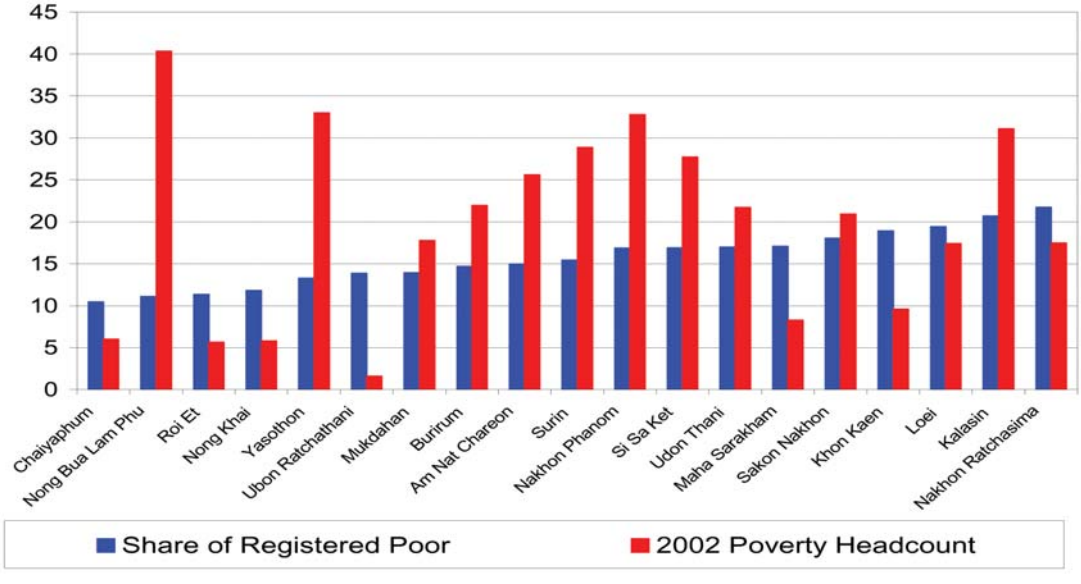
One way to illustrate the implication of lack of targeting is to investigate the reduction in the poverty gap under the assumption of perfect targeting.[8] The poverty gap measures the average consumption shortfall of the poor relative to the poverty line. Considering the rural population only, it equaled 3.1 percent in 2002. Assuming that the transfer is both perfectly targeted and fully consumed, the sum of all poverty gaps across rural individuals is the minimum income transfer needed to bring all rural poor just up to the poverty line. Under these assumptions, an income transfer of Bt25.2 (= 0.031 x rural poverty line of Bt813) per person per month would be required to eliminate poverty. The total annual volume of income transfers for rural poverty eradication would then be Bt13.1 billions (= Bt25.2 x 12 months x 43,300,000 persons). This is equivalent to no more than 1.3 percent of central government spending in fiscal year 2002, or just one sixth of the estimated budget spent on the Village Fund Program. By contrast, maintaining perfect targeting within regions but assuming that this amount is allocated according to current public expenditure patterns, the Northeast would receive only 30 percent rather than over 60 percent (its share in national rural poverty), and Northeast poverty would fall by only half. If the sum was evenly spread across the rural population (as in the Village Fund Program), the Northeast would obtain 40 percent, and Northeast poverty would fall by under two thirds rather than being eliminated.

[8] Perfect targeting implies that each individual below the poverty line would receive a transfer equal to the shortfall of consumption below the poverty line. Assuming that all this income transfer is consumed, all previously poor individuals would then have a consumption level just equal to the poverty line. No individual above the poverty line would receive any transfer. The following numbers are hypothetical and few developing countries would choose to continue making income transfers to the poor in perpetuity. Perfect targeting is impossible in practice, not all income is consumed, and transfers based on the shortfall of consumption (or income) to the poverty line to the poor have significant disincentive effects.

Poverty Registration

Another important grass-root policy is the poverty registration initiative. The RTG launched a nationwide poverty registration program lasting from January 5, 2004 until March 31, 2004. Each poor person was invited to register herself at the District (Amphoe) branch of the Ministry of Interior and to fill out a form stating the major reasons of poverty. The District office passes on the roster of the poor to the village committee for assessment of their validity. The revised rosters are then used by the RTG for assistance in alleviating the identified problems. It is too early to evaluate the success of this program, as the government is still in the process of providing help to registered poor. Most importantly, we cannot tell whether the aided families escape poverty at least in the short term, let alone the long term. Nevertheless, information on the number of registered poor is already available. The evidence at the national level suggests that, unless the village committee screens carefully, there may be a large leakage to non-poor. Already after two thirds of the registration period, the number of persons declaring themselves as poor exceeded the number of income-poor according to the national poverty line. In the Northeast, the share of registered poor and poverty headcount according to the 2002 SES coincides remarkably close at the regional level (Figure 24). However, these measures differ greatly at the province level. In particular, the share of registered poor tends to be too high in provinces with low poverty headcounts, such as Ubon Ratchathani. In general, the share of registered poor varies much less from one province to another than the poverty headcount - the respective standard deviations are 3.3 compared to 11.2. Furthermore, while direct and practical assistance is clearly useful, families are poor often due to a multitude of inter-related factors. In many cases, there is no 'silver bullet' for solving poverty and one-off assistance will not lift households permanently out of poverty. This suggests that incorporating geographical targeting into the design of a range of anti-poverty program could greatly aid its effectiveness.

Figure 24: Share of Population Registered as Poor and 2002 Poverty Headcount in Northeast Provinces (%)



Shared Growth – Regions

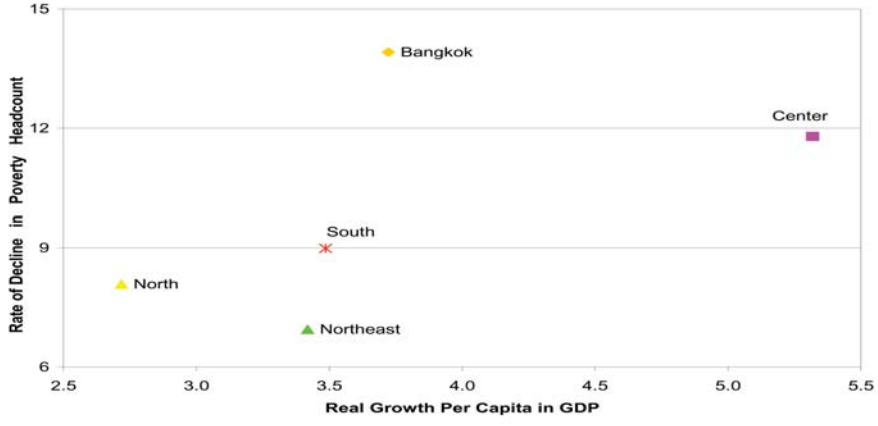
What accounts for the sharp improvement in poverty at the national, regional, and province levels? Many factors could play a role, including government policies, the international economic environment, or the ingenuity of the Thais in bettering their living standards. In view of Thailand's growth performance, the primary candidate has to be that poverty reduction is related to income growth. While international evidence supports this hypothesis (Chen and Ravallion 2004, Ravallion 2001 and Field 2001), it is by no means commonly accepted. High inequality in Thailand leads some to posit that growth is essentially irrelevant to the problem of poverty, which should be regarded solely as an issue of "cutting the pie" rather than "the size of the pie". Even allowing that Thailand's growth has been unequally shared across regions, there is no doubt that economic growth led to poverty reduction. Figure 25.A shows that regions with higher growth have more poverty reduction. Between 1988 and 2002, the economy in the Center grew in per capita terms annually by 5.3 percent and poverty declined annually by 11.8 percent. The Northeast grew only by 3.4 percent and poverty decline only by 6.9 percent.

Combining GDP growth rates and poverty reduction rates leads to the concept of the poverty elasticity of growth. It gives the percentage change in poverty for a one percent increase in real per capita GDP. For every one percent growth of regional GDP between 1988 and 2002, poverty fell by 2 percent in the Northeast, 2.2 percent in the Center, 2.6 percent in the South, 3 percent in the North, and 3.7 percent in Bangkok. This seems to suggest that growth was least effective in reducing poverty, or least "pro-poor", in the Northeast. However, the issue is not that clear-cut. First, the elasticity depends on the poverty measure. Figure 25.B shows the poverty elasticities for the poverty gap, which equals the average income shortfall of the poor relative to the poverty line. The greater this distance, the higher is the poverty gap. For this poverty indicator, the Center's elasticities is lowest at 2.5, compared to 2.6 for the Northeast, 3.2 for the South, 3.3 for the North and 3.7 for Bangkok.[9] Second, the elasticity tends to be higher the greater the initial income (Chen and Ravallion 2004, Heltberg 2002). A reduction in poverty of one percentage point represents a smaller proportional change if initial poverty is 48 percent, as for the Northeast in 1988, rather than 4 percent, as for Bangkok in 1988. Finally, a given rise in income reduces poverty more the lower initial inequality. Since inequality in the Northeast is higher than in the South, Center, or Bangkok, economic growth would have resulted in less poverty reduction (Figure 25.C). In this context, the performance of the North stands out. In spite of lower initial income levels and higher inequality, the North achieved greater poverty reduction per one percentage growth than the South and the Center. Overall, the Northeast's poverty elasticity can be accounted for by its high initial poverty and inequality, although its performance looks weak relative to the North and, to a lesser extent, the South.

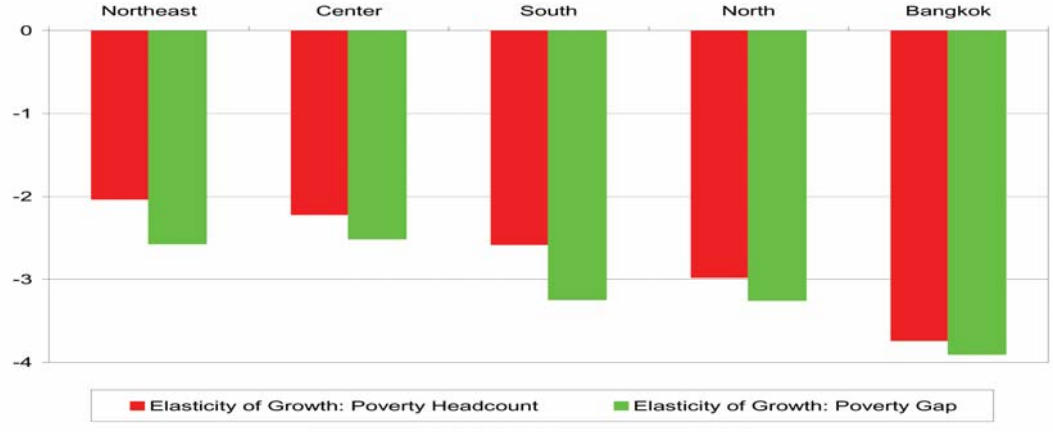
[9]The poverty gap overcomes one criticism of the poverty headcount, namely that it is indifferent to the distribution amongst the poor. For example, the poverty headcount could fall if resources were reallocated from the very poor to the poor. For the PPP$ per day poverty line, the elasticity of growth for the poverty gap between 1981 to 2001 was -3.3 for East Asia, -3.7 for Eastern Europe and Central Asia, -1.8 for Latin America, -4.3 for the Middle East and North Africa (Chen and Ravallion 2004).

Figure 25: Poverty and Growth, 1988 to 2002

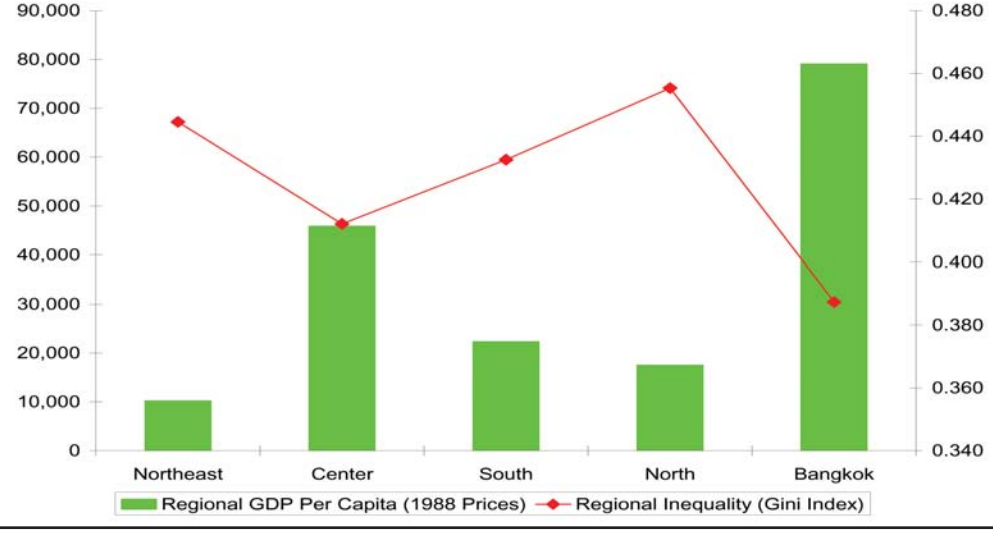
A. Rate of decline in poverty and rate of real per capita growth in regional GDP



B. Elasticity of Growth: Percentage decline in poverty headcount and poverty gap for one percent increase in real per capita growth of regional GDP



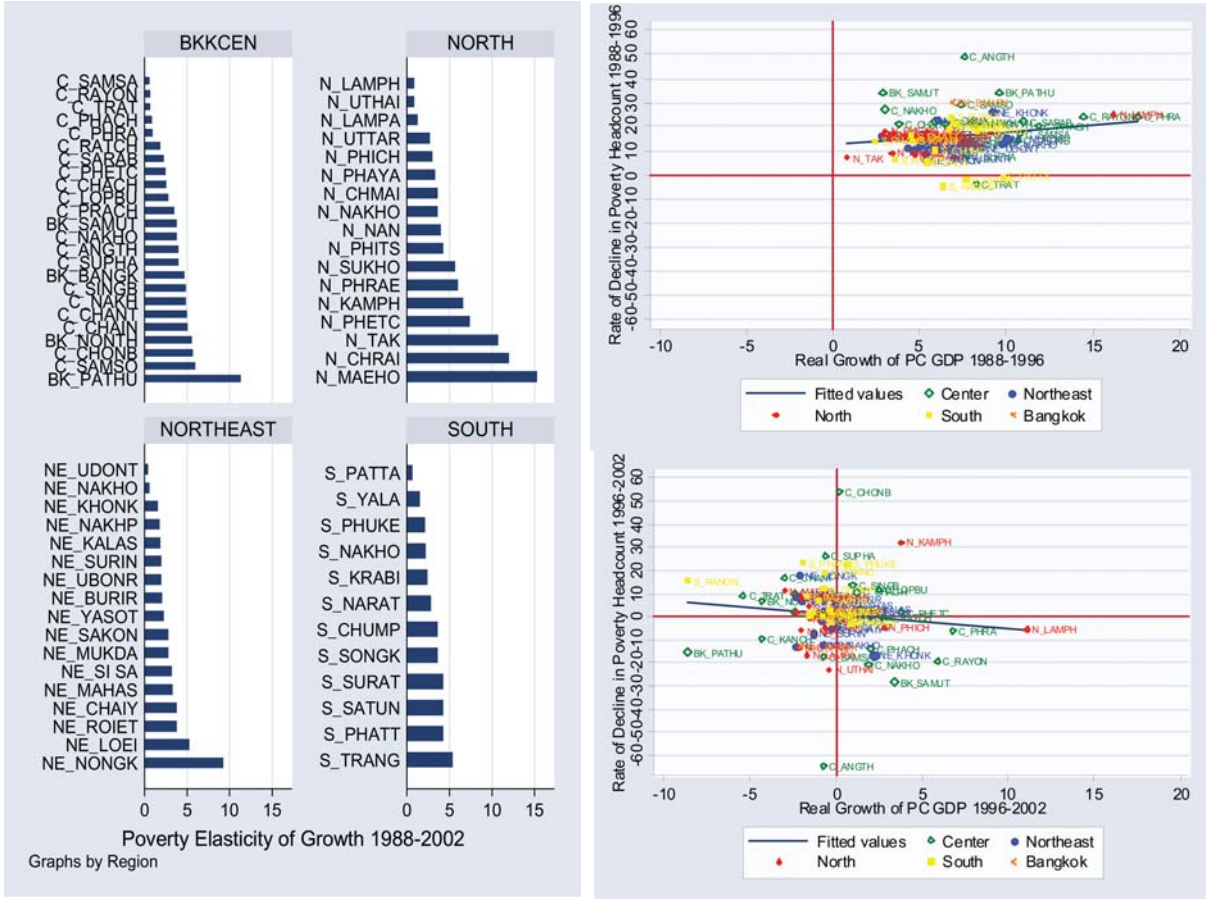
C. Regional GDP Per Capita and Regional Inequality in 1988



Shared Growth – Provinces

We just found that regions with higher growth had larger declines in poverty. Figure 26 looks at the same issue, this time for provinces. This analysis will tell us whether the large positive impact of economic growth on poverty reduction, which is evident at the regional level, is replicated across most provinces. The scatter plots on the right show how the rate of decline in the poverty headcount relates to real per capita GDP growth, separately for pre-crisis years (1988 to 1996) and post-crisis years (1996 to 2002). The contrast between these two periods is stark. Pre-crisis, more growth is associated with more poverty reduction. All 73 provinces had positive growth, and only four had higher poverty, and in three of these four provinces poverty was no higher than 5 percent in 1988. Overall, a higher rate of growth led to more poverty reduction, as indicated by the upward-sloping fitted line. By 2002, 25 provinces increased income above 1996 levels, and 41 provinces reduced poverty below 1996 levels. More growth was not related to more poverty reduction. The panel on the left combines rates of growth and poverty reduction for the whole period from 1988 to 2002.10 Clearly, some provinces have done much better at translating growth into poverty reduction also within the Northeast. One average, the Northeast has done worse than the North and the South.

Figure 26: Growth and Poverty in Provinces, 1988 to 2002



Durable Ownership

Rising living standards express themselves not just in higher income and consumption, but also in ownership of durable goods. They can improve the quality of life in multiple ways. Refrigerators and washing machines cut down the time required to get through daily household chores; television provides access to information; and motorcycles help to get around places. Most of these goods require electricity connection. The expansion of power networks lays the ground for making household work less strenuous and information access easier.

Durable goods also have a sales value and are as such an indication of wealth, a form of savings. They provide insurance against economic uncertainty and a way of preparing for future expenses. Ownership of small durable goods varies in response to changes in income. Looking at trends in durable good ownership as a whole can help to confirm the findings on poverty.

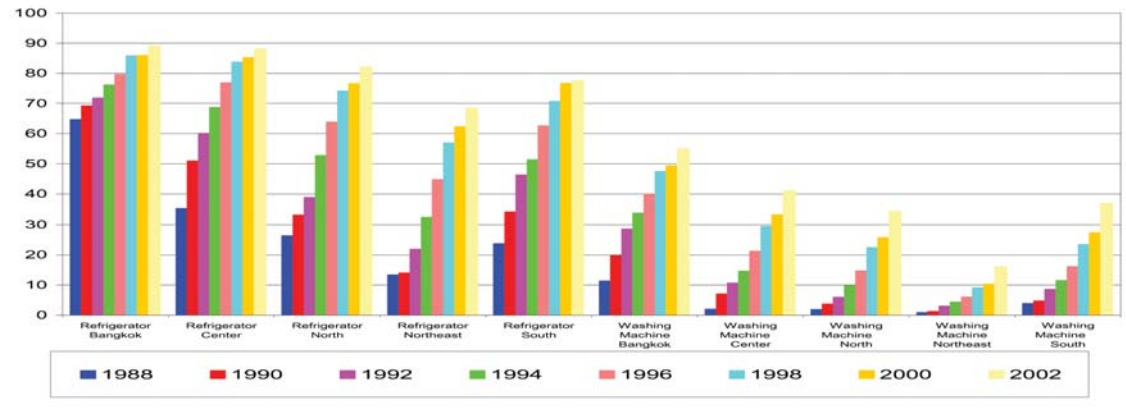
The distribution of durable goods ownership both across time and space is in line with expectations. Comparing regions, the Northeast comes out lowest for refrigerators, washing machines, and radios, reflecting the highest levels of income poverty. However, economic growth has helped to reduce the ownership gap to other regions considerably. For example, more than two thirds of the Northeast population lived in households with refrigerators in 2002, compared to only one seventh in 1988. Clearly, televisions are among the first items purchased once some spare income is available: almost all households owned a television in 2002, compared to only just over one third in 1988.

Patterns of durable ownership that serve similar functions are also telling about income progression. Bicycle ownership went down over time, as households substituted from low to high quality durables with higher income. Households switch from bicycles to motorcycles or even to cars. Compared to other regions, the Northeast has the highest ownership of bicycles but the lowest ownership of cars, indicative of its income ranking.

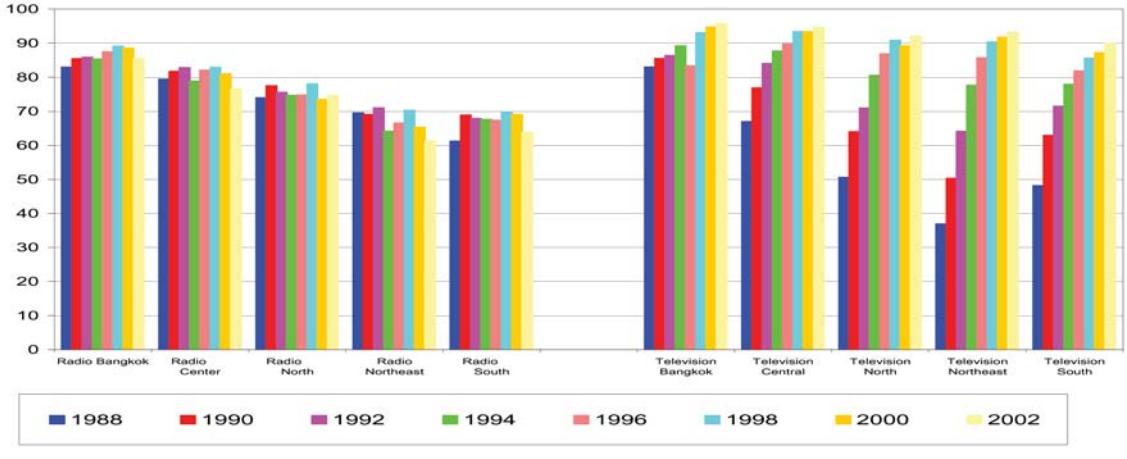
In spite of the increases, most Northeast households have little material possessions. More than 30 percent of the Northeast population has no refrigerator, more than 80 percent has no washing machine and about 95 percent has no car. This suggests that for most families little or nothing is left over from the daily labor after the most urgent food and consumption needs are covered.

Figure 27: Durable Goods Ownership (Percent), 1988 to 2002

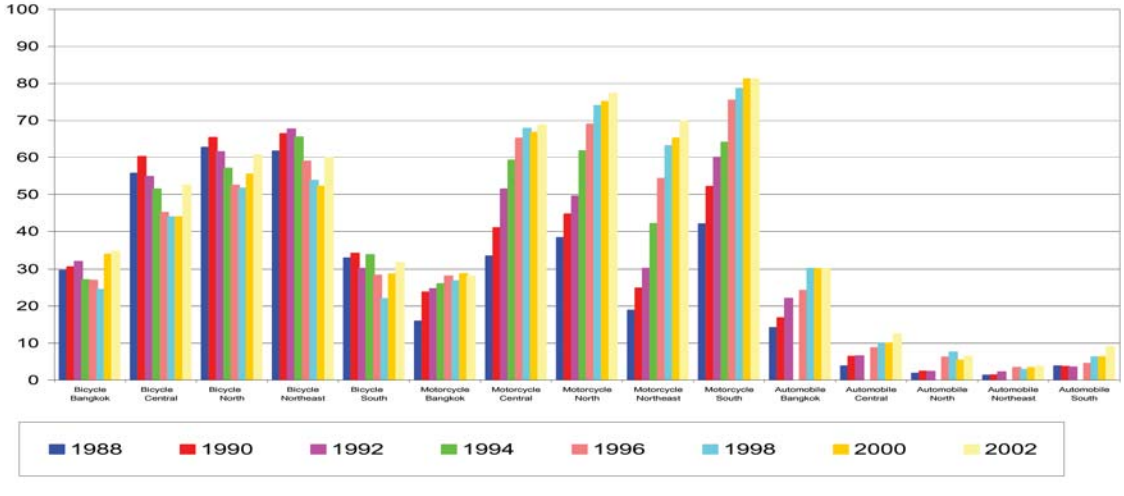
A. Refrigerator and Washing Machine



B. Radio and Television



C. Bicycles, Motorcycles, and Automobiles



II. Constraints

Cities

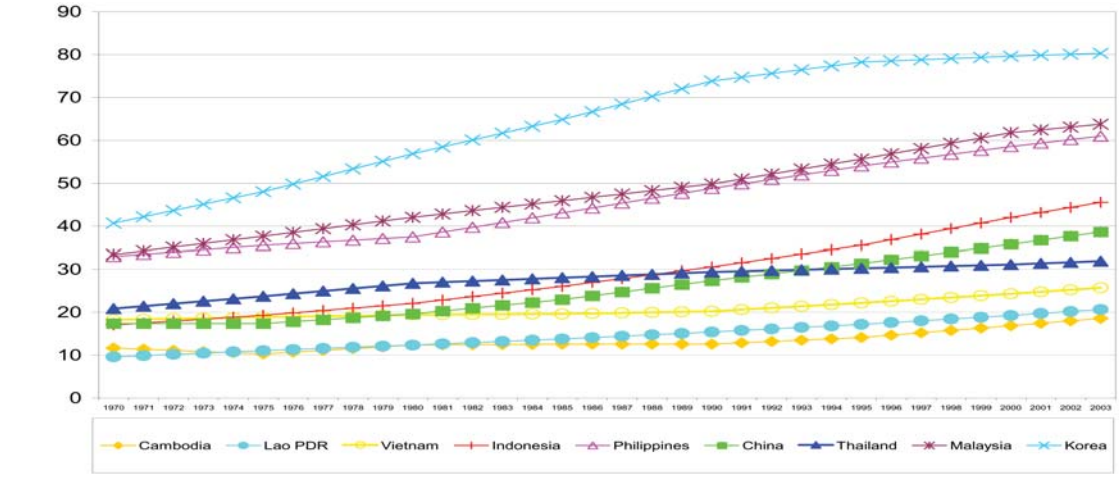
Urbanization and Development

Urbanization refers to the process of growth in the population share living in cities, towns, and sub-urban areas. It is a territorial response to a structural shift away from agricultural in the economy, associated with features like division of labor, advanced production technology, variety in goods and services traded and population density and diversity. Worldwide, urbanization is indicative of a country's per capita income level: the correlation coefficient is around 0.75 to 0.80. It is no wonder then that urbanization is often taken to be synonymous to economic development. By international standards, East Asia's urbanization levels are low. In 2000, 36 percent of the population lived in cities and towns, less than half of Latin America's level. Upgrading of infrastructure, spread of urban areas to envelope rural areas, and rural-urban migration are projected to increase urbanization levels (ADB, WB and JICA 2005). Over the period of 2000 to 2015, the population living in cities with more than 1 million residents is expected to increase by about half (to 500 million), and the population living in mega-cities of more than 10 million residents will rise by a similar proportion to 120 millions.

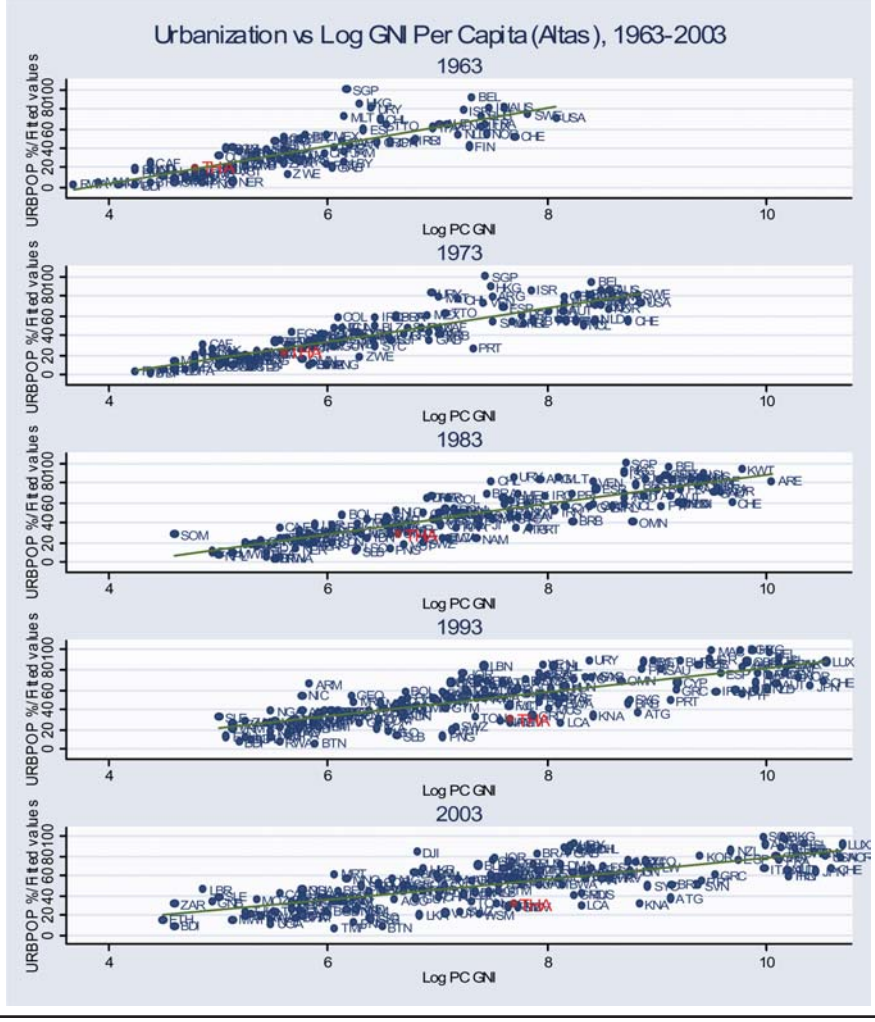
Even by East Asian standards, Thailand's urbanization level as well as its urbanization rate (change in urbanization levels) are low (Figure 28.A). Thailand is less urbanized than Korea, Malaysia,the Philippines, Indonesia and China. Only Vietnam, Lao PDR and Cambodia, whose income levels are about one fourth to one seventh of Thailand's, are less urbanized. Since 1970, Thailand's urbanization rate is second lowest among these countries, higher only than Vietnam's. The urbanization rate slowed from the early 1980s onwards, coinciding with the policy shift from import-substitution to export orientation, and fell even behind Vietnam's. Thailand urbanization is low for its income level also from a global perspective. Compared to other countries, Thailand's urbanization was on par with its income level in 1963 (Figure 28.B). Yet, urbanization lacked income growth, and by 2003, Thailand's urbanization level of 33 percent was about 20 percent below compared to the average urbanization degree of countries of its income level. Even allowing for an under-recording of in-migrants to urban areas in the registration of the Ministry of Interior, lack of widespread urbanization remains a salient feature of Thailand's development path. Across the world, densely-populated urban areas have been a force behind development. They provide markets for outputs, inputs, labor and other services and allow firms to profit from economies of scale and scope, specialization and the rapid diffusion of knowledge and innovation. For example, the US experience over the last century shows that while major production centers move across sectors and regions over time, economic activity in manufacturing and service sectors has always concentrated in and around cities (Gordon et al 2003). The slow pace of urbanization is linked to lower fertility in urban areas, out-migration from Bangkok to surrounding areas (and outlying regions during the Asian crisis), as well as a cautious policy approach toward urbanization. However, arguably the most important factor is the metropolis Bangkok which dominates urban development in Thailand.

Figure 28: Urbanization Indicators

A. Urbanization in East Asian Countries, 1970 to 2003



B. Urbanization and Per Capita GNI, 1963 to 2003



Primate City

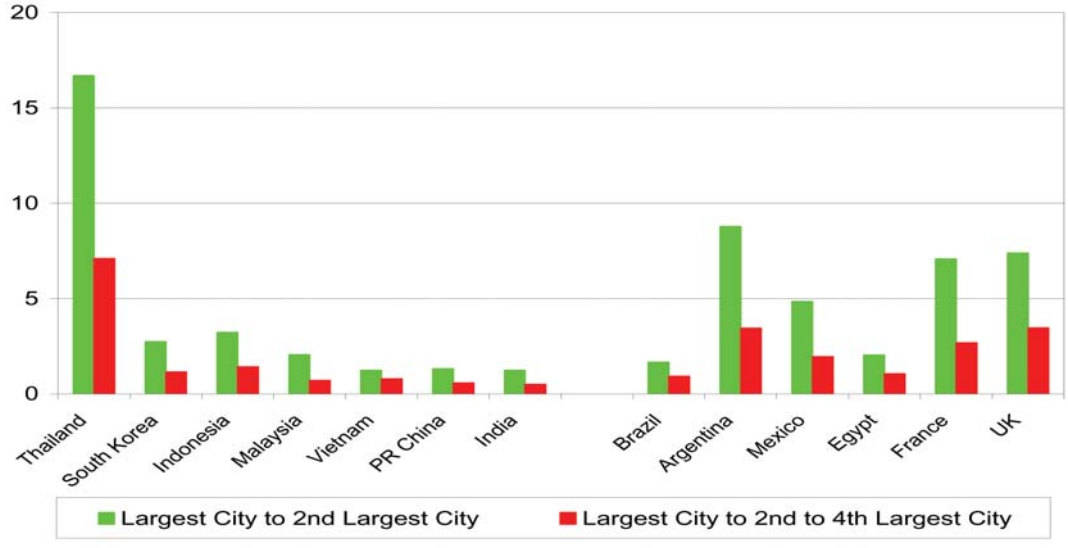
Thailand's urbanization is not just low but municipal areas are concentrated in and around one city: Bangkok. Thailand is dominated by the primate city of Bangkok. It is the political (capital, unitary government sector), economic (location for enterprise headquarters and export hub), financial (location for banks and stock markets), transport (focal point for the country's transport and communication infrastructure) and cultural (important temples) center. Bangkok stands near perfectly at the geographical midpoint of Thailand, almost equidistant from its northern and southern borders as well as centered between its eastern and western boundaries. The sheer size and activity of primacy cities becomes a strong pull factor, bringing additional residents into or close to the city and causing the primate city to become even larger and more disproportional to smaller cities in the country. While not all countries have a primate city, for those that do, the primate city dominates cultural and economic life in that country. Standard examples of primate cities are London and Paris in Europe, Santiago and Buenos Aires in Latin America. Examples of countries without primate cities are the United States, (largest city and financial center New York, capital Washington, D.C.); Brazil (Sao Paulo and Brasilia); and Australia (Sydney and Canberra).

Measures for the primacy of a city involve comparisons of the size of the largest city in a country compared to the next largest cities in terms of population.[11] Figure 29.A compares Thailand with other countries that are often given as examples for countries with primate cities for two indicators. Thailand stands out as the most extreme case of primacy. Cities such as Beijing, Jakarta, Kuala Lumpur, or Manila have all become global centers for international trade, communications, employment of migrants, and foreign direct investment, and experience unprecedented prosperity as a result of their advantages. But Bangkok dominates urban development in Thailand like perhaps no other city in other countries. In 2000, Bangkok had around 6.3 million people, which was about 17 times the number of inhabitants of Samut Prakan, the second largest city, where 380,000 people lived. In fact, Samut Prakan lies in the vicinity of Bangkok, as does the third largest city, Nonthanburi. About twenty years ago, Samut Prakan was only the 12th largest city, and Nonthanburi only the 25th largest city. Only Udon Thani, the fourth largest city in Thailand with 290,000 inhabitants, is far away from Bangkok's gravity at 564 kilometers distance. The rise of these urban agglomerations in Bangkok's neighborhood has led to a fall in the primacy index for Thailand, while at the same time widening the gap between the extended Bangkok area and the rest of Thailand (Figure 29.B). According to some estimates, the extended Bangkok area could include as many as 17 million people (Webster 2005). Thailand's changes in city rankings reflect a more general regional trend. The most rapid population growth in East Asia is taking place in peri-urban peripheries (Webster 2002). Neighboring cities are connecting with each other and form into larger urban clusters. These include large parts of China's coastal zone, the Philippine's National Capital Region, the cross-border cluster of Singapore-Riau-Johore, and Bangkok, Vicinity and Eastern Seaboard in Thailand.

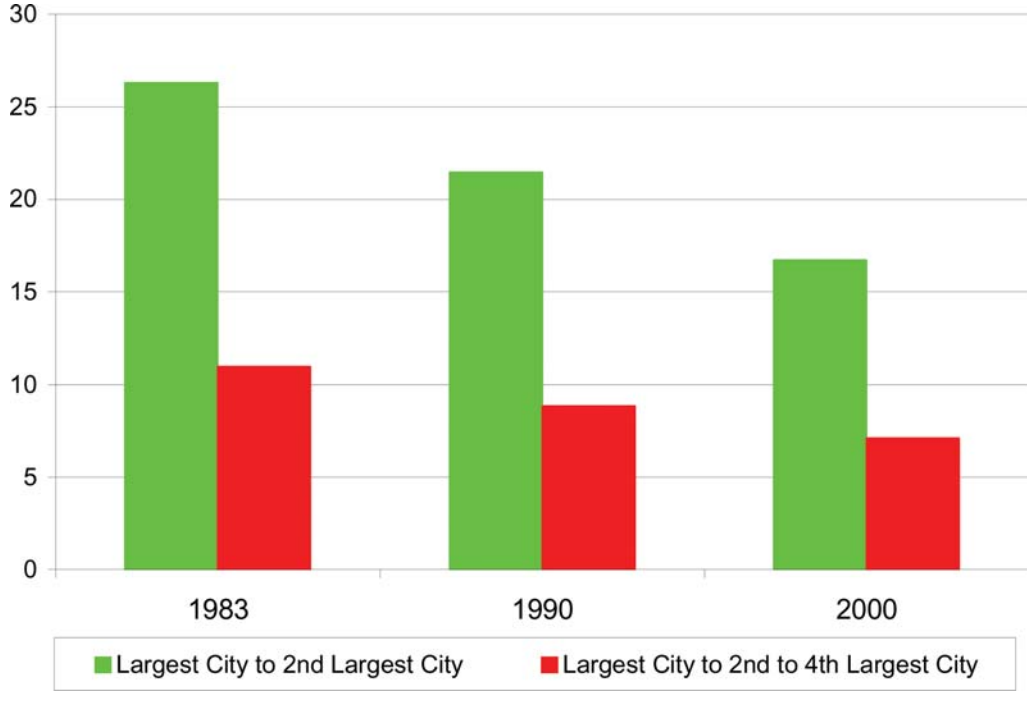
[11]Mark Jefferson introduced the concept of the primate city in 1939. According to his definition, primacy is present when the largest city's population is several times larger than the population of the second largest city (Jefferson 1939).

Figure 29: Primacy Indices

A. Thailand and Asian and Non-Asian Countries



B. Thailand, 1983 to 2000



Drivers, Spillovers and Congestion

Bangkok is one of the world's most cosmopolitan cities, the center of an extended area covering one quarter of the Thai population and to more than half a million expatriates, which attracts millions of tourists every year. While the degree of Bangkok's primacy is unusual, the factors of primacy conform to experience elsewhere. Bangkok is the country's capital for a highly centralized government; has access to a major port; is a conduit for inter-regional traffic; and is located above most of Thailand's groundwater. Historically, Ayutthaya, Thailand's capital from 1350 to 1767, was unusual among South Asian economies for its strong role in international trading. The port of Ayutthaya was an entrepot, an international market place where goods from the Far East could be bought or bartered in exchange for merchandise from the Malay/Indonesian Archipelago, India, or Persia, as well as local wares or produce from Ayutthaya's vast hinterland. After the fall of Ayutthaya, the new kingdom that emerged first at Thonburi, at the western bank of the Chaophraya river, and later at Bangkok, at the eastern bank, continued to rely heavily on trading for its economic base. The nearby fertile areas of the Central Plain provided the rice for exports by the Bangkok government. Hence, the central government had little interest in developing and integrating with outlying provinces, and began strengthening its administrative hold on these regions only in the 1860s. While international trade helped Bangkok to move from traditional to more processed goods, other regions continued subsistence farming. Overall, drivers such as comparative advantage, economies of scales, transport facilities and centralized administration combined to build Bangkok's primacy into the structure of the Thai economy (Biggs et al 1990).

Bangkok's primacy provides strong advantages for enterprises compared to other regions. They include easy access to export channels, lower transport costs, better utilities, higher labor productivity due to a skilled labor force, a more developed financial sector, close proximity to the public administration and policy makers, and, most importantly, strong powerful agglomeration economies through strong forward and backward linkages to input and output markets, which increase profitability for all firms. Nevertheless, not all firms locate in Bangkok. Immobile factors such as land and natural resources (processing makes them easier to transport), lower land and labor costs, and local markets for small enterprises, such as handicrafts or manufacture of farm tools, lead to spatial dispersion. While primate cities are vital economic growth poles for their countries, they can also be a structural hindrance for the development of lagging regions. They typically become the center for both economic and social services, reinforcing disparities between the primate city and other cities. Their strong pull factor can undermine the development of thick markets and institutional capacity in outlying regions (Henderson 1988 and Krugman 1995). Problems associated with primate cities are not only issues balanced regional development but also within the primate city itself. Urban growth produces challenges. Vibrant enterprises pose rising demands for business services that meet modern standards. For example, Japanese vehicle manufacturers operating in Thailand report that Bangkok traffic congestion has increased the level of stocks that they need to hold (JBIC 2004). In addition, the poor, living frequently in peri-urban, informal settlements, require basic infrastructure, sanitation and housing. While urban incomes are higher than rural incomes, the cost of living is more expensive and social capital often weaker.

Extended Bangkok Area and Beyond

While low urbanization has not impeded economic growth in Thailand, it has contributed to the sharp contrast between the extended Bangkok area and the rest of the country. As we have already discussed, the most dynamic urban areas are located in close proximity to Bangkok (Figure 29.B). We have also already seen that Bangkok's economic structure is very different that the Center's (Figure 19), which includes localities such as the Ayutthaya and Eastern Seaboard industries areas. While Bangkok is dominated by the service sector, the Center is the home of much of Thailand's manufacturing base. Bangkok is a leading hub for Asian media and marketing services, high quality business and producer services (law firms, accounting firms, management consultants), high amenity and sophisticated cultural products (design and fashion, jewelry, cuisine, health and spa services), as well as over 60 international organizations and a large diplomatic community (Webster 2005). These activities flourish through the low cost of doing business, the cosmopolitan flair, and the, by international standards, lost cost of living. By contrast, firms in need of a large plant site are attracted to the Bangkok fringe. These localities share some of the agglomeration advantages of Bangkok, yet they avoid some of the disadvantages, especially the high cost of land.

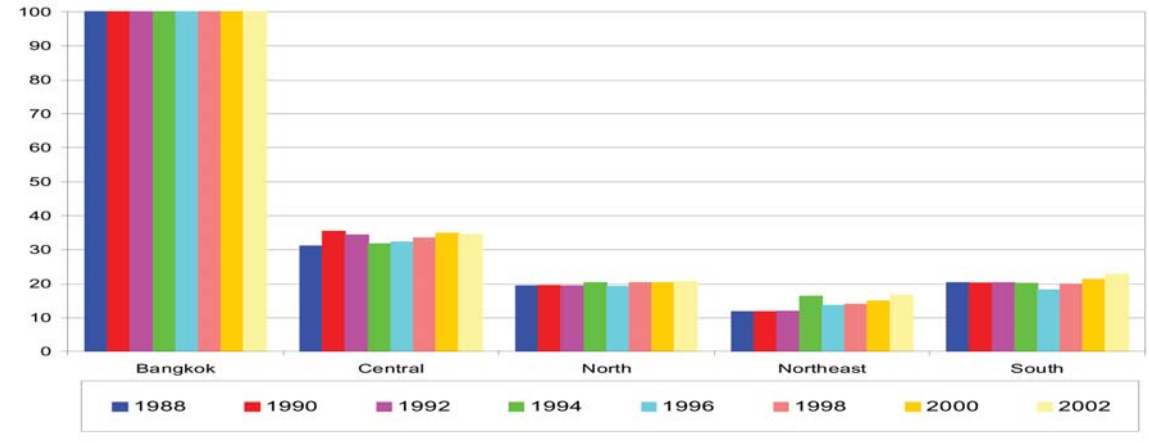
Within a predominantly rural country, the Northeast stands out as the most rural region. In 2002, only every sixth person lived in an urban or suburban area, compared to one in five in the North, one in four in the South, and one in three in the Center (Figure 30.A). And within the Northeast, there are again large differences. Two fifths of the Northeast's population live in the provinces of Nakhon Rathchasima, Ubon Ratchathani, Udon Thani and Khon Kaen, which comprise the four major cities of the same names. Figure 30.B shows the ranking of the nine largest cities after Bangkok in 1983 for 1983, 1990 and 2000. With the sole exception of Udon Thani, all cities fell in their rankings, and only four (Udon Thani, Nakhon Rathchasima, Chiang Mai and Hat Yai) remain in the top ten. Udon Thani is a former US military base, is a major center of resident expatriates and located nearby an important archeological site as well as the Friendship Bridge to Lao PDR.

Similarly, their economic performance has been disappointing. Only Khon Kaen and, modestly, Nakhon Ratchasima increased between 1981 and 2003 their provincial-level per capita GDP compared to the national average, and none of the provinces had income levels in excess of the national mean (Figure 30.C).[12] Unfortunately, the concerns about the sustainability of an innovative regional cities project launched in the second half of the 1980s have been confirmed (Box 3).

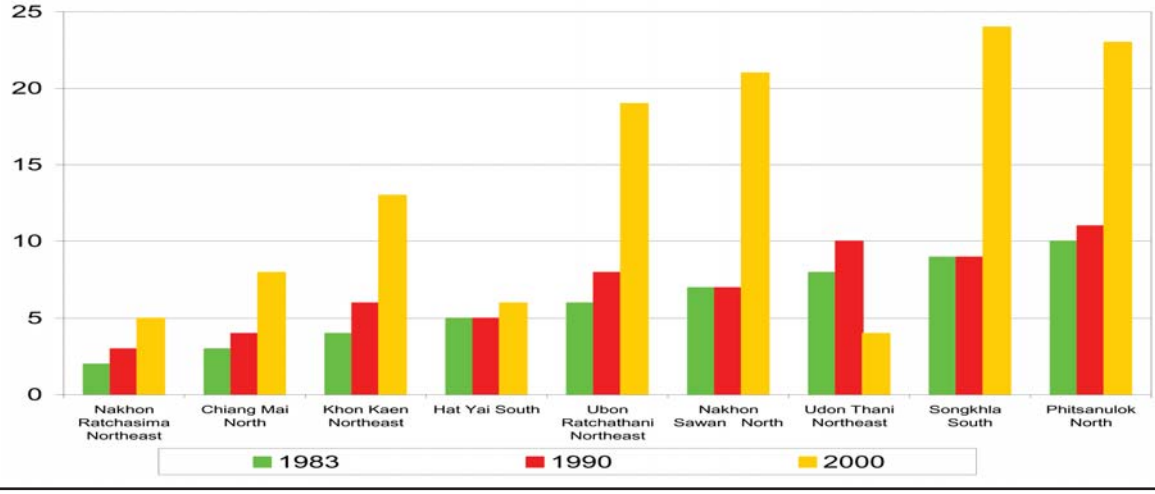
[12] To what extent are changes in income levels linked to changes in the size and density of cities? While it is generally accepted that geographical concentration of economic activity can raise productivity, there is no consensus about the magnitude of the effects, whether population size or density matters more, and whether there is a minimum threshold of city size or density before these effects are triggered.

Figure 30: Urbanization and Regional Cities

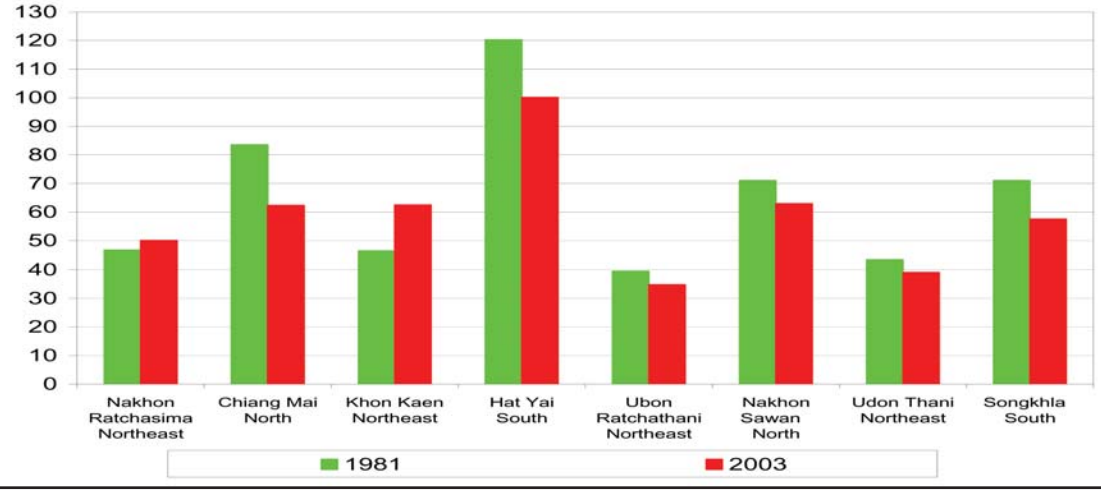
A. Regional Urbanization, 1988 to 2002



B. Ranking by City Population of Largest Nine Cities outside Bangkok, 1983, 1990 and 2000



C. Per Capita GDP of Selected Provinces relative to National Average, 1981 and 2003



Urbanization and Industrialization

The lack of successful development of regional cities in outlying regions is one reason for the small manufacturing sector. But why is low industrialization related to low urbanization? Industrialization typically moves people away from immobile factors, such as land and natural resources, on which agriculture draws on. In addition, industrialization creates incentives for production and market activities to cluster. Manufacturing firms tend to locate close to large urban centers to minimize transport costs and realize scale economies. Industrialization increases the need for both physical infrastructure and human capital, which are factors that large cities are better at providing. In this way, urbanization leads to concentration at the same time (Puga 1998). In addition, in spite of high rents, small firms also cluster in large cities, where they benefit from diversified market niches, mobile labor supply, good infrastructure and services and proximity to input suppliers and large firms. This underscores the importance of supporting development of infrastructure and services in regional growth centers. The next section will take a closer look at the experience of the Thai manufacturing sector.

Box 3 : The Regional City Project

In 1985, the Ministry of Interior, Department of Local Administration, and the World Bank signed a US$27.5 million loan for the Thailand: Regional Cities Development Project. Its objectives were to stimulate economic development by strengthening four municipalities as productive urban centers, increase their financial autonomy and help reduce migration to the central region. The locations were Khon Kaen and Nakhon Ratchasima in the Northeast, Chiang Mai in the North, and Songkhla in the South. Specifically, the project components included improvements in infrastructure, capacity building at the local as well as central levels, in addition to establishing a fishport and industrial area in Songkhla. The project was closed in 1994 and rated satisfactory based on good progress on infrastructure, administration, and fishport operations. The project led to follow-up project including eight other cities using only Thai resources. However, the project's performance audit report noted that the sustainability of the project remains uncertain due to a number of reasons. First, the centralized government system is the main constraint to the development of regional cities. Majors as well as provincial governors require increased power for revenue collection and decision making. Second, the project preparation (6 years) and implementation (8 years) took a long time partly due to the highly centralized system. Devolving more project responsibilities to the local government should lessen the need for inter-agency coordination at the national level. The Thai Cabinet deliberated on matters concerning project preparation and implementation on no less than 28 occasions. Third, as the population and economic activity spread to outlying areas, infrastructure and development programs are demanded outside the municipal boundary. There is need for a mechanism of implementing projects jointly by the tambon administrations and municipalities.

Enterprises

Manufacturing Value Added

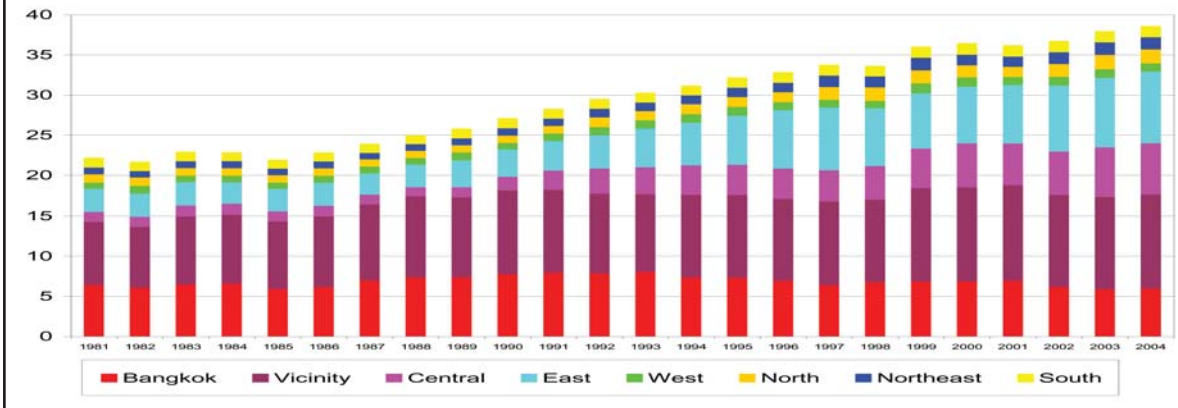
Manufacturing has grown in importance over the last 25 years. In spite of investment slump and Asian crisis, the manufacturing sector expanded continuously its share in GDP. The sector is now approaching two fifths of GDP, compared to one third of GDP before the Asian crisis and just under one fifths of GDP in the early 1980s (Figure 31.A). The expansion is closely linked to the boom in exports, which increased from around one fifth of GDP in the early 1980s to around 45 percent before the Asian Crisis and now contribute close to two thirds of GDP. Manufacturing accounted for 87 percent of all exports in 2004, compared to 80 percent in 1993, 45 percent in 1986 and just over 30 percent in the early 1980s.[13] Within manufacturing exports, the share of high-tech products increased from 58 percent in 1993 to 78 percent in 2003 (Figure 31.B). While exports of textile and garments products have declined, exports of electrical machinery and parts, non-electrical machinery and parts, and vehicles and parts have surged.

While the importance of manufacturing has grown, the role of Bangkok and Vicinity as Thailand's factory hub has declined. During the 1980s, their combined share was between 65 to 70 percent (Figure 31.C). By the time of the Asian crisis, it had fallen to just over 50 percent, and now stands at 46 percent. Most of the decline was due to Bangkok, which took the brunt of the adjustment triggered by the Asian crisis. Since the early 1980s, Bangkok's contribution to Thailand's manufacturing value added fell by 45 percent, and the Vicinity's contribution contracted by 15 percent. By the same token, the manufacturing share of the Central's 6 provinces almost tripled, and of the East's 8 provinces almost doubled. These two subregions contributed just under one fifth of manufacturing GDP in 1981, and now account for twice as much. The East's contribution has exceeded Bangkok's since 1996, and the Central's contribution has topped Bangkok's share since 2003. By contrast, the Northeast, North and South have not benefited from the expansion of the manufacturing sector outside of Bangkok and Vicinity. Both the North and the Northeast contribute only 4 percent to the sector's value added, which is the same fraction as in the early 1980s. The South did even worse, and its share contracted from 5 percent to 3 percent over this period. The trends for the Northeast and especially the North look more encouraging since the late 1980s, with an average annual GDP growth rate in manufacturing of 10 percent, about 2 above the national average. Between 1999 and 2004, the annual growth rate dropped to 6.4 percent in the North and 4.4 percent in the Northeast compared to a national average of 6.5 percent. In any case, whatever expansion has taken place over the last decade and a half occurred from very low levels of value added. The evidence from labor productivity shows the same pattern. While the East and Central have overtaken Vicinity and Bangkok in terms of value added per manufacturing worker, the North remains the least productive region, reaching no more than 60 percent of the output per worker in the North and 10 percent of the output per worker in the East, Vicinity and Central.

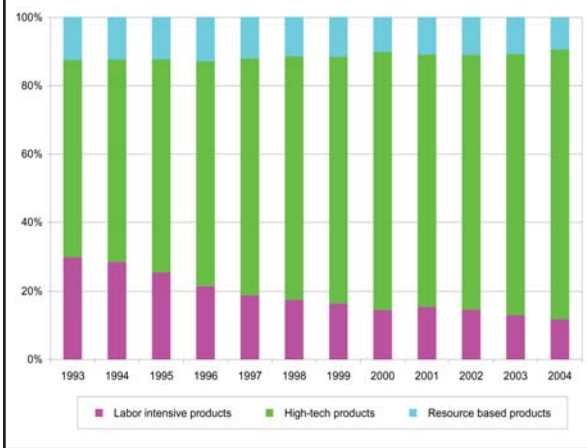
[13] This does not imply that manufacturing equals to 57 percent of GDP (close to ninety percent of two thirds of GDP) as manufacturing value takes into account the use of intermediary inputs.

Figure 31: Manufacturing GDP and Exports, 1991 to 2004

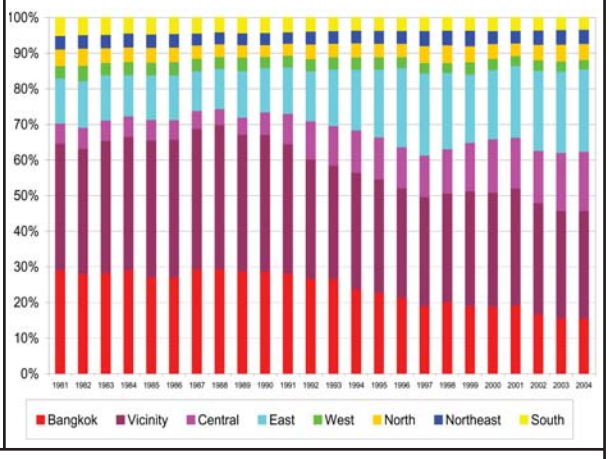
A. Manufacturing as Percent of GDP



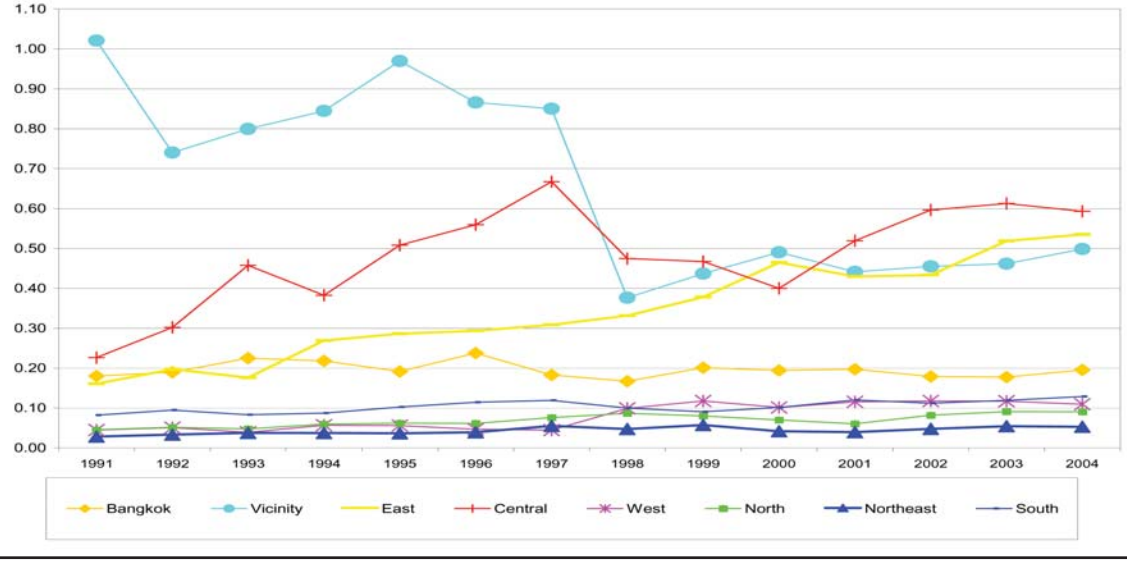
B. Manufacturing Exports by Product Type as Percent of Total Manufacturing Exports



C. Regional Breakdown of Manufacturing GDP



D. Labor Productivity in Manufacturing, 1991 to 2004



Employment Dynamics

Out of Thailand's 7400 tambons, some 2700 had manufacturing establishments in 1996/7. Yet, manufacturing jobs were available in four fifths of Bangkok's tambons and over half of Center's tambons, but only in just over one third of the North's and the South's tambons and only one fifth of the Northeast's tambons (Figure 32.A).

Five years later, the clustering of companies in the extended Bangkok area increased even further. Almost all of Bangkok's 154 tambons and more than three fifths of the Center's 1932 tambons offered manufacturing employment. Manufacturing employment also increased in the Northeast, where the share rose to just under one third, and the North, where it rose to two fifths. Only the South did not experience any increase.

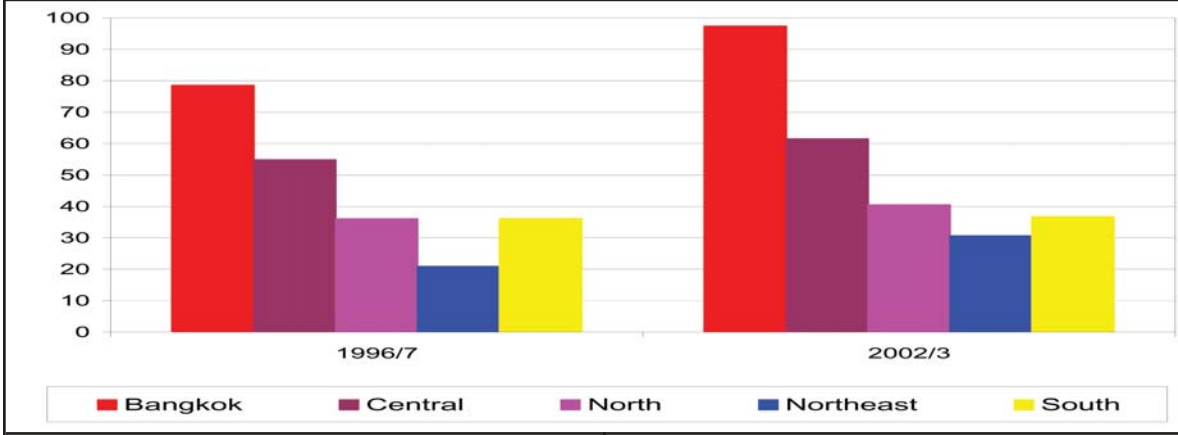
As manufacturing value added shifted from Bangkok and Vicinity to other areas, the geographical distribution of companies and their work force have changed as well. Combining the 1996/7 and 2001/2 manufacturing censuses, we get a detailed picture of the dynamics in the spatial spread of employment among business establishments from just prior to the Asian crisis to well into the recovery. Figure 32.B plots circles of employment for enterprises with 10 workers or more, where the size of the circles corresponds to employment levels.[14] This data set covers just over half of all manufacturing employment. There is a strong concentration of employment in and around the Bangkok area. Other parts of the countries are dominated by gaps, representing areas without manufacturing employment.

The employment numbers tell a similar story. Between 1996/7 and 2001/2, Bangkok's employment share declined from 28 percent to 23 percent and the Center's share increased from 56 percent to 60 percent (Figure 32.C). The Northeast's employment share increased by 2 percent while the North's and South's contributions remained unchanged. Median employment of enterprises is highest in Bangkok and Center, and lowest in the Northeast, where it is no more than 17 workers among enterprises with at least 10 workers.

[14] The 1996/7 data is taken from the 1997 Industrial Census collected during 1996 and 1997. The 2001/2 data draws on the listing for the 2002 Business and Trade Census, which covered the entire manufacturing sector. The restriction of 10 workers or more is imposed for two reasons: the 1997 census did not cover all enterprises with less than 10 workers; and the 2004/5 Thailand Productivity and Investment Survey, which we will investigate later, also focused on companies with at least 10 workers. Each dot is randomly placed within a tambon (subdistrict). Red circles identify outliers where employment figures are greater than the 75th percentile by three times the difference between the 25th and 75th percentiles.

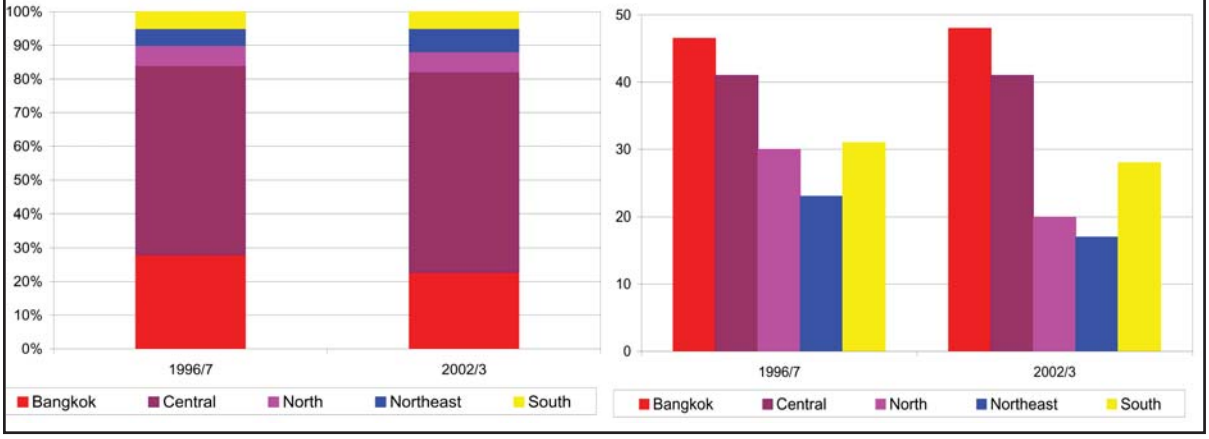
Figure 32: Spatial Distribution of Manufacturing Employment, 1996/7 and 2001/2

A. Share of Tambons with Enterprises (%)



B. Cartogram Maps

C. Employment Shares (%) and Median Number of Workers per Enterprise

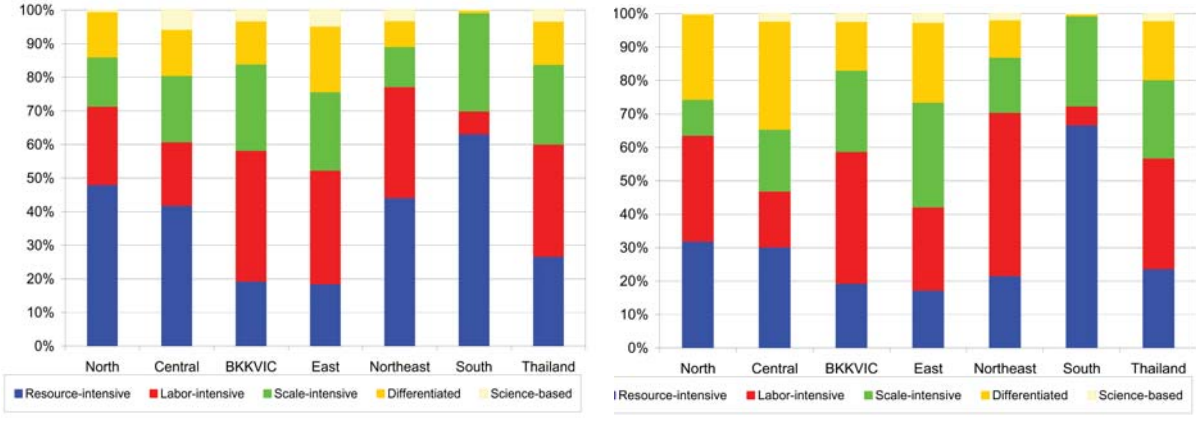


Sector Composition

Much of Thailand's employment is concentrated in a few sectors. Food products and beverage, wearing apparel, textile and furniture were the largest employers in 1996/7, accounting for over two fifth of all manufacturing jobs, and remained among the five most important sectors in 2001/2. The spatial pattern varies widely by industry. Figure 34 shows the employment maps for the eight industries covered in the 2004/5 Thailand Productivity and Investment Climate Survey (PICS), which includes Thailand's biggest employers. The concentration of employment in individual industries exceeds that of employment overall. The Northeast is most represented in wearing apparel, textiles, food processing and furniture, which account for about half of total employment.

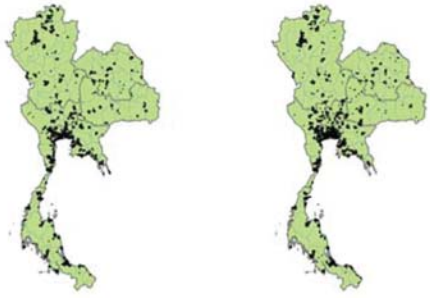
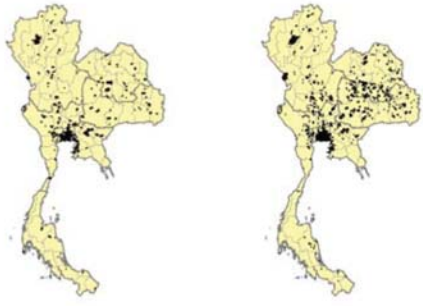
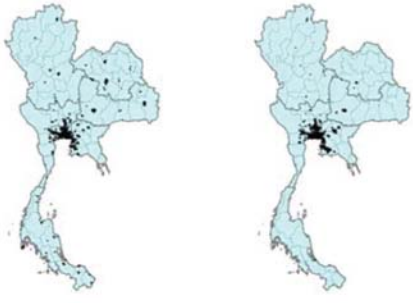
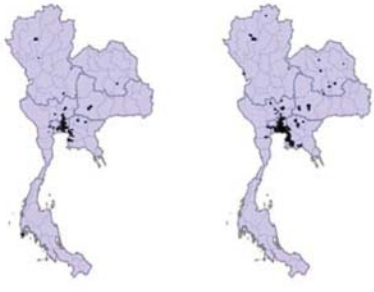
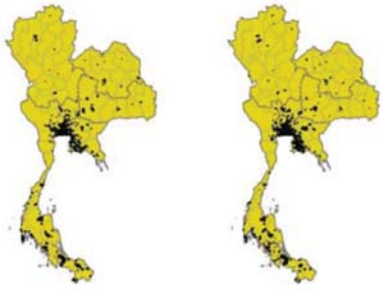
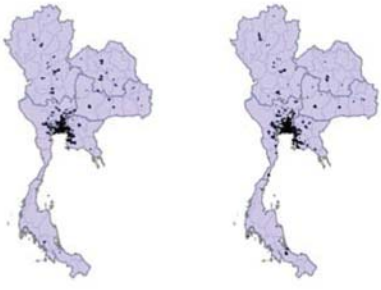
The two sectors that experienced the largest increases at the national level were electronic parts, which almost tripled its share from 2.9 percent to 8.2 percent, and wearing apparel, which rose from 7.5 percent to 9.7 percent. All regions benefited from their expansion, with the exception of the South in electronic parts. The employment increase of electronic parts came together with a higher GDP share, while wearing apparel employment rose in spite of negative GDP growth. Together with printing and starch products, these were also the sectors that saw the largest gains in the Northeast. The only large scale industry that experienced a decline between 1996/7 and 2001/2 was textile. The employment structure changed as a result of these adjustments at the industry level. Figure 6 shows a breakdown of the manufacturing sector by technological characteristics, as developed by the OECD.[15] The Northeast and the South stand out as the regions with the lowest shares of differentiated and science-based employment. While the South is dominated by resource-intensive industries, the Northeast largest sectors are labor-intensive industries. Apart from Bangkok and Vicinity and the South, the contribution of these sectors increased between 1996/7 and 2001/2.

Figure 33: Manufacturing Employment 1996/7 and 2001/2 by Technological Characteristics



[15] This classification is applied in Lall (2000). Resource-based industries (such as food processing and wood products) draw on natural endowments, labor-intensive products require typically low technical skills; scale-intensive products use complex technologies but are not cutting edge; differentiated products use advanced design; and science-based products apply modern technologies.

Figure 34: Spatial Distribution of Employment of PICS Industries

A. Food Processing	B. Textile
	
C. Wearing Apparel	**D. Auto Parts**
	
E. Electronic Parts and Appliances	**F. Rubber and Plastics**
	
G. Wooden Furniture and Product	**H. Machinery and Equipment**
	

Concentration

The employment maps suggest important differences in diversification across Thailand. We can measure the employment correlation among localities for a given distance with the help of a correlogram. In principle, one might expect employment shares to be closely positively

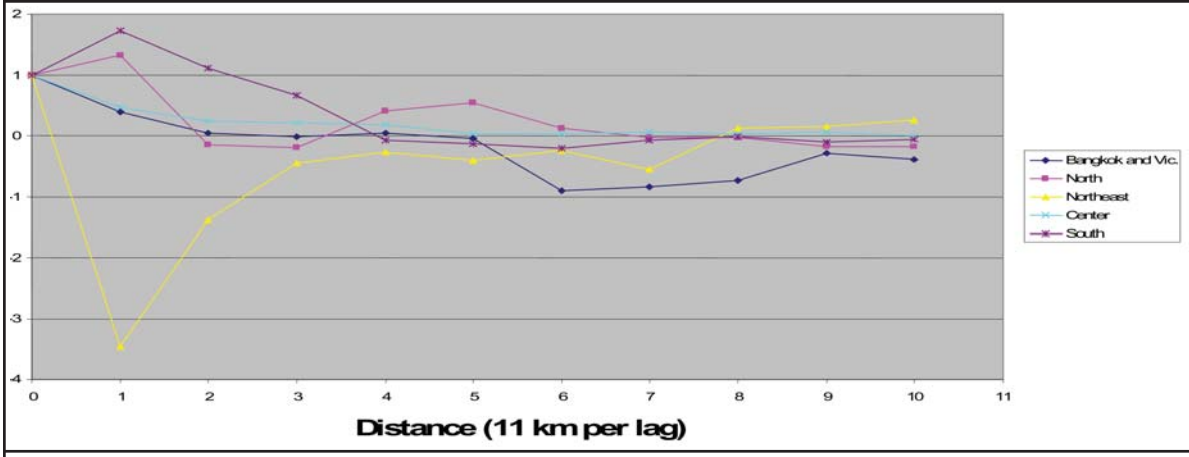
correlated in nearby tambons. Figure 35.A shows that outside of the Northeast, tambon employment up to a distance of 22 kilometers is indeed positively correlated. By contrast, tambon employment is negatively correlated with nearby tambons in the Northeast. In other words, while Northeast firms tend to locate far from each others, firms in other regions tend to locate close to each other. This suggests that the Northeast is not benefiting from agglomeration.

Figure 35.B shows the Herfindahl index by region before and after the Asian crisis. It equals the sum over the squared employment shares of all 4-digit industries. A higher index implies a larger concentration. In general, the South and the Northeast lag behind other regions in terms of diversification. Among the 125 4-digit manufacturing industries in Thailand, 29 expanded and 40 declined, while the rest changed by less than 0.1 employment share. As a result, the manufacturing sector became more concentrated, as indicated by the rise in the Herfindahl index.

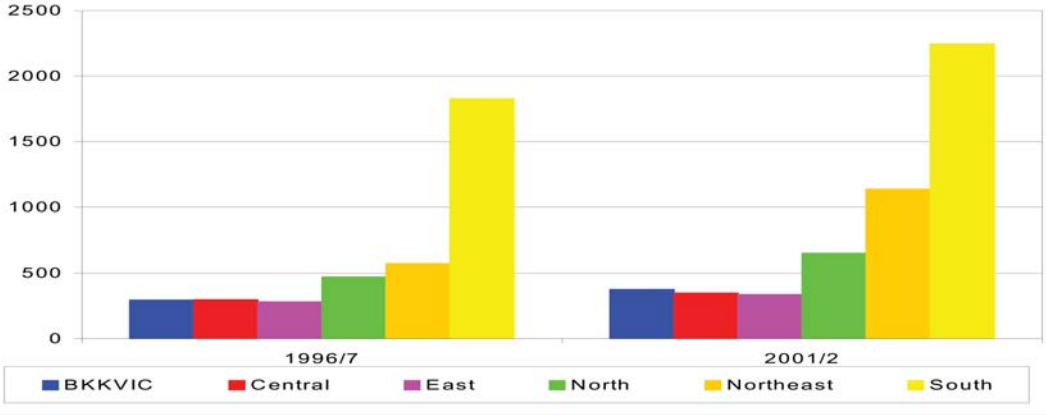
Is diversification linked to the expansion of manufacturing employment? Focusing on the changes between 1996/7 and 2001/2, the rise of Central's employment share would indicate it does, while the contraction in Bangkok's share and the rise in the Northeast's share would indicate it does not. Indeed, relating growth rates in manufacturing employment over this period to the Herfindahl index in 1996/7 across Thailand's 845 amphoes (districts) gives no clear relationship. At the sectoral level, the same finding holds for wearing apparel, while the correlation is positive for electronic parts in districts that did not have any electronic parts industry before the crisis. This supports the notion that knowledge spillovers and innovation are less relevant for a labor-intensive industry like wearing apparel, which relies foremost on a low-cost labor force with basic skills but essential for a differentiated industry like electronic parts, which relies more on linkages to other companies.

Figure 35 : Regional Employment Concentration, 1996/7 and 2001/2

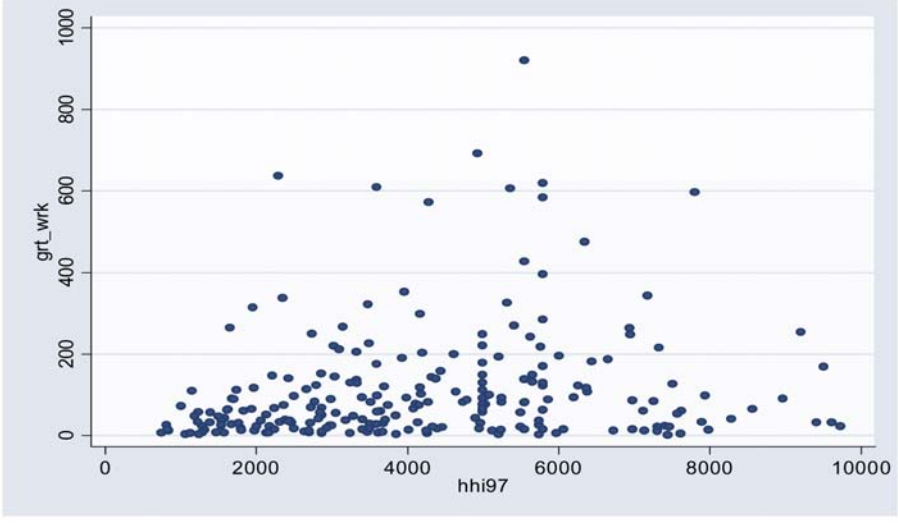
A. Correlogram



B. Herfindahl Index



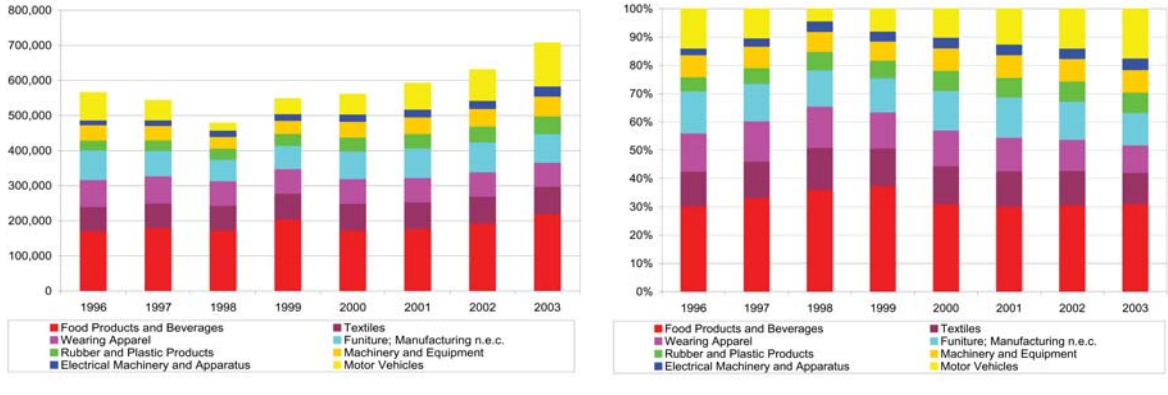
C. Amphoe Growth Rates in Manufacturing Employment from 1996/7 to 2001/2 relative to 1996/7 Herfindahl index



Industry and Regional Groups

The 2004/5 PICS survey provides us with a rich data set to investigate the two trends that dominated the manufacturing sector since the late 1980s: the relocation of manufacturing outside of Bangkok and Vicinity to the East and Central; and the expansion of high-tech products relative to labor-intensive products. The 1,385 manufacturing firms, surveyed from March 2004 to February 2005, were selected purposefully to emphasize export-orientation and high value-added. The survey presents a rich source for exploring location and performance issues of sizable manufacturing companies. We classify the eight industries covered in the survey into two categories. The low-tech group includes food processing, textiles, wearing apparel, wooden furniture and product; and the high-tech group contains auto parts, electronic parts/electrical appliances, rubber and plastic, machinery and equipment. The group labels should not be taken literally. Some textile industries may employ high-tech equipments, while some equipment factories could be rather labor-intensive. Rather, they provide a convenient way of distinguishing the two groupings, which are nothing more than aggregates over the eight industries. While the PICS selected industries at the 4-digit level, it is nevertheless instructive to compare the growth performance for the 2-digit industries from which they were drawn. They amounted close to 50 percent of Thailand's manufacturing value-added both in 1996 and 2003 and slightly less in-between (Figure 36). At this aggregated 2-digit level, these eight industries declined during the Asian crisis but have recovered since and are now in real terms one quarter above the 1996 level. However, the low-tech group grew annually in real terms by between -1.5 percent to 3.6 percent, while the high-tech group expanded by 3.6 percent to 8.9 percent. As a result, the share of the high-tech group rose from one fifth in 1998 to over one third in 2003. The reason for aggregating industries into two groups is that we need sufficient observations in each category to explore also differences across regions. The Survey covers separately the North, Northeast, Central, Bangkok and Vicinity, East and South. For parts of the discussion, we will aggregate regions into two groups: Bangkok and Vicinity ("Bangkok") versus the rest of Thailand. This is required due to the limited number of observations, but also motivated by the trend identified above: the importance of Bangkok and Vicinity in terms of manufacturing output has declined relative to the rest of Thailand since the late 1980s.

Figure 36: 2-Digit PICS Industries, Real Value Added (1988 Prices) and Total Value Added (%), 1996 to 2004



Products, Size and Exports

Having organized the firms into regional and technology categories, we can now explore the differences between these groups across three dimensions: products, company characteristics, and the investment climate. The investment climate indicators come in two types: the firm's perceptions of both general constraints to operations and obstacles to doing business.[16]

Firms focus on similar 4-digit products across the regions, especially in the high-tech sector, although their shares are different. Among the 11 products represented in the sampling frame among low-tech industry, only six are among the top three products in any of the regions (Figure 37). And among the 26 high-tech products, only seven are among the three most important products. The Northeast is engaged in products that are produced also in at least another two regions (furniture, wearing apparel and textile preparation for low-tech; and electronic parts, plastic products and auto parts for high-tech). By contrast, among low-tech industries, Central stands out for sugar products and the South for wooden container production; and among high-tech industries, the South stands out for rubber products and the North for agricultural machinery. However, the weights of these products differ widely from region to region. In the Northeast, North and South, low-tech industries are less concentrated than high-tech industries, while there are little differences in the more advanced regions of Bangkok and Vicinity, Central and the East. This is consistent with the idea that economic development comes with diversification, especially of high-tech industries.[17]

We now turn to company characteristics. Relative to high-tech firms in the other regions, Bangkok's firms tend to be older, more domestically owned and less export- or import-oriented. They have a smaller workforce, although more often hired from other regions, and draw more on raw materials from other regions. Bangkok's low-tech industries have broadly similar features as Bangkok's High-tech industries, with the exception of a higher export- and import-orientation. The Northeast's low-tech industries stand out for low foreign-ownership and low export-orientation.

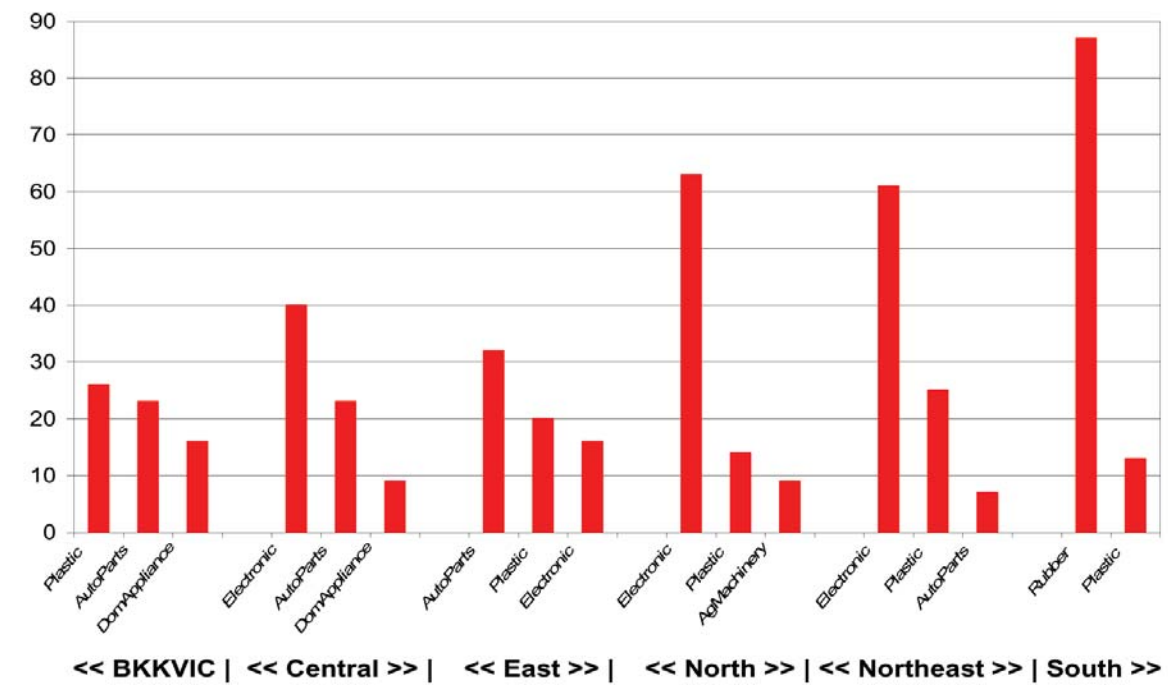
Finally, we compare investment climate indicators between Bangkok and other regions. Bangkok high-tech companies report less problems with infrastructure, and more difficulties with business support services, skilled labor shortages, corruption, competition from imports and utility prices. Bangkok's low-tech firms also report obstacles in macro stability, anti-competitive practices and high taxes.

[16] The survey identified constraints through the firm's rating of 18 issues according to the severity of each given constraint ("closed" question), and obstacles through firm's selection of the three biggest problems out of a list of 22 issues ("open" question).

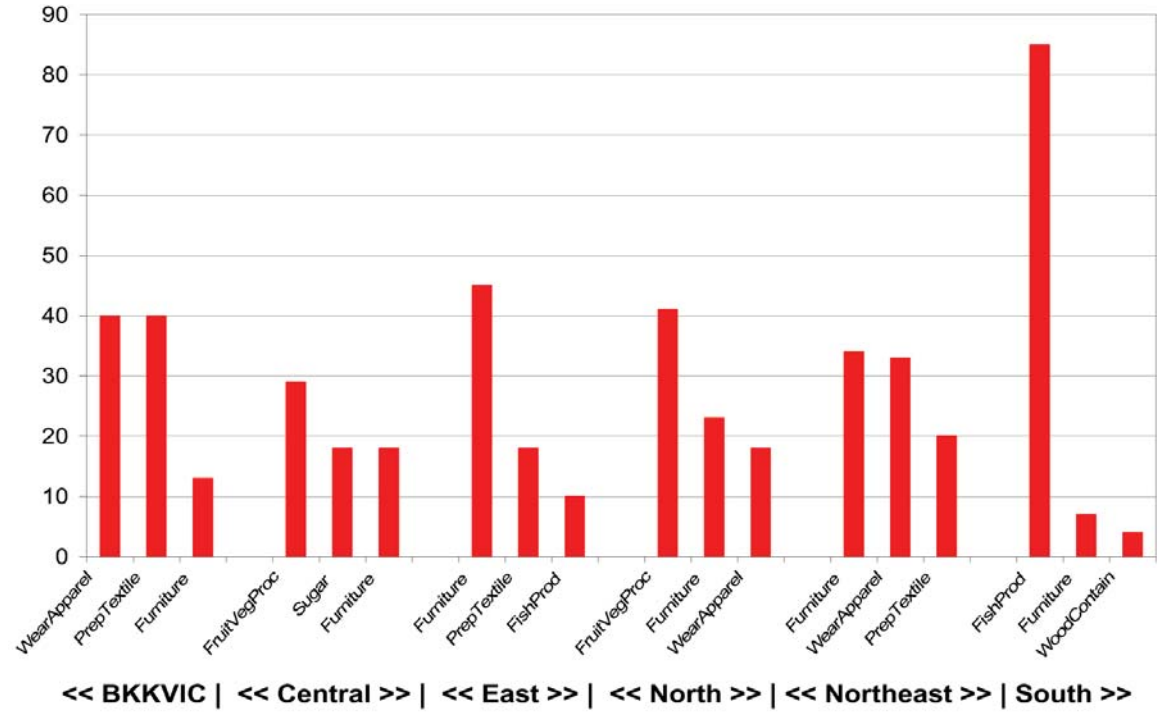
[17] Imbs and Wacziarg (2003) show that as poor countries get richer, sectoral production become less concentrated and more diversified. Sectoral specialization applies only to high-income countries. This holds not just for the shift from agriculture to manufacturing and services, but also for the manufacturing sector alone.

Figure 37: 4-Digit Products by Regions

A. High-Tech Industries



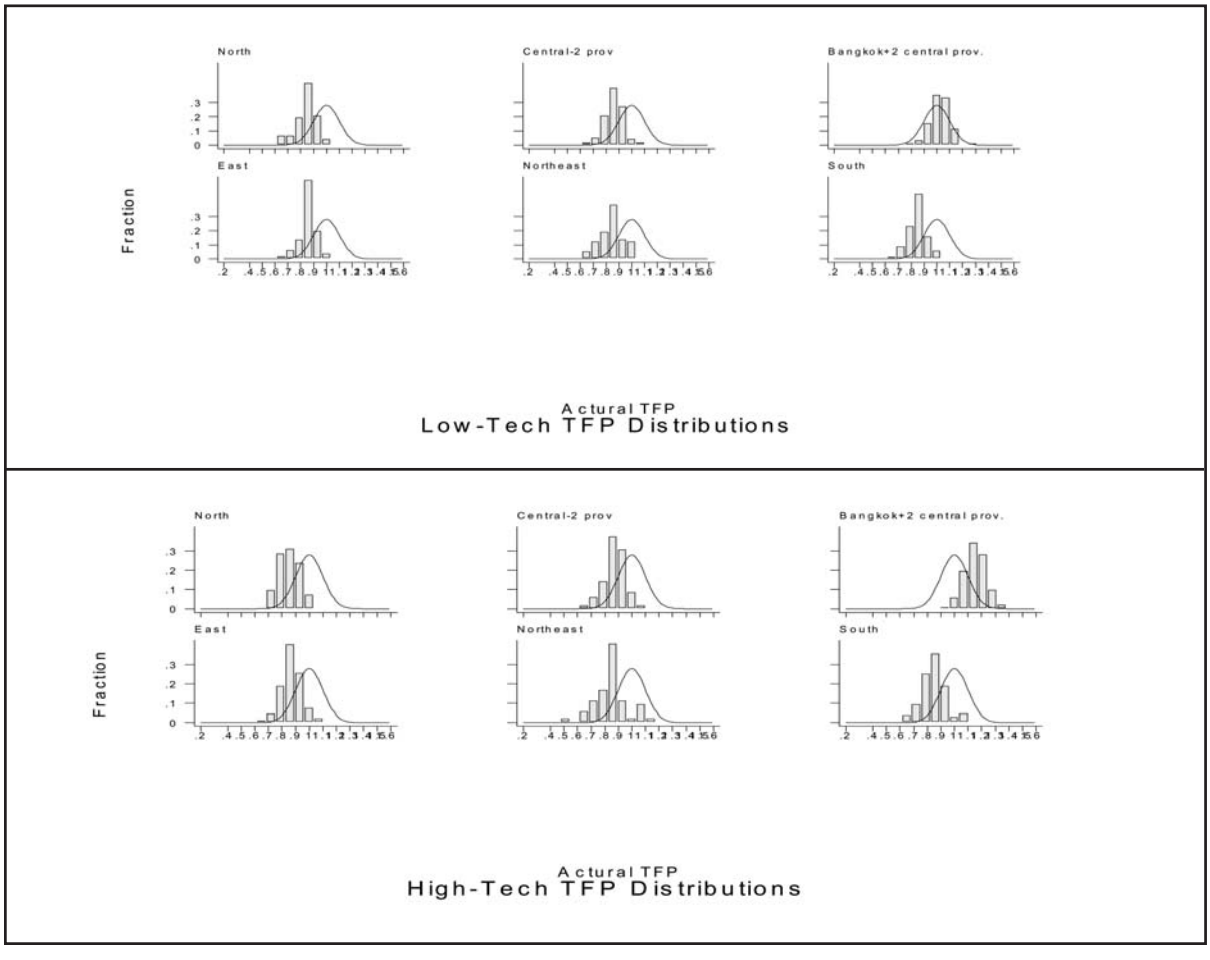
B. Low-Tech Industries



Firm Productivity

The next sections will relate these constraints to a measure of firm-level performance: total factor productivity. It is a multi-factor productivity measure that represents the efficiency of the firm in transforming inputs, including skilled and unskilled labor and capital, into outputs, defined as value added or the differences between sales and intermediary goods. The estimation follows the Olley and Pakes (1996) routine which allows for simultaneity and selection biases.[18] Subtracting from value added labor and capital inputs weighted by the estimated production elastiticies gives us total factor productivity. Figure 38 shows the regional graphs of the distribution of firm level productivity relative to the national average, which is normalized by a mean of unity and a variance of 0.1. Mean productivity is higher in Bangkok than outside of Bangkok, and high-tech industries have higher mean productivity both within and outside Bangkok than low-tech industries.

Figure 38: Regional Distribution of Total Factor Productivity



[18] Simultaneity bias occurs if input demand is in part determined by the manager's knowledge of productivity levels. As inputs and outputs are determined at the same time, inputs are not exogenous to output levels. Selection bias stems from productivity being affected the location choice.

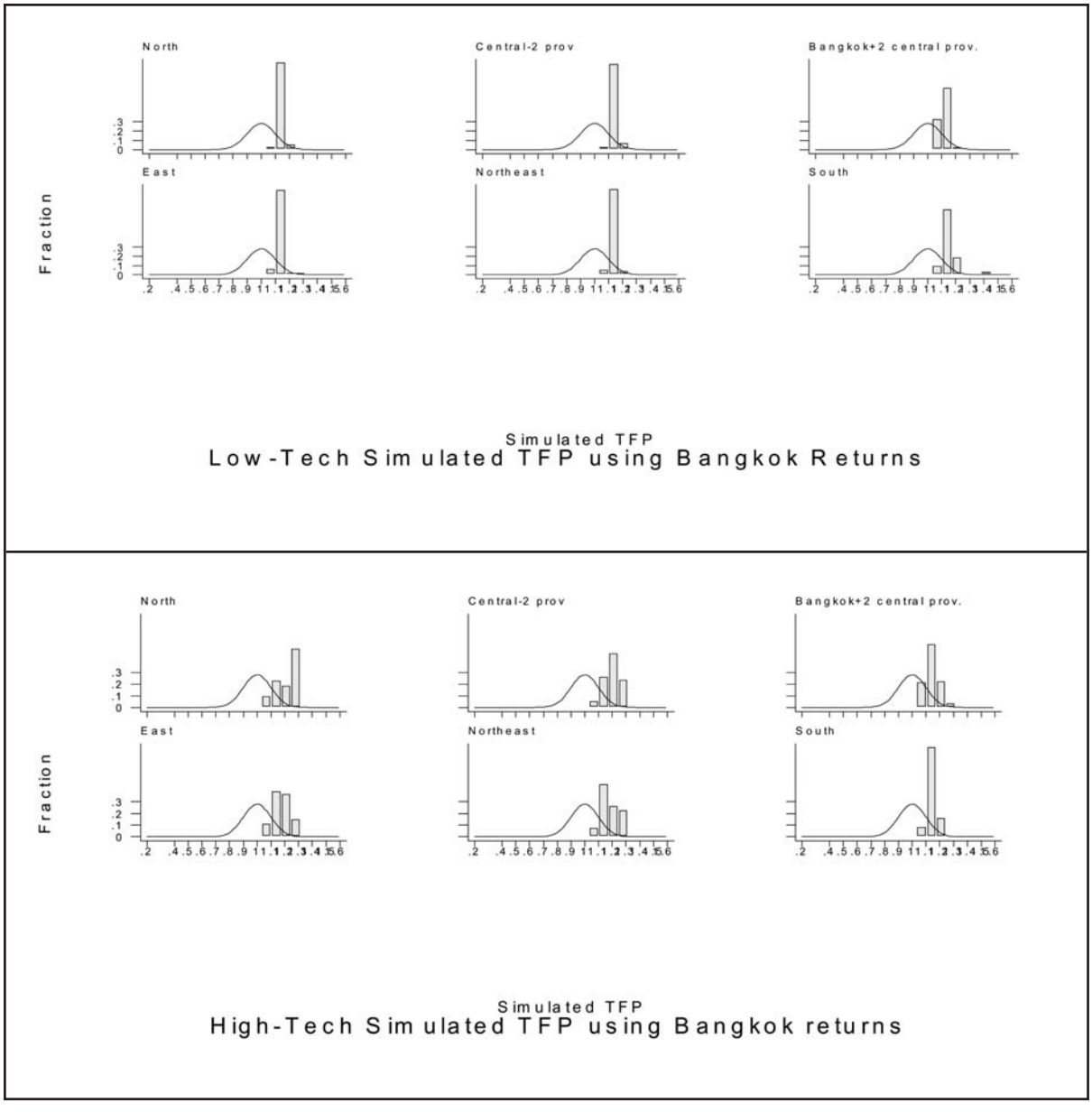
Decomposing Firm Productivity

What are the correlates of firm productivity? We decompose the contributions of 4-digit product characteristics, company characteristics and investment climate variables on firm level productivity.[19] We model productivity to depend on company characteristics (employment size at birth, age, share of skilled workers, share of local workers, share of raw materials from local sources, presence of imports, presence of exports and presence of foreign ownership), product characteristics (4-digit industry dummies) and our sets of company closed and open responses to the investment climate. As expected, total factor productivity is positively related with high skill worker share, export-orientation and foreign-ownership, although these factor matter more among Bangkok's high-tech industries. Regarding investment climate indicators, the findings are similar to the descriptive statistics quoted previously. The most striking differences are as follows. Skilled labor shortages reduce productivity for Bangkok's high-tech industries but not otherwise. Utility prices, political instability, lack of business support corruption and crime lower the performance of Bangkok companies, while infrastructure, telecommunication and taxes hold back productivity outside of Bangkok.

What is the overall impact of investment climate differences on productivity? Predicting firm performance from company characteristics and product dummies suggests that they account for 79 percent of firm productivity. However, this is likely to be a lower bound of the impact of investment climate on performance. The investment climate affects location choice, so that company and product features themselves reflect investment climate influences. A key difference between Bangkok and other regions lies precisely in the returns to such company and industry characteristics. Figure 39 shows the regional distributions of simulated firm productivity relative to the national mean. We allow the companies outside of Bangkok to have Bangkok returns to firm characteristics and the same product structure as in Bangkok. Firms outside of Bangkok now have higher returns than Bangkok, as the values of firm characteristics that increase productivity, such as age, size and ownership are in fact better than in Bangkok. A key question is why are the product portfolios so different? For companies outside of Bangkok products, this may reflect the presence of export-oriented multinational, or the dependence on local raw materials for product development. While their productivity levels are lower in these activities when compared to more traditional products of the Bangkok and Vicinity, their contribution to the export boom and economic recovery over the last years was crucial. The analysis suggests that addressing deficits in institutions, infrastructure, and business services outside of Bangkok and Vicinity is essential for sustaining the export boom.

[19] This methodology is similar to Dollar et al (2003), Escribano and Guasch (2004) and Haltiwanger and Schweiger (2005).

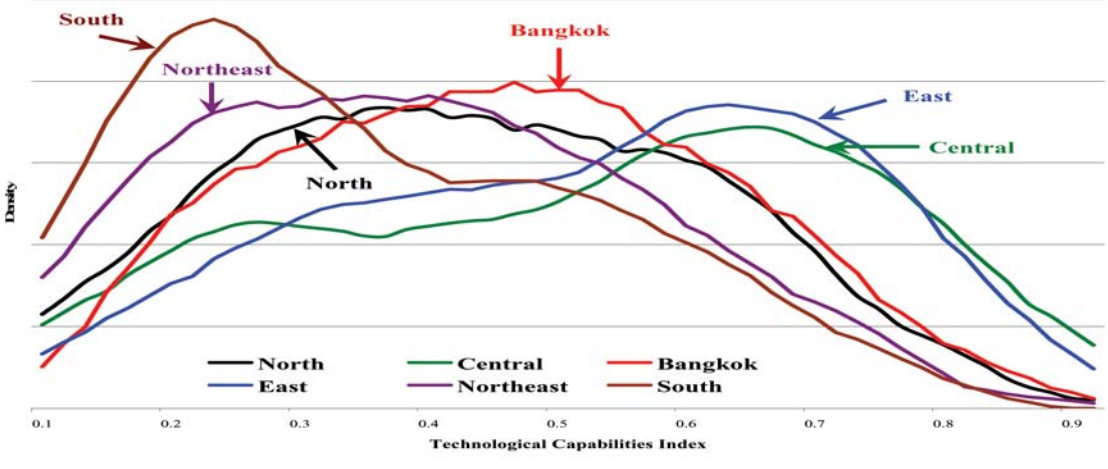
Figure 39: Simulated Productivity Outside of Bangkok Using Returns of Bangkok and Vicinity



Technological Capability

The findings on total factor productivity are supported by evidence on regional variation in technological capability. The 2004/5 PICS provides the information needed to construct an index of technological capabilities across manufacturing establishments in Thailand (World Bank 2005). TCI draws on the taxonomy developed by Lall (1992), which identifies and categorizes firm-level technological capabilities into investment, production, and linkages activities. TCI permits useful comparison of the technological capabilities across firms and enables econometric analysis of the influences on the acquisition of firm-level technological capabilities. TCI provides a composite measure of technological capabilities composed of information about firm-level technological behavior that is provided by the rich data collected in the PICS. TCI is composed of 27 separate technical activities. Investment technological capabilities is represented by 6 separate technical activities; production technological capabilities by 14 separate technical activities; and linkages technological capabilities by 7 separate technical activities. A single point is given for each technical activity the firm has performed; for higher levels of IT-related investments and computer-controlled machinery, an additional point is scored. Therefore, each firm is ranked out of a total technological capability score of 29, and the result is normalized to give a value between 0 and 1. Establishments located in the East and Central score highest and those in the North, Northeast and the South regions score lowest on the TCI scale (Figure 40), while establishments located in Bangkok and Vicinity fall somewhere in between. The businesses located in the East and Central are consistently ranked first and second, respectively, also in each of the three areas of activity: Investment (0.529 and 0.471), Production (0.428 and 0.396), and Linkages (0.370 and 0.333). Establishments in Bangkok follow with overall average TCI score of 0.415, and also in Investment (0.411), Production (0.370), and Linkages (0.316). Establishments located in the Northeast region have the poorest average Investment and Linkages TCI scores of 0.303 and 0.202, respectively.

Figure 40: Kernel Density Plots of TCI by Region



Northeast Exporters

The PICS analysis indicates that enterprise in the Northeast have lower productivity than Bangkok-based firms. Yet, while the Northeast manufacturing base is small, it includes many foreign-owned and export-oriented companies. What businesses locate in the Northeast? What products do they produce? Box 1 gives eight examples of export-oriented firms, both local and foreign-owned. These firms produce agricultural (fruit and vegetable cans, flour and sweetener, Jasmine rice, chicken products) and industrial (iron roofs, cargo services, trucks, and carpets) goods and services. Three features stand out. First, the Northeast attracts companies through access to raw materials, workers, and land as well as BOI incentives. Second, the products either build on traditional activities (rice, livestock and fabrics), service the storage and transportation needs resulting from the distance to consumer markets (cargo and trucks), or supply housing materials for the over 20 millions regional population. Third, while all companies consider lack of skilled workers a serious constraint, daily workers constitute a large part of the work force and only some firms use wages to attract qualified employees.

Box 4: Business Case Studies of Northeast Exporters

Thaisun Food Product Co. is a Japanese and Taiwanese company producing fruit and vegetable cans. It located in Nong Khai province in 1988, attracted by the availability of labour and the special BOI investment incentives. While originally exclusively export-oriented, it now also sells to the Thai market. The company still buys its raw materials from the same five local suppliers as at the beginning of its operations. The main problem is the lack of qualified workers.

Corn Products Amardass is an agricultural joint venture, founded by the 2001 merger of a Thai firm and a US company, which holds 80 percent of the stock. The two main products are flour and sweetener, about 70 percent of which are exported. The company chose the Northeast for raw materials (mainly cassava) and BOI investment promotions. Among the 300 employees, 20 percent are daily workers, receiving wages slightly above the minimum wage. The company is sometimes confronted with labor shortage.

Deimos Holding Co.,Ltd was founded in 2000 in Nakhon Ratchasima to provide cargo services to US mother company Effen Food Co. Ltd, which provided half of the founding capital. Services include storage of goods, packaging and truck forklift logistics. The company has expanded from 10 permanent employees to 32 as of 2004. Monthly wages are on average Bt7,600 in 2003.

Bluescope Lysagh, Ltd. is a subsidiary of an Australian multinational steel company. Founded in 1988 as a coated steel factory in Pathumthani, the company has since expanded to Khon Kaen, Rayong, Chiangmai and Songkhla. Specializing in iron roof construction and installment, about 70 percent of it goods are sold domestically. The main obstacle to expansion of this medium-size company is lack of qualified workers, even though the company pays wages above the levels of civil servants and other private employers. The company provides basic in-house training to workers.

Chiameng Rice Mill Corporation Co., Ltd, founded in 1937, originated from the first rice mill in Bangsue, Bangkok. By 1955, the company started exporting Jasmine rice under the brand name "Golden Phoenix", known as "Hong Thong" rice in Thailand and widely recognized for its swan logo. This family company, with its headquarter in Bangkok, has four branches and produces the full circle of jasmine rice products, starting from seeds, processing, quality-enhancement to packaging and distribution. The company has invested continuously in modernizing its technology, which it considers superior to its competitors. The main foreign competition includes basmati-rice producing companies from India and Indonesia.

There is little competition in the input market as the company purchases directly from farmers, selecting high quality unhusked rice or which it pays a price premium. The location of the Sri Sa Ket branch was chosen for raw material supplies and land area. This branch employs around 150 workers with a salary of around Bt6,000 to Bt6,500. The main problem is lack of skilled labor.

Kawna Kaisod Co.Ltd., a Thai company established in 1981 with BOI support, began chicken export in 1993. It belongs to a group of five companies, whose activities range from breeding and broiler farms, a frozen chicken factory and a chicken feather factory. The company invests regularly in upgrading of its technology and exports about 80 percent to Europe and Asia. Raw materials are sourced mostly from local suppliers. Since its foundation, employment has increased almost every year to reach 1,400 employees in 2004. Only 15 percent of the workers are on monthly contracts. The main obstacle in employment is the lack of qualifications of the employees. A part of the profits is reinvested to avoid the need for bank loans.

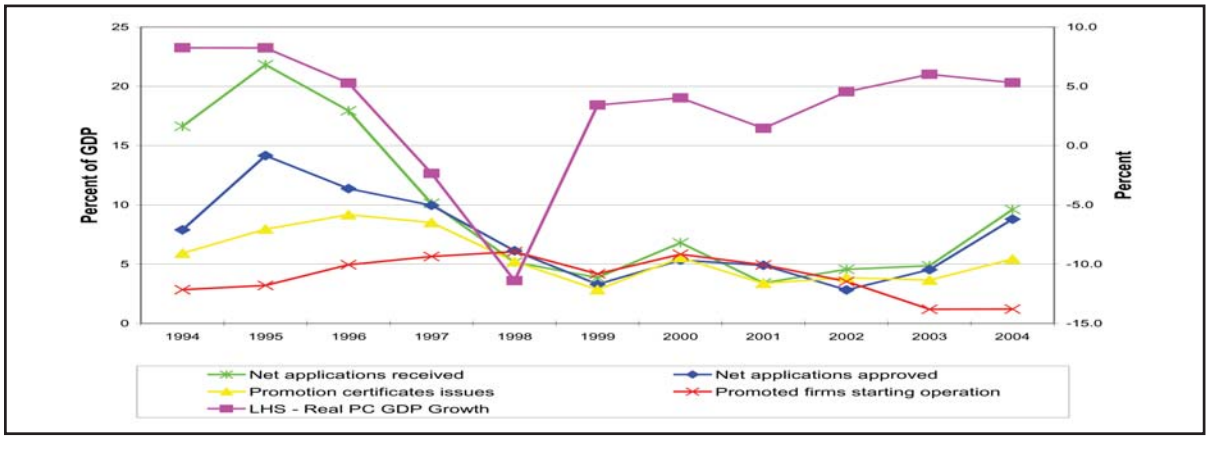
Khon Kaen Cho Thawee Co., Ltd is a truck and trailer company was founded by a former rice mill owner. The owner relied on the know-how of his foreign-trained sons to expand over the last 30 years its business. In the mid-1990s, the company entered a joint venture with Emil Doll Gmbh to upgrade its technology. The foreign company selects raw materials and is in charge of boosting production efficiency. The most important products today are trailers and half-trailers that can handle heavy freight on every type of road. Some trailers have anti-vibration systems as well as axle systems that allow every wheel to turn freely enabling them carry manufactured concrete weighing up to 160 ton per block. The company is careful to select only high-quality inputs, most of which are imported from abroad. Four fifths of the customers are foreign, and much of the domestic customers are state-owned companies. The company expanded from around 200 permanent employees in 1994 to 300 employees after the merger, before it declined to 150 workers after the Asian crisis. Today, it has recovered to 400 employees. Salaries, which were cut by about 20 percent in 1997, are on average Bt8,300. The main problem is lack of qualified labor. The company reinvests most of its profits, but also takes out Bank loans to fund capital investment.

Carpet Maker Co.,Ltd. is a joint venture of Thai business people, established in 1985 in Khon Kaen. Originally producing silk, it started in 1987 to produce carpets for domestic market, and began in 1998 to focus on exports. Today, exports account for 80 percent of total sales. In contrast to its technologically more advanced two main competitors, the company specializes in high-quality handmade production. Cloth and wool raw materials are imported from Europe, while the glue is ordered from a domestic supplier. The company had 335 employees in 2004, compared to 270 employees in 2001. About 60 percent are monthly employees, receiving a salary of about Bt6,000. One important obstacle is to find qualified employees for executive level responsibilities. The company draws on

Board of Investment Promotions

The Board of Investment (BOI) is a powerful instrument of industrial policy in Thailand. Established in 1960, its objective is to promote new investment through providing tax privileges and import duty exemptions. The 1977 Investment Promotion Act empowers the BOI to grant various fiscal and non-fiscal incentives for foreign and domestic investment that meet national economic development. They include exemptions from import duties, corporation income tax and dividend tax; and permissions to bring in expatriate worker, own land and operate in otherwise prohibited industries for foreign firms. In the first two decade of its existence, the basic thrust was to support capital-intensive industrialization. In 1983, the emphasis shifted towards promoting export orientation. Explicit criteria for the granting of investment promotions were introduced for the first time. They included the generation of foreign exchange through export; employment creation; utilization of local raw material; and industrial decentralization. However, the BOI system still kept many small and medium firms out of exporting or of supplying exporters, as it was mostly large firms that received BOI promotional benefits. During the last years, about 20 to 30 percent of promoted investment was from Thai companies, 40 to 50 percent from foreign companies, with the rest accruing to joint ventures. In general, the BOI has been a follower, not a leader. BOI promotions tend to lag behind the business cycle. Figure 41 shows the amounts of investments from 1994 to 2004 along the four steps in the application procedure: from valid ("net") applications to approvals, issue of promotion certificate and the start-up of factory operations. While the amount of net applications declined in line with GDP growth during the Asian crisis, the value of promoted investment as percentage of GDP started declining in 1999 and increased only in 2004, about four years after the recovery process began. The investment of promoted firms that started operations is still no more than one percent of GDP in 2003 and 2004. The same trends are evident at the sectoral level. For example, not until the mid-1980s, after a large devaluation, took the electronics sector really off, and the BOI started issuing more electronics promotions in 1987 than in its entire existence to date (Christensen et al 1993). In any case, to the extent that tariffs and taxes have become less important over time, the importance of BOI incentives has declined.

Figure 41: BOI Applications, Approvals, Certificates and Start-Ups (% of GDP), 1994 - 2004



BOI Zones

Since 1987, BOI investment promotions pursue the objective of regional development. The country was divided in three zones based on proximity to Bangkok, and the incentives offered were differentiated according to the zone a business is located in. The zones evolved over time, and as of today, Zone 1 comprises Bangkok and Vicinity and Zone 2 provinces from the East, Central, West and Phuket in the South (Figure 43).

How effective has the zoning policy been? The ultimate criteria of success would be regional convergence, which we have already investigated. A weaker yardstick is to investigate the distribution of BOI allocations of investment promotion certificates by regions and zones. Even here, the influence of BOI is limited, as private investment decisions are influenced by a range of factors. In spite of the BOI zoning policy, the investment promotions are concentrated on Bangkok and Center (Figure 42). From 1997 to April 2005, the Northeast's share averaged 3.8 percent, compared to a GDP of 11 percent. The North and the South, with GDP contributions of about 9 percent, received 3.2 percent and 6.4 percent on average, respectively.

However, the BOI zoning has succeeded to the extent that investment has shifted from Bangkok to Zone 2 areas. Even this development is likely to have resulted also from congestion and high land rents in Bangkok. The overlap of investment promotions and manufacturing employment confirms this picture (Figure 43.B). In the North, Northeast and South, some manufacturing activity has emerged in large provinces with adequate infrastructure and low wages. Even those firms investing in Zone 3 locate typically as close as possible to Zone 1 in order to limit transport costs while maximizing investment incentives. For example, about one half to three quarters of Northeast investment promotions go to Nakhon Ratchasima, which is in the Southwest corner of Zone 3, and close to Bangkok. Overall, the BOI zoning policy has influenced the spatial pattern of industrialization, but it has failed to induce widespread industrialization beyond Bangkok and the Center.

Figure 42: BOI by Regions and Zones (%)

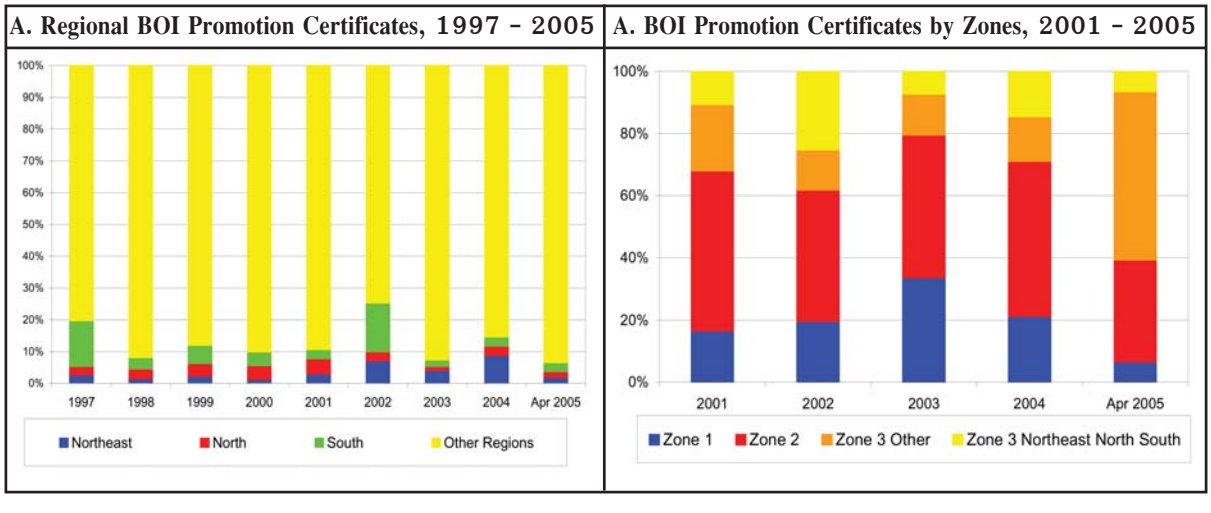
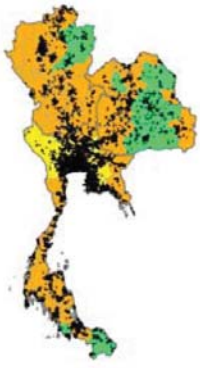
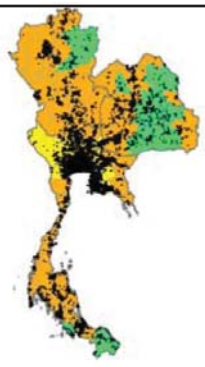
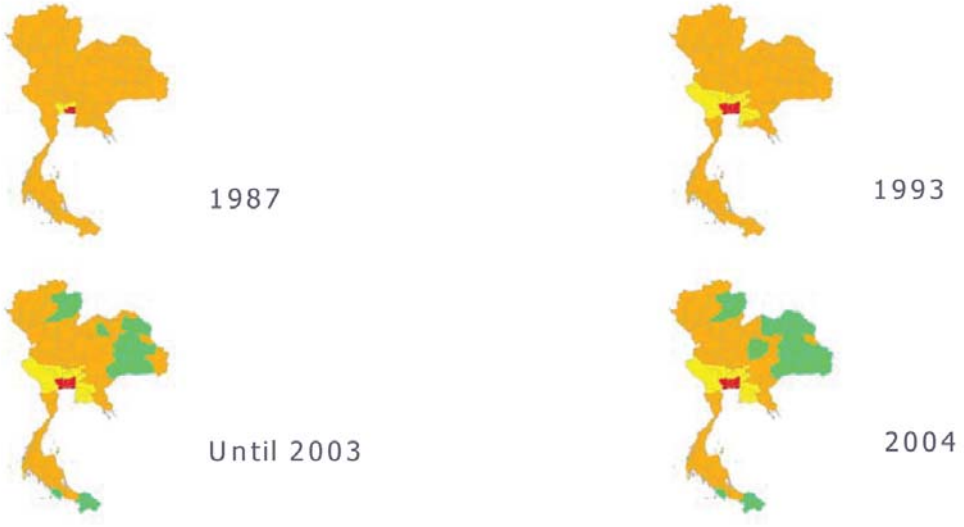


Figure 43: BOI Investment Zones

A. BOI Zones 2005	B. Manufacturing Employment, 1996/7 and 2001/2
	

C. BOI Zones, 1987 to 2004



Box 5: Eastern Seaboard Program

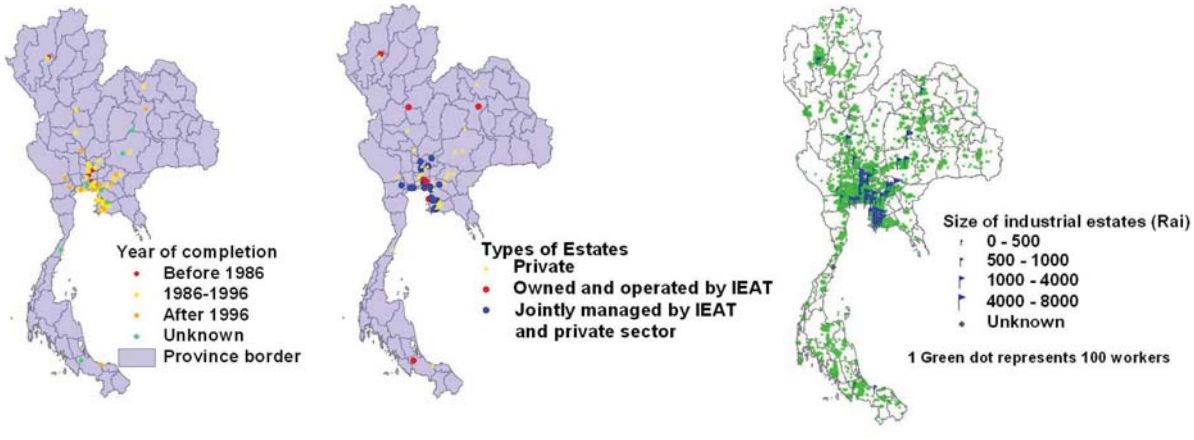
As part of the general policy switch from import-substitution to export-promotion, Thailand launched the Eastern Seaboard Program in the 1980s with the support from the Japanese government's Overseas Economic Cooperation Fund. This is the most ambitious attempt to promote infrastructure-led development of an area outside Bangkok. The project was organized around the newly discovered natural gas supply in the Gulf of Thailand. The plans included initially large scale investment in heavy industry, ranging from steel mills to gas and oil processing. In the end, these most ambitious projects were scaled back for financial reasons, but two sea ports (Map Ta Phut and Laem Chabang), a sizeable industrial estate and an export promoting zone were established. This area of three million people is in Rayong province up to 190 km distant from core Bangkok. The export-oriented factories were a success and contributed to the export boom in the late 1980s and early 1990s as well as the economic recovery from the Asian Crisis. By 1997, 200 companies had relocated from Bangkok to the Eastern Seaboard.

Industrial Estates

Industrial estates operated by the industrial estate authority of Thailand (IEAT) are a second instrument of the RTG for promoting investment. The 1979 IEAT act provides special incentives for investors locating in industrial estates situated in regional areas. These industrial estates comprise both general industrial zones and export-processing zones. The incentives are similar to those offered by the BOI, with the principal difference that IEAT grants investment privileges only to investment projects located in the industrial estates. Apart from industrial estates, there are industrial zones created by Ministry of Interior, privately-run industrial parks as well as industrial estates managed jointly by the public and private sector. Most industrial estates were created during 1986 to 1996, before demand for additional industrial estates was cut short by the Asian crisis (Figure 44).

Industrial estates have failed to promote investment diversification to remote areas. The principal reason is that supply driven infrastructure projects are unlikely to succeed without a clear market demand for the services provided. Industrial estates themselves are located primarily in Zone 1 and Zone 2. Since industrial estates offer similar incentives as those presented by Zone 2 or Zone 3, firms have little reason to relocate to Zone 3. There are only five industrial estates or parks in the Northeast, four in the North and two in the South. The bulk of industrial estates are located in the Eastern Seaboard area (Box 5) or in central provinces just north of Bangkok. These industrial estates have been successful in forming clusters of companies, especially in Bangkok, the East and the Central region. Industrial estates have attracted foremost foreign firms and large Thai firms, but much less small-and-median enterprises. Nevertheless, firms from industrial estates near regional urban centers typically form various linkages to the local supplier network of smaller firms in the urban area.

Figure 44 : Industrial Estates

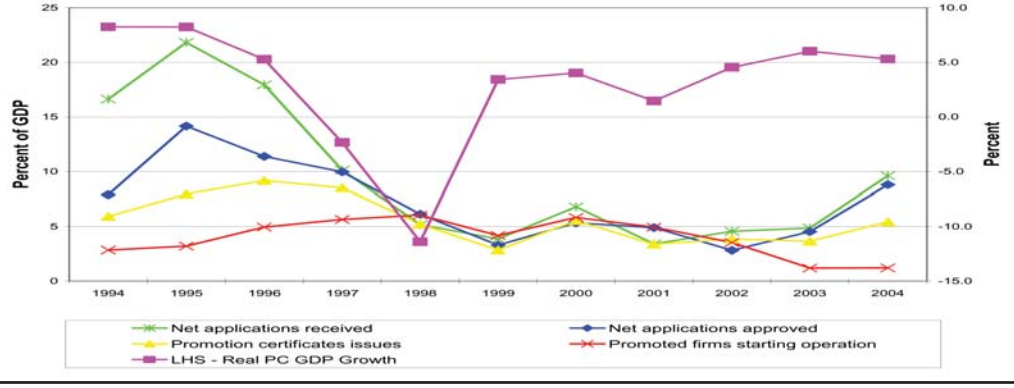


Construction Permits

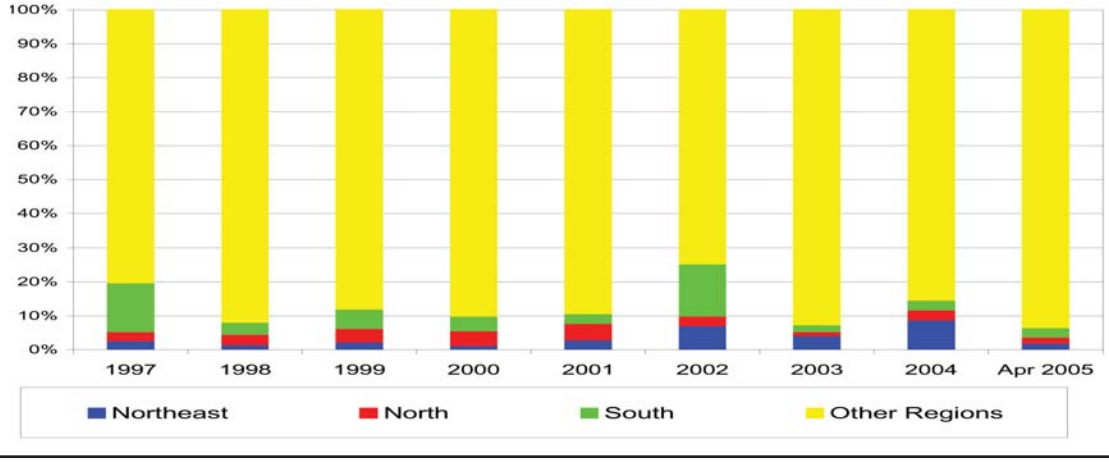
Construction area permits are typically considered leading economic indicators because they tend to increase or decrease before the economy/business cycle changes as a whole. For example, if building permits increase and residential construction is growing, one can expect an increase in demand for durable goods to follow, such as major appliances that will be placed in new homes. The increase in building permits foreshadows the increase in the demand for durable goods. Figure 45.A shows that residence, commerce, industry and other construction area permits declined already in 1995 or 1996, one to two years before the Asian crisis. However, with the exception of residence permits, the recovery in the construction indicators is sluggish. In the same way as this indicator may tell us something about the status of the business cycle, it can also inform us about the regional distribution of economic activity. Figure 45.B displays the shares in total construction area permits by region from 1995 to 2003. Only the South and Center increased their shares during this period. The Northeast's share declined since 2000 and accounted for no more than 5 percent of all construction permit in 2003, the lowest share since 1992.

Figure 45: Construction Area Permits

A. Construction Area Permits and Real Per Capita GDP, 1989 to 2003



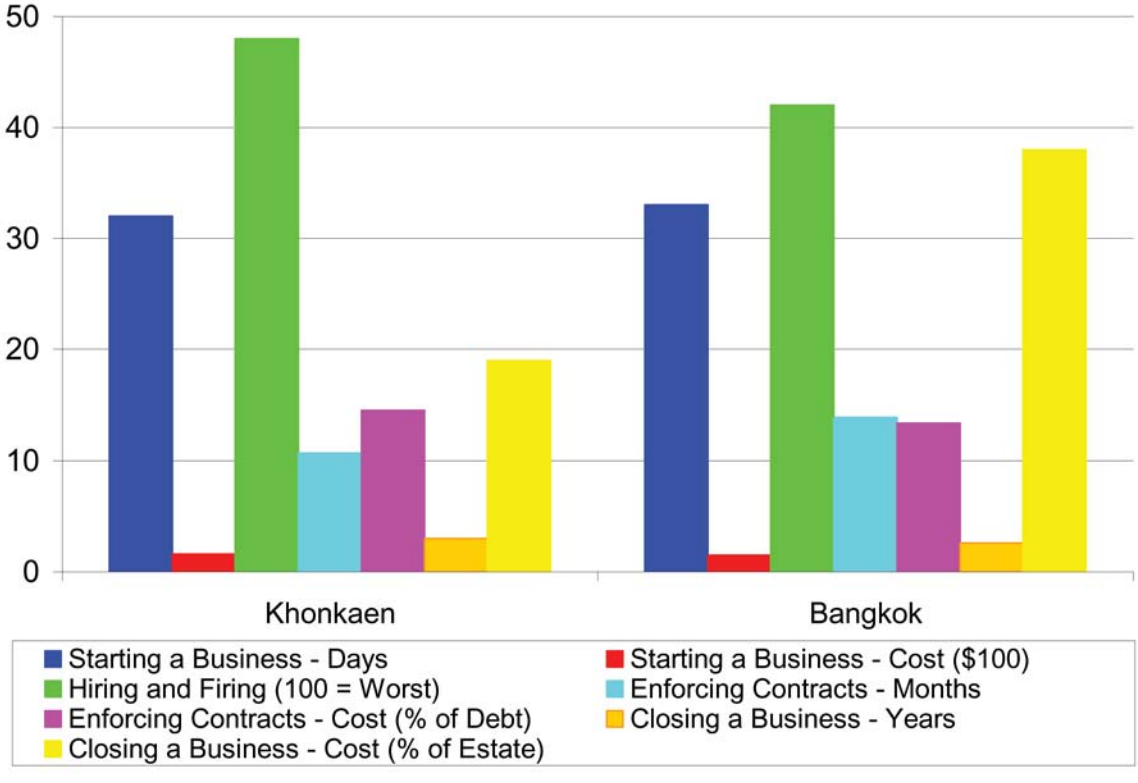
B. Regional Share in Total Construction Area Permits, 1995 to 2003



Business Regulations

Business regulations affect directly the productivity of investment and economic activity of micro to large enterprises. It covers a range of issues, from the costs to starting a business to the costs of closing a business. Measuring quantitatively costs of doing business has long been a challenge. Recently, the 2004 and 2005 World Bank Doing Business Surveys proposed a new methodology based on quantitative indicators of business regulations and their enforcement. These surveys of 145 countries referred to a business or workers of precisely specified characteristics which operate in the country's most populous city. During spring 2005, we returned to the same respondent as for the 2005 Thailand survey with the same questionnaires apart from one key modification. The location of the business was assumed to be Khon Kaen, the administrative center of the Northeast, rather than Bangkok. Five modules of the original survey were amenable to this adjustment (Starting a business; hiring and firing workers; enforcing contracts; closing a business, and registering property). The responses for Bangkok and Khon Kaen are shown in Figure 46. The differences are generally minor. Compared to Bangkok, the costs of doing business in Khon Kaen are no higher, and perhaps somewhat lower. If enterprises do not locate to Khon Kaen, government red tape does not appear to be the reason.

Figure 46: 2005 Doing Business Survey – Khon Kaen and Bangkok



Banks

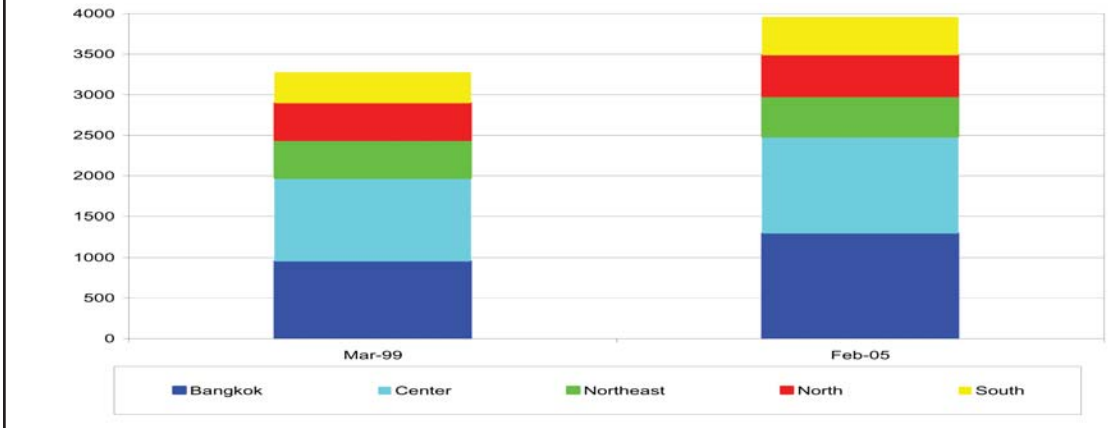
Thailand's economic growth came along with a rapid development of the financial sector. Broad money (M2) increased from about two-fifths of GDP in the early 1980s to 90 percent in the early 2000s. This is a ratio far higher than the norm for a country at Thailand's income level. Over the last 30 years, the financial sector expanded also in the Northeast. The amount of deposits mobilized by commercial banks increased from 10 percent of Northeast GDP in 1975 to 22 percent of Northeast GDP in 2004. This is only moderately lower than the numbers for the North, South or the Center. Only Bangkok, Thailand's financial and commercial hub, towers above the rest, with a deposit-GDP ratio of 110 percent in 2004. This points to the size of the Bangkok market and the ties of commercial banks to large enterprises with headquarters in the capital.

Most branches of domestic commercial banks are concentrated in Bangkok and Center, reflecting the economic potential of these regions. About two thirds of all branches were located their in 2005, slightly more than in 1999. This compares to 13 percent in 2005 for the Northeast, down from 15 percent in 1999 (Figure 47.A). While this is lower than the regional population share, it exceeds the Northeast's GDP share of 10 percent. Furthermore, the number of commercial branches increased almost fourfold in 30 years, from 102 in 1975 to 468 in 2005. Finally, branches are also more equitably spread than deposits and credits. Bangkok accounted in February 2005 for two thirds of all deposits, the Center for one fifth, and the Northeast, North and South each for five percent (Figure 47.B). Credits are even more concentrated on Bangkok, which accounts alone for three quarters of all credits. The Northeast's share was five percent in 2005, almost the same as in 1999. The Asian crisis was linked to overexposure to foreign debt and risky loans. While banks have benefited from the acceleration in economic activity since the late 1990s, they have remained more cautious in managing funds and providing credits. Broad money, which had increased to over 100 percent in the early 2000, declined again to 90 percent in 2004. While the amount of deposits increased by 14 percent in real terms between 1999 and 2005, the value of credits declined by 11 percent over the same period, even though lending rates have declined (Figure 47.C). Credits exceeded deposits by 13 percent in 1999, whereas deposits exceed credits in 2005 by the about the same share. Commercial banks in the Northeast have also become more conservative in lending. Credits exceeded deposits by 20 percent in 1996 and 8 percent in 1999, but deposits surpass credits by 17 percent in 2005. In fact, only commercial banks in Bangkok released loans in excess of deposits in 2005.

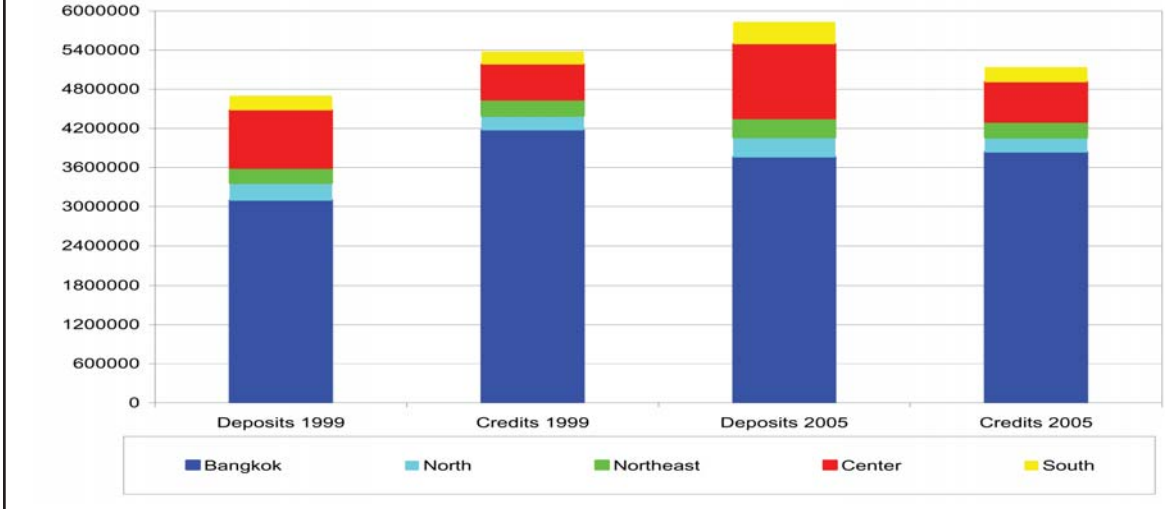
While credit supply to enterprises is sluggish, household and consumer credit has increased by annually 15 percent over the last three years. Much of this increase was due to influential public financial institutions. In 2004, about one quarter of all credits was extended by public financial institutions. The three main public financial institutions are the Government Saving Bank, the Government Housing Bank and the Bank for Agriculture and Agricultural Cooperatives (BAAC). They accounted in 2004 each for between 7 to 8 percent of the total credit extended. These institutions are well presented through branches in provinces and districts throughout the country.

Figure 47: Commercial Bank by Regions, 1999 and 2005

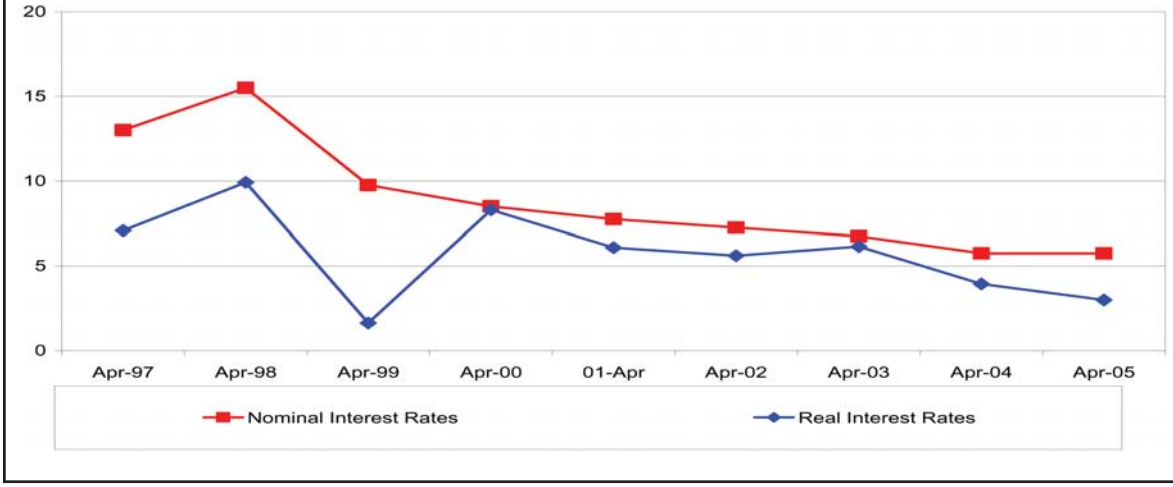
A. Number of Branches by Region, March 1999 and February 2005



B. Deposits and Credits by Region (Million Baht, 1988 Prices), March 1999 and February 2005



C. Commercial Bank Lending Rates, April 1997 to April 2005



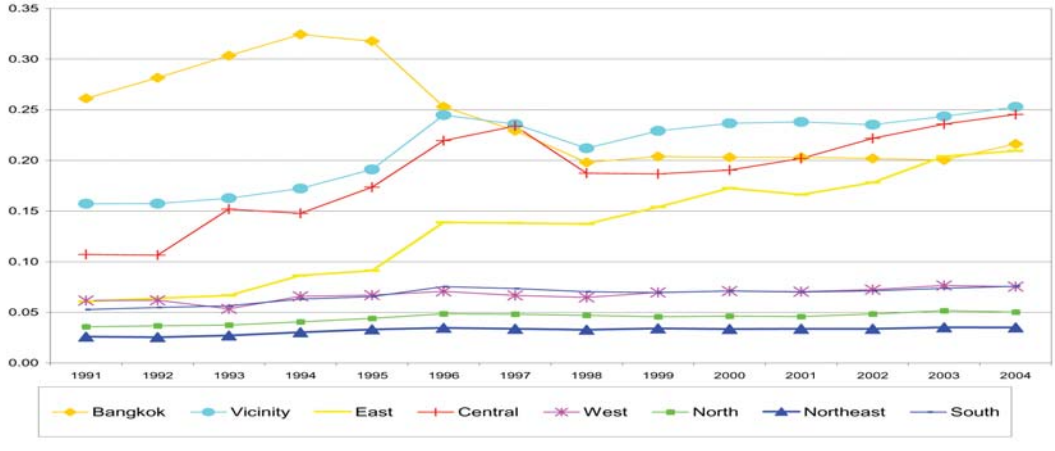
Workers

Jobs

Low living standards in the Northeast are to a large extent a reflection of the lack of well-paying jobs. Unsurprisingly, one of the most common complains from Northeast's villagers is the absence of work that pays a decent wage. Nevertheless, there are different views on the performance of Thailand's labor market. Some characterize it as flexible and efficient, pointing to low unemployment rates, low labor organization, and high worker mobility. Others argue that labor protection laws reduce the competitive edge of firms. And yet others point out that it is inequitable and fails to deliver on job security. The following sections attempt to characterize the contribution of the labor market to regional convergence in economic well-being. After all, what is central is employment growth such that Northeast workers find gainful employment, have adequate productivity levels that are fairly compensated, and achieve reasonable income security for workers. We will first look at labor supply in terms of quantity, quality, and prices, and then explore the impact of two labor market institutions (minimum wage and labor protection act). Finally, no discussion of the Northeast labor market would be complete without investigating worker migration to other regions. Perhaps even more than for the rest of this report, it will be important to look at the Northeast relative to the other regions. The discussion will focus on the period from the early 1990s to 2004, which allows us to see the workings of the labor market through the experience of the Asian crisis.

But first of all we set out the basic challenge: raising labor productivity. Figure 48 plots regional GDP divided by employment from 1991 to 2004. Throughout the entire period, Northeast workers are the least productive. In 2004, they produced only a sixth of what the average worker in Bangkok, Central, East and Vicinity generated, and reached no more than 70 percent of the output of a Northern worker. While labor productivity grew by annually 2.3 percent, this was 0.4 percent less than in the North, 0.5 percent less than in Thailand overall and a remarkable 7.7 percent less than in the East. Ultimately, lifting living standards in the Northeast will only be possible if this productivity gap is closed.

Figure 48: Labor Productivity, 1991 to 2004

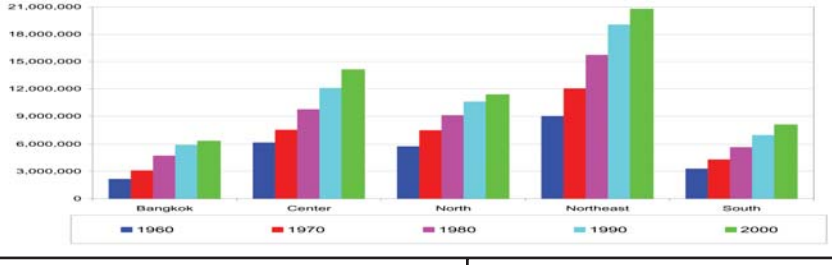


Demographics

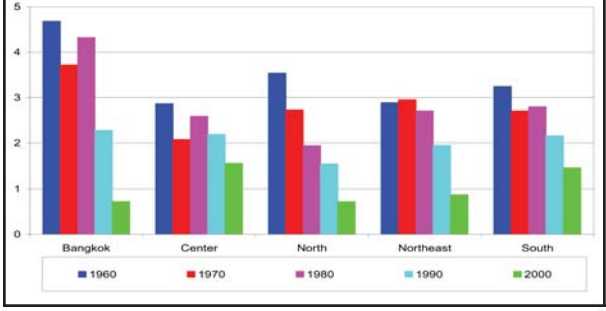
Population size and population growth are intimately related to the labor market. Steady increases in the labor force and employment are one important driver for higher national income. Thailand's population has grown rapidly. It more than doubled from 26 million in 1960 to 64 million in 2004. The population increased in all regions, but especially in Bangkok (Figure 49.A). Its population tripled between 1960 and 2000, compared to a 2.5 times rise in the South, a 2.3 times rise in the Northeast and Center, and a doubling in the North. One factor behind these differences is fertility rates. Due to rising incomes and government-sponsored family planning programs, the total fertility rate declined from over 6 livebirths of women in childbearing age in 1964/65 to around 2 in the mid-1990s. In turn, the national population growth rate fell from 3.1 percent in 1960 to less than 1 percent today, or from 2.9 percent to below 1 percent in the Northeast (Figure 49.B). In spite of this decline, the Northeast population is still younger than in other regions, apart from the South. Around 30 percent of the population are younger than 15 years of age, compared to no more than 18 percent in Bangkok or 23 to 24 percent in the Center and the North (Figure 49.C). This suggests that large increases in population are likely to persist for some time. Even with lower fertility rates, the large increase in the number of young adolescents implies strong increases in population numbers. This poses major challenges for policy-makers in providing accessible education and employment opportunities as they reach working age. But there is also an upside. Schooling of the current and future generations will be more egalitarian than of past generations. This will be an important force for regional convergences over the long-term. Furthermore, a very high dependency ratio makes saving difficult for most working individuals and families. This problem should decrease as today's young adolescents reach working age, presenting the opportunity for reducing poverty - as long as there are jobs for them.

Figure 49: Demographic Indicators

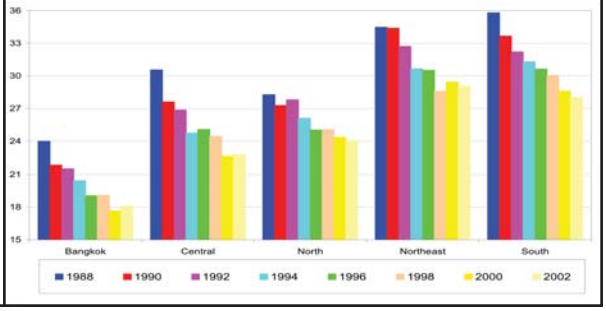
A. Regional Population, 1960 to 2000



B. Regional Population Growth Rates, 1960 to 2000



C. Household Members Aged Less than 15 Years, 1988 to 2002



Working-Age Population

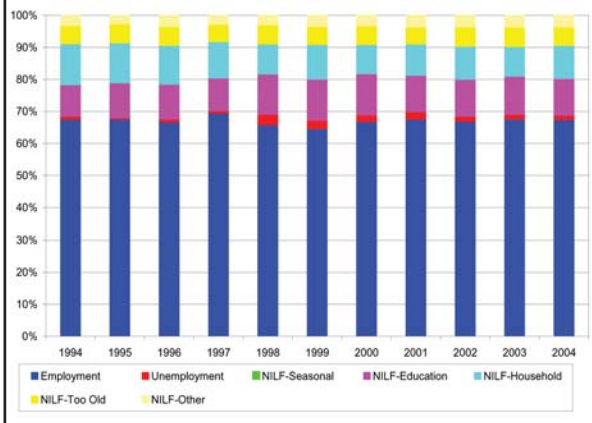
Job creation is important from both an economic and a social point of view. Being without a job can undermine the self-esteem of workers and the well-being of their families. Between 1994 and 2004, the labor force has grown from around 32.5 million to around 36 million in Thailand, and from 10.5 million to around 12 million in the Northeast. Figure 50 looks at the changes in the composition of the population aged 15 years or older ("adults") over the last decade. Figure 50.A to Figure 50.E refer to August of the year, Thailand's harvest season. A number of points stand out.

First, unemployment, including seasonal unemployment, is low. It affected no more than 3 percent of the adult population in August. Even during the Asian crisis, where GDP declined by 11 percent in 1998, did not increase unemployment beyond that level. This suggests that almost all adults looking for jobs were able to find some kind of job. The high adaptability of the Thai labor market to changes in labor demand is likely to be linked to two factors: downward-flexibility of wages and the safety net of farm employment. Second, the Northeast employment share has declined from a high level. Over four fifths of the adult population were part of the labor force in August 1991. The share dropped sharply during the Asian crisis and was in August 2004 still some 7 percent below the 1994 level. The North and the Center experienced similar trends, while the employment shares remained constant in Bangkok and the South. The declining importance of agriculture explains some of these changes. Bangkok is unaffected, as agricultural employment is negligible, as is the South, where the agricultural sector remains viable. The South's employment share is now as high as the Northeast's, equal to close to three-quarters of the adult population. Third, the Northeast has the lowest employment shares during the agricultural slack season in February. Non-seasonal and seasonal unemployment in the Northeast rose to as much as 8 percent around 2000 and remained still at 4 percent in February 2004, around 2 to 3 percent higher than in other regions (Figure 50.F). However, the gap in employment shares from August to February declined from 12 percent in 1994 to 8 percent in 2004, again related to the declining agricultural work force. Fourth, other factors behind lower employment shares are education and household work. The shares of Northeast people staying out of the labor force in order to attend schools or to stay home for household work increased over the last decade by over 50 percent and over 40 percent, respectively. These increases are the highest in any region.

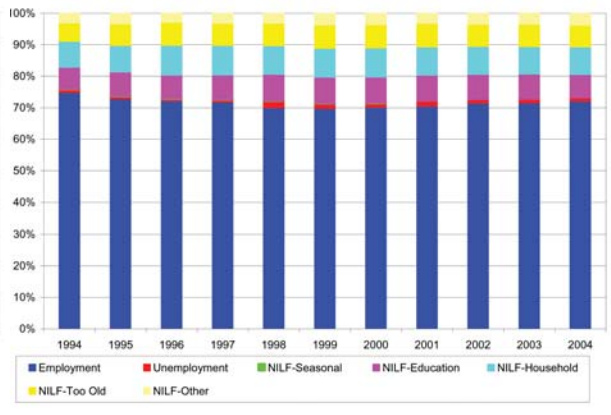
Overall, unemployment is low but employment shares have declined substantially. Some of this drop should not be a cause for worry. People postpone their entry to the labor market to invest more in education and become more productive workers later. Education also changed expectations so that fewer workers are willing to take on physically demanding farm labor jobs. But labor force participation also declined for bad reasons: labor demand declined during the Asian crisis and decent jobs have remained scarce since then. If half of the decline in participation rates was due to a "discouraged worker" effect, Northeast unemployment in August would be 5 percent rather than 1 percent.

Figure 50: Labor Force Composition

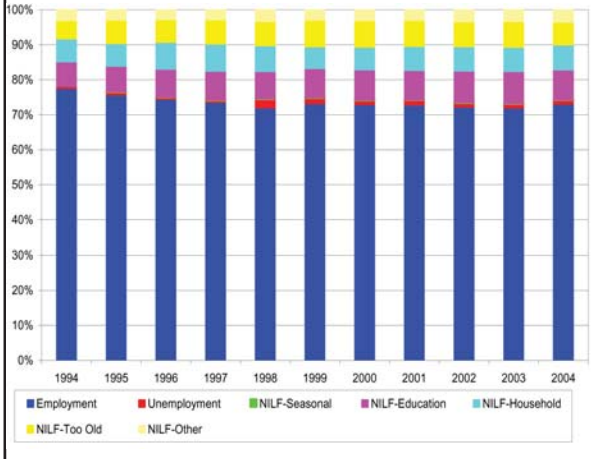
A. Bangkok – August



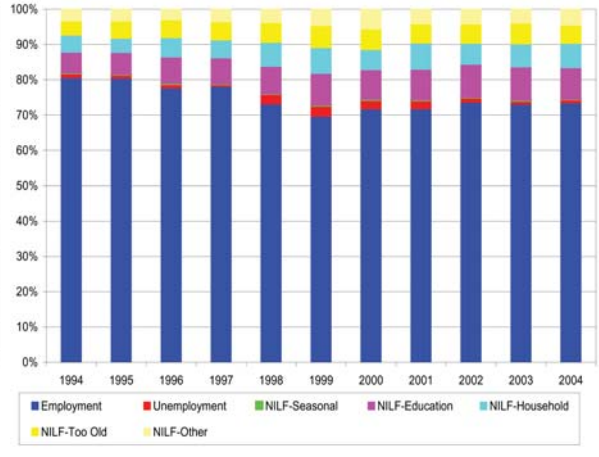
B. Central – August



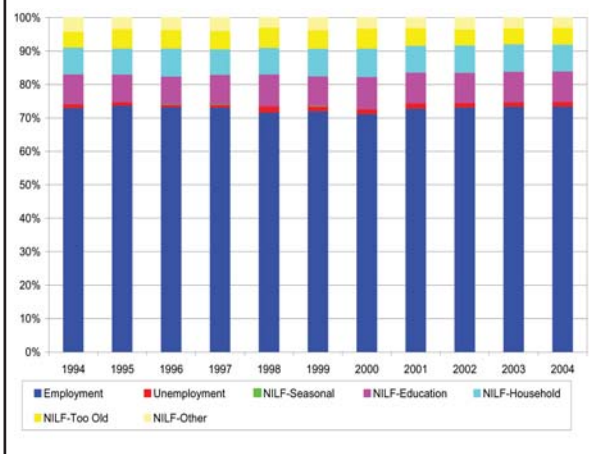
C. North – August



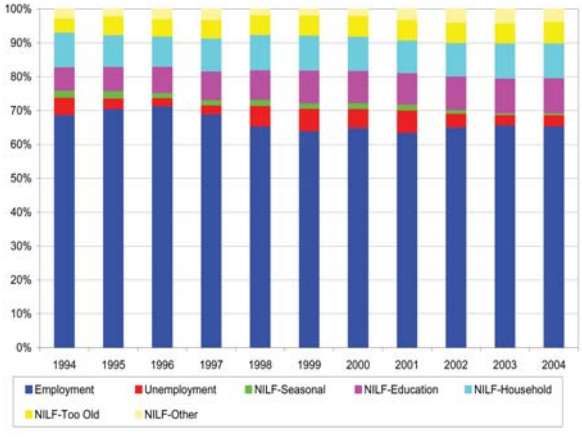
D. Northeast – August



E. South – August



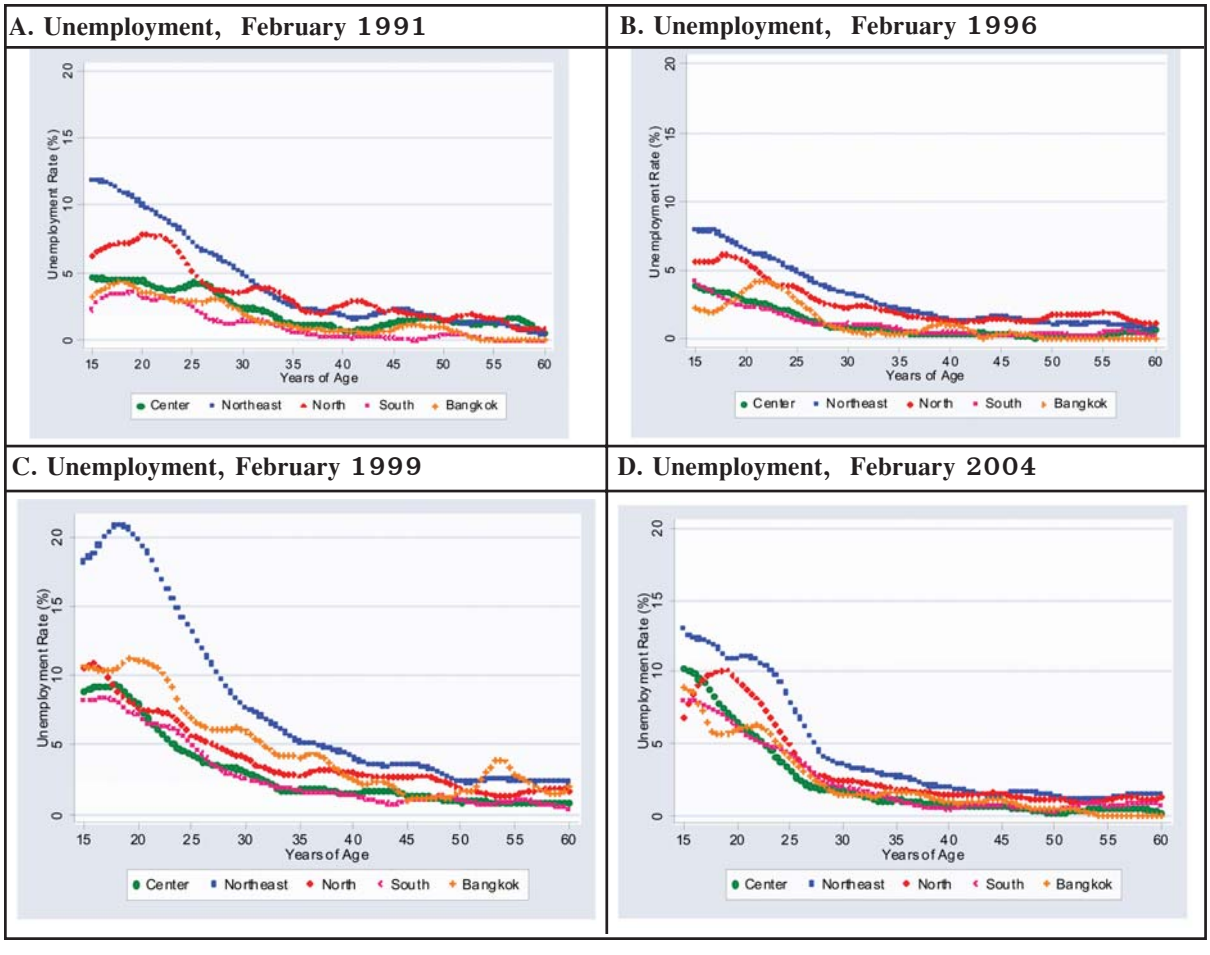
F. Northeast – February



Job Entry

While the Asian crisis in now almost ten years ago, the decline in labor force participation rates suggests that its impact is still being felt. The young entrants to the labor market are perhaps the group that has been affected most. Figure 51 looks at the trends in the regional shares of unemployment of the labor force by age. It shows four years: the early 1990s (1991), the last year before the crisis (1996), the peak of the crisis (1999), and the latest figure (2004). Three general features are worth emphasizing, although they apply especially to the Northeast. First, unemployment is higher at young age than at old age across all regions. Second, young workers are subject to the largest movements in unemployment rates. Employers adjust to changes in the economic outlook foremost by reducing intakes and increasing dismissals of young workers. Northeast unemployment rates for the age group of 15 to 35 year-old are the highest in the country. Third, young workers have not yet fully recovered from the Asian crisis. Across all regions, entry to wage jobs has become more difficult for the 15 to 20 year-olds. Unemployment for the 15 year-old labor market entrants in the Northeast is still around 50 percent higher in 2004 than in 1996.

Figure 51: Regional Unemployment Rates and Educational Attainment by Age (%)



Wage Employment and Skills

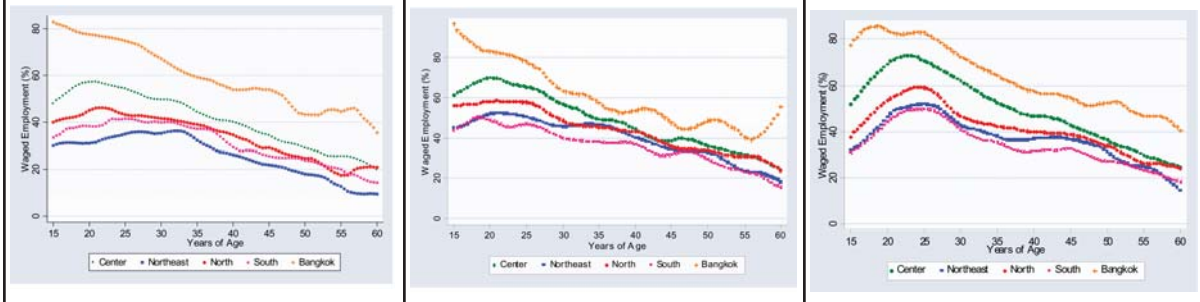
To understand the changes in the labor market since the early 1990s, this section takes a closer look at the characteristics of the employed ("workers"). With economic development, more people leave family work, primarily in agriculture, to take up wage employment. In fact, if people talk about jobs, they mean jobs that pay a wage. The share of Northeast workers who receive wages at the age of 35, increased from around 30 percent in 1991 to 45 percent in 1996 before dropping off to just under 40 percent in 2004 (Figure 52.A). Among workers aged 15 years or older, still two-thirds are in non-wage employment in Northeast. Up to the mid-1990s, the Northeast managed to close the gap to other regions but it widened again relative to Bangkok and Central after the Asian crisis. The share of workers earning monthly salaries is yet smaller, and increased by less, than the share of wage workers. It rose from around 9 percent in 1991 to 13 percent in 1996 and to 15 percent in 2004 in the Northeast (Figure 52.B). This is the lowest percentage in the country, and compares to over one in two workers in Bangkok. Similar to wage employment, the gradients at young age became steeper between 1996 and 2004. Overall, between 1991 and 2004, the average age increased from 31 to 34 for a wage worker and from 33 to 35 for a monthly salaried worker.

While increases in wage employment slowed after the Asian crisis, the education profile of the workers improved throughout the period. Figure 52.C compares education attainment for workers, wage workers and monthly wage workers between the Northeast and the rest of the country. Four points stand out. First, clearly, rising school enrollment has led to a better skilled labor force across the country. For example, the share of workers with primary education or less dropped from 90 percent in 1991 to 70 percent in 2004 in the Northeast, and from 77 percent in 1991 to 68 percent in the rest of the country.

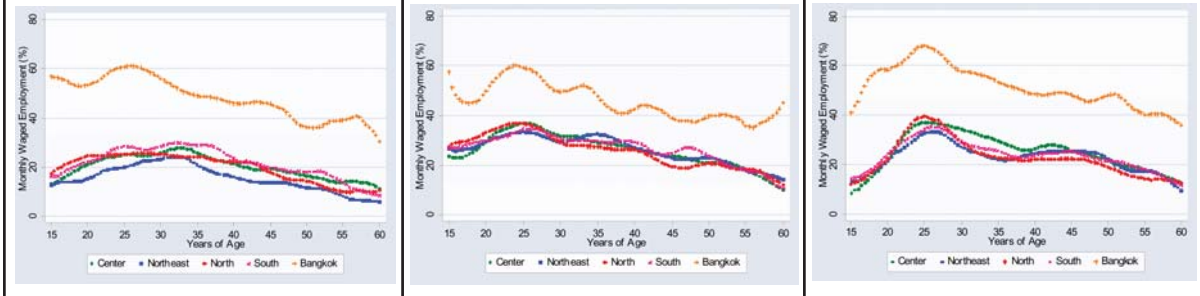
Second, wage workers have better education than workers, and monthly wage workers have higher degrees than wage workers, again both in and outside the Northeast. For example, almost one in two worker on a monthly payroll had vocational or university education in the Northeast, compared to one in five wage workers and one in ten workers. Third, the educational attainment has increased faster after the Asian crisis for all employment categories. For example, the share of monthly wage workers with vocational or university degrees increased by 10 percent between 1996 and 2004, after having declined by 3 percent between 1991 and 1996. This suggests that employers have become more demanding in terms of skill requirements. Finally, while the education profile of the Northeast is worse for workers and wage workers than the rest of the country, this is not the case for wage workers paid monthly. The only difference is that there are more workers with vocational education rather than university degrees. Workers with vocational education account for one third of all monthly salaried workers in the Northeast, compared to a quarter in the rest of the country. This finding squares with a generally worse education profile in the Northeast, as monthly salaried jobs are much harder to come by in the Northeast than in the Center or Bangkok.

Figure 52: Employment Composition

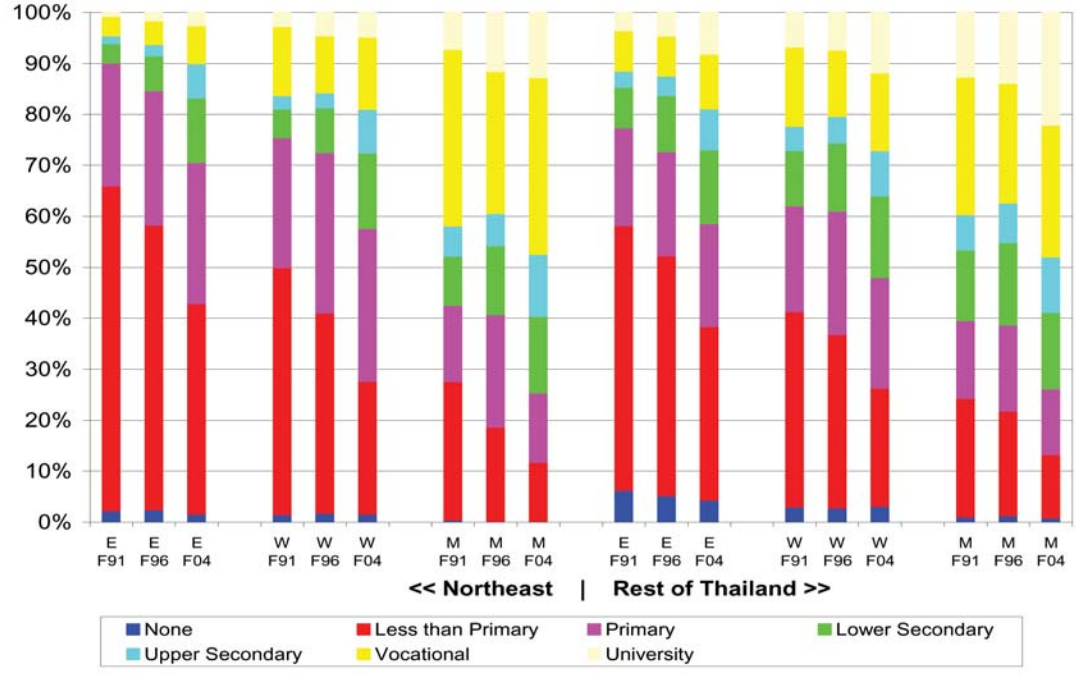
A. Wage Employment as Percentage of Overall Employment by Region; February 1991, February 1996 and February 2004



B. Monthly Wage Employment as Percentage of Overall Employment by Region; February 1991, February 1996 and February 2004



C. Educational Attainment of Workers (E), Wage Workers (W), and Monthly Wage Workers (M) of the Northeast and the Rest of Thailand (%); February 1991, February 1996 and February 2004



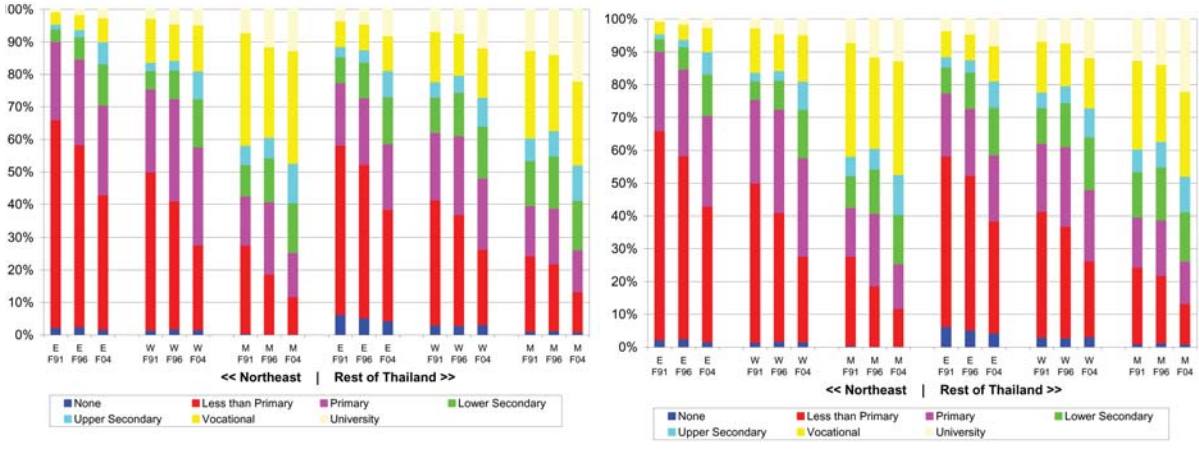
Occupation

The increases in education attainment, (modest) rise in wage employment shares and the reduction in seasonality at the microeconomic level, and the reduction in agricultural value-added at the macroeconomic level all point to changes in the occupational structure. Figure 53 shows the employment shares by sector of occupation, separately for each region, as before for 1991, 1996 and 2004.

Thailand has experienced a substantial adjustment across sectors. First, the importance of agriculture as job provider has declined across the country. The Northeast has seen the largest reduction of 20 percent, followed by the North, with around 15 percent, and the South, with around 12 percent. Remarkably, the Northeast had in February 2004 a smaller employment share in agriculture than the South. Nevertheless, agriculture remains the dominant employer, even during the off-season, still providing jobs to more than 45 percent of Northeast workers. Second, as expected, the importance of agriculture declines as we restrict attention to wage employment. For the Northeast, just under one quarter of wage workers, and less than five percent of monthly wage workers, are in agriculture. However, a revival of agriculture has taken place since the Asian crisis in terms of wage employment. In all regions outside Bangkok, wage employment shares in agriculture increased between 1996 and 2004. The South increased during this period agricultural wage jobs by a remarkable 20 percent. This suggests that commercial farming has done well over this period. Third, the key sector that provides monthly wage jobs in the Northeast, North or South is services rather than industry. About four-fifths of all monthly salaried position in the Northeast are provided by wholesale, retail, social and other services.

Overall, the labor market analysis shows that the employment and skill structures are different across regions. The Northeast typically fares worse than other regions. However, while these trends are persistent until today, employment has become older, more educated and somewhat more often wage paying across all regions since the Asian crisis. In addition, the Northeast narrowed the gap to other regions.

Figure 53: Occupational Structure by Region of the Employed (E), Wage Workers (W) and Monthly Wage Workers (M) (%), February 1991, 1996 and 2004

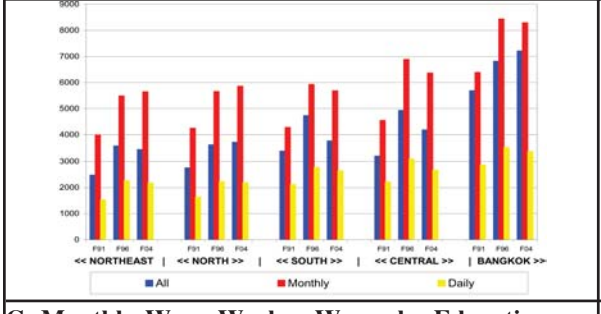


Wages

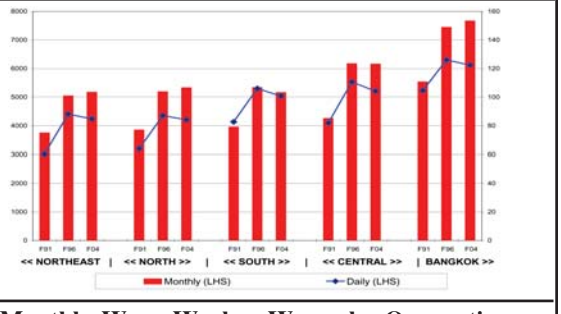
Perhaps the most important aspect of a job is the wage it pays. Figure 54.A shows average real wages received over the last month, including bonuses and overtimes pay, separately for workers on a monthly payroll, daily payroll and overall average. Northeast wages increased around 40 percent in real terms from 1991 to 1996, boosted by strong economic growth, and changed little from 1996 to 2004, reflecting the combined impact of Asian crisis and recovery. Monthly wages are about 140 to 160 percent higher in the Northeast than daily wages. Northeast wages were between 60 to 90 percent lower in 1991 than in Bangkok but the gap dropped to around 50 percent by 2004. The Northeast wage gap declined also relative to the other regions. Figure 54.B shows monthly wages separately for those paid monthly and those paid daily. The spatial and time trends are similar those of monthly wages. Differences in daily and monthly wages reflect foremost differences in skills and sector. Figure 54.C and Figure 54.D break down wages of monthly wage workers by education and occupation. Wages increase with higher education. A Northeast university graduate earned in the early 1990s almost 250 percent more than a worker with primary education or less. However, wages of university graduates in 2004 were still below the 1996 levels, and the wage premium fell to less than 200 percent. Upper secondary education earned lower wages than lower secondary education. The highest wages are earned in the non-commerce service sector in the Northeast. Agricultural wages have risen above those earned in commerce since 1996.

Figure 54: Wages in February 1991, February 1996, and February 2004

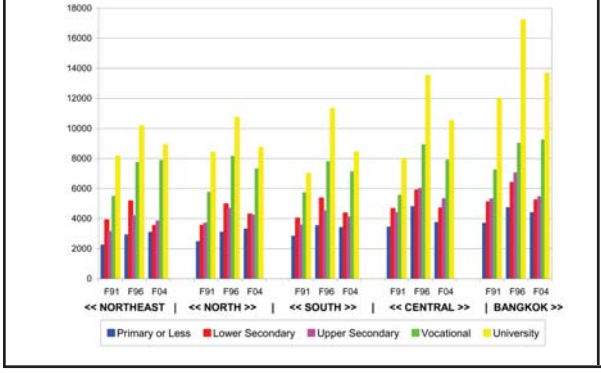
A. Wages during the last 30 Days



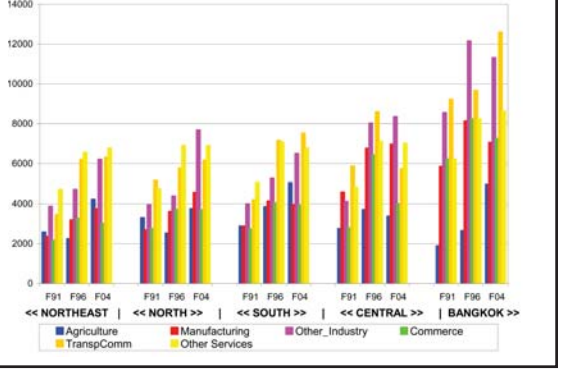
B. Monthly and Daily Wage



C. Monthly Wage Worker Wages by Education



D. Monthly Wage Worker Wages by Occupation



Returns

This section takes the analysis of wages and education one step further. It estimates returns to education over time using Mincer regressions. In its most basic form, log hourly wages are regressed on education, controlling for age, aged squared, gender, province and urbanization.[20] Figure 55.A to Figure 55.E show the coefficients on education levels from a series of such cross-sectional regressions for monthly wage workers. Education is divided into six attainment levels (less than primary, primary, lower secondary, upper secondary, vocational and university) and the returns are estimated relative to workers with less than primary education, the omitted category. The results confirm the wage analysis. Across all regions, education, and especially vocational and university education, yields a wage premium. The returns to education increased up to the mid-1990s and tended downwards since then. Furthermore, wage differentials tended to increase up to the crisis and have fallen since then. The Northeast stands out in two ways. First, the differences in the returns by education level are larger than in other regions. Second, the premium for vocational education is 200 percent larger than upper secondary education and only 50 percent smaller than university education. The corresponding gaps in Bangkok are 60 percent and 180 percent, respectively.

We can verify these findings using years of schooling an alternative measure of education attainment, drawing on the Socio-Economic Survey. Among monthly wage workers in the Northeast, another year of education increased monthly wages by 15 percent in 2002, compared to 18 percent in 1988 (Figure 55.F). The wage premium of another year of education is highest in the Northeast, followed by the North, Center, South and Bangkok.[21] The ranking is constant over time, apart from switching between the Center and South. The labor market signals the high value of education. This is not surprising. More remarkable is the lack of increases in the value of education over the last decade in spite of the export boom, and not just in the Northeast, but also Bangkok and the Center, Thailand's manufacturing centers. Traditionally, the low educational attainment of the majority of Thai workers appeared to be a serious constraint for Thailand to become a producer of technology-intensive products, as Thailand may loose its comparative advantage in labor-intensive industries compared to countries such as Lao PDR, Vietnam, and China that still have low labor costs. Yet, the lack of rising returns to education casts doubts over this hypothesis. The next sections will look at different explanations for this finding.

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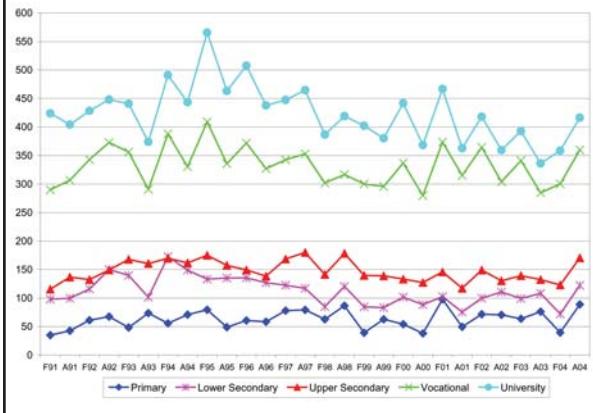
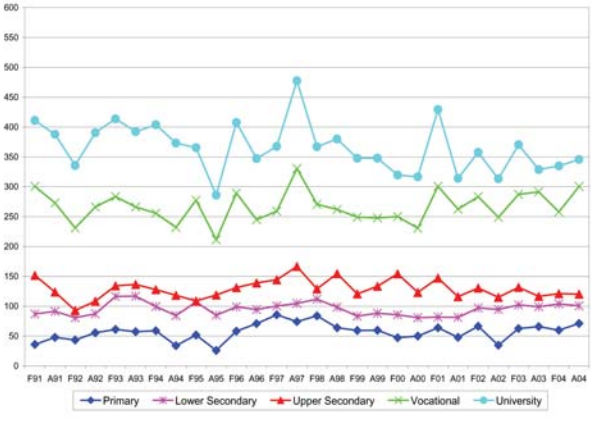
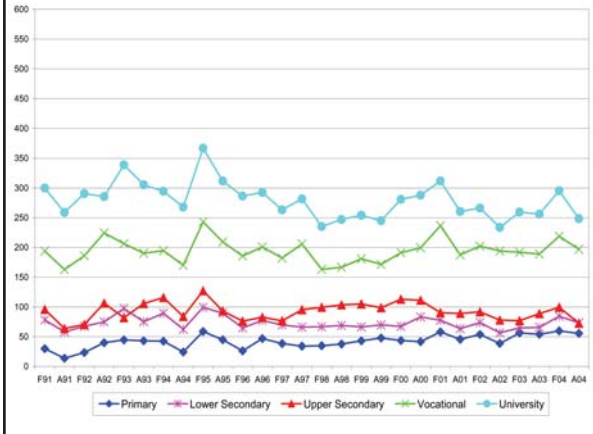
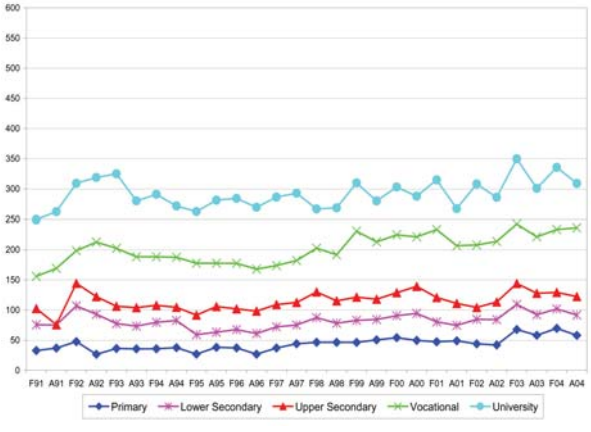
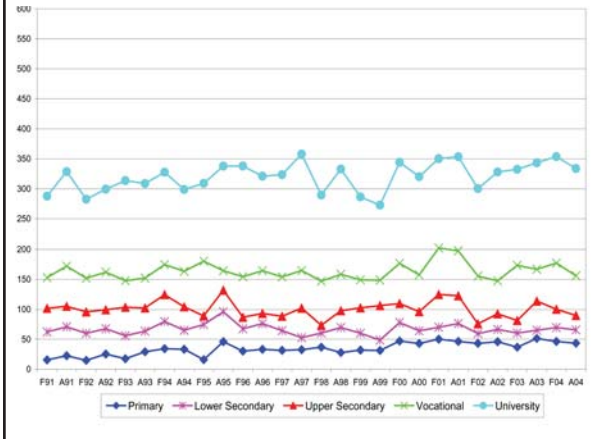
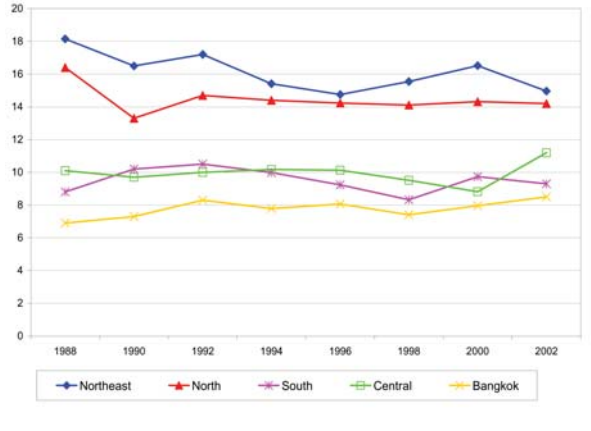
[20] The calculation yields, under certain conditions, private returns. Social returns would require incorporating the public costs of providing education net of any external effects (through endogenous growth other channels) of education (Psacharopoulos 1995). The analysis makes no attempt at measuring these effects, implicitly assuming that they have not changed differentially across skill levels over time.

[21] The returns to education levels are calculated using Kennedy (1981). Blunch (2004) reports similar estimates using SES data from 1994 to 2002. He notes that returns are overall lower with household fixed-effects, although the gradient remains similar. This comes at a cost of dropping household weights and households with one wage worker. Similarly, Hawley (2004) finds with LFS data from 1985, 1995 and 1998 that for the group of 24 to 35 year-old wage workers an additional year of schooling provides has a return of 11 percent. The return remained stable over the period.

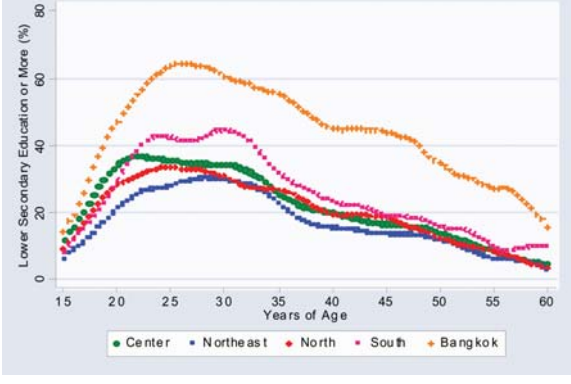
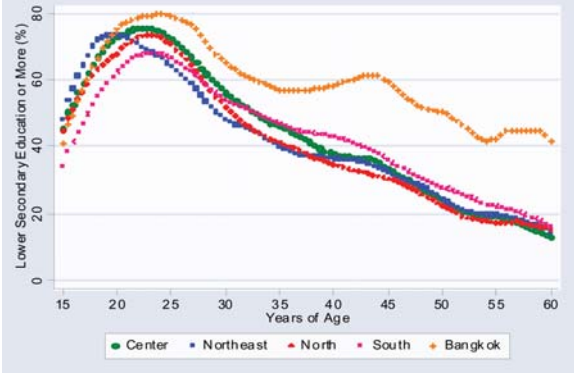
Figure 55: Returns to Education of Monthly Wage Earners Relative to Less than Primary

A. Northeast, 1991 to 2004, LFS	B. North, 1991 to 2004, LFS
	
C. South, 1991 to 2004, LFS	**D. Center, 1991 to 2004, LFS**
	
E. Bangkok, 1991 to 2004, LFS	**F. Return to another Year of Education, 1988 to 2002, SES**
	

Supply and Demand

One explanation is that the supply of educated workers has increased so quickly that it has outpaced rising demand of education, and hence suppressed returns to education. Clearly, education levels increased strongly across all regions and age groups since the early 1990s (Figure 56). The left column of Figure 57 shows relative labor supply for four adjacent skill groups (university to vocational; vocational to upper secondary; upper secondary to lower secondary; and lower secondary to primary). As schooling levels of young new entrants into the labor market increased, relative labor supply improved. Relative labor supply increased by between 30 to 100 percent over the entire period.The only exception is vocational education relative to upper secondary education, which decreased by 40 to 50 percent. Katz and Murphy (1992) developed a framework to derive relative labor demand from wage and labor supply trends. Following the methodology laid out in Sanchez-Paramo and Schady (2003), the right column of Figure 57 shows relative labor demand for a constant elasticity of substitution of 2 across skill levels.[22] Compared to the early 1990s relative labor demand declined for university, upper secondary and lower secondary education. In other words, only relative demand for vocational degrees increased. The same hold relative to 1996, with the exception that labor demand for university relative to vocational degrees remained constant in the Northeast.[23] These findings contrast with evidence from Malaysia (Tan and Gill 1998) and trade-oriented economies in Latin America (Sanchez-Paramo and Schady 2003). The lack of rising labor demand for higher skill levels suggests that Thailand does not engender the kind of rapid technological progress that would fuel wage growth in the formal sector.

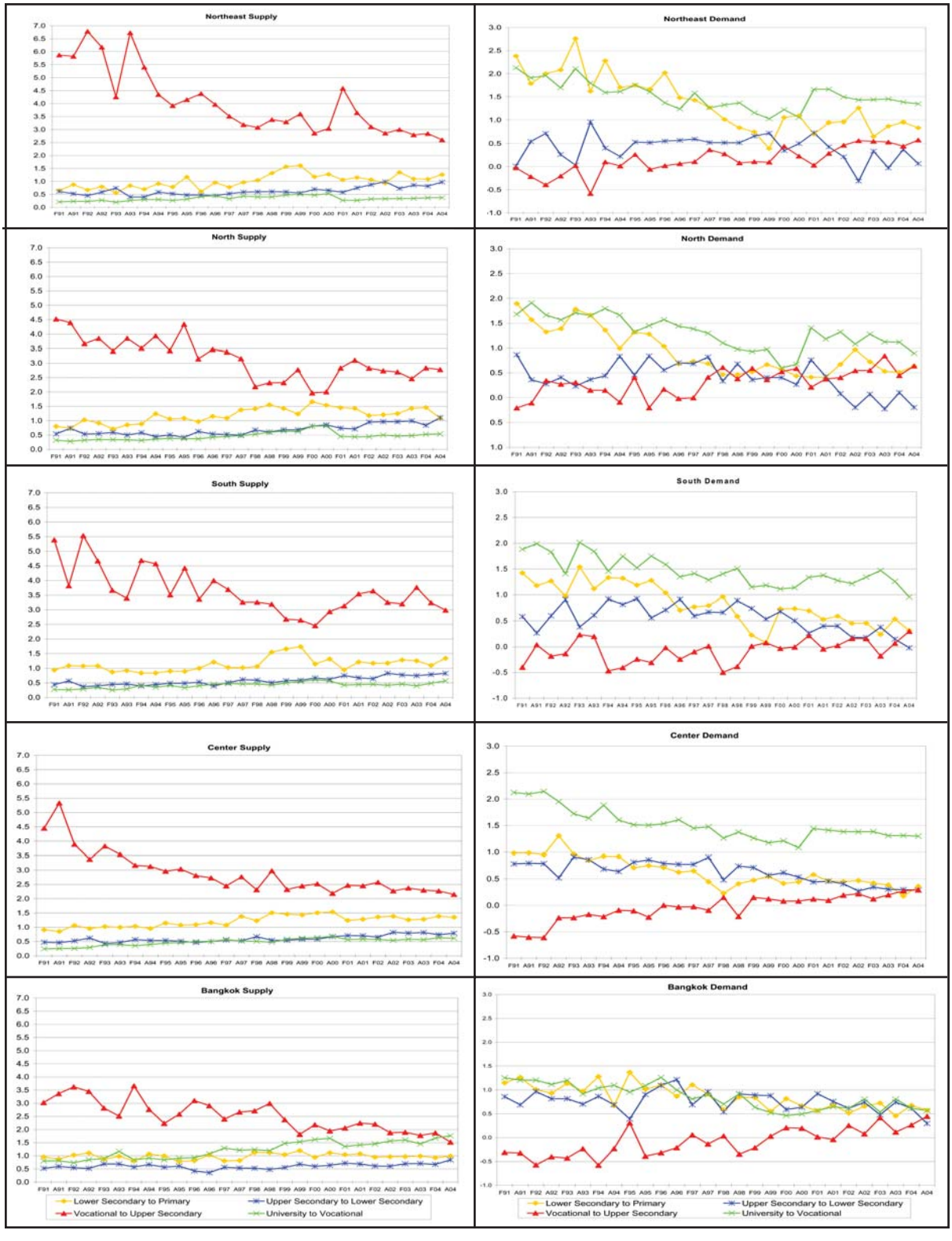
Figure 56: Population Aged 15 to 60 years-old with at least Lower Secondary Education (%)

A. February 1991	B. February 2004
	

[22] Following Katz and Murphy (1992) and Sanchez-Paramo and Schady (2003), relative labor demand is backed out from relative wages and relative labor supply from a simple supply-demand model under the assumption of a constant elasticity of substitution of 2. The economy is assumed to be operating on the demand curve, and labor supply is taken to be inelastic in the short run. In order to net out compositional changes in the labor force, each cross-section is reweighed to replicate the average gender-age (in five year brackets) structure over the entire period. In practice, the reweighing makes little difference to the findings. Assuming elasticities of unity or 3, as common in the literature, produces similar results.

[23] Using LFS data from 1989 to 1995, Moenjak and Worswick (2003) find that at the upper secondary level, vocational education has a higher return than general education.

Figure 57: Relative Labor and Relative Labor Demand of Monthly Wage Workers (Substitution Elasticity of 2), 1991 to 2004



Unions and Minimum Wage

Another potential reason for the modest wage increases could be weak labor market institutions that protect workers' interests. The next two sections look briefly at three dimensions, namely unionization, minimum wages and labor protection legislation. The conclusion is that these institutions are weak and have little bearing on the functioning of the labor market. However, these weaknesses are a long standing feature of Thai labor markets and cannot account for the change in wage trends after the Asian crisis. For the labor market to promote prosperity, it should assure that demand for labor is met by supply at a price that is acceptable for both parties. This coincidence of wants is what creates wage employment. Most labor protection aims to enhance job security by making dismissal costly to the employer. By the same token, it also can have the unintended effect of making hiring more costly. While a fully fledged discussion of these institutions and their impact on wages and employment is beyond the scope of this report, the focus is on coverage and enforcement.

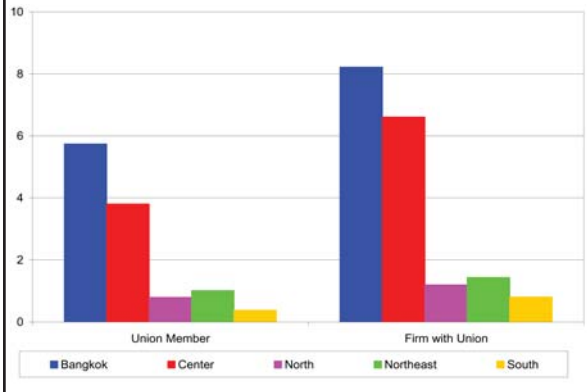
First, labor unions play a negligible role in Thailand. The 1975 Labor Relations Act 2518 provided private and state enterprise employees the right to form labor unions. In 1991, the right was withdrawn from state sector employees, before it was granted again in the 2000 State Enterprise Employees Relations Act (Chandoevwit 2004). According to the latest available survey data, only 1 percent of private sector workers were members of a labor union in the Northeast, and only 1.5 percent worked in a firm with a labor union (Figure 58.A). Even in Bangkok, the corresponding numbers (5.7 percent and 8.2 percent, respectively) are still low in international perspective.[24]

Second, the minimum wage has fallen in real terms over the last decade and is not enforced. The minimum wage was introduced in Bangkok in 1972 and nationwide in 1974. There were 14 minimum wage levels in 2004, varying at the province level and ranging from a daily rate of 133 to 170 baht. While nominal minimum wage rates are increasing, in real terms the minimum wage has fallen by around 2 percent per year since 1996 (Figure 58.B). Nevertheless, minimum wages are relatively high compared to wages paid in some regions. Assuming that the median monthly wage is not affected by minimum wage levels, the toughness index is defined as the ratio of the minimum wage over the median monthly wage. Minimum wages are much "tougher" in the Northeast and North, where the index is over 90 percent, compared to Bangkok, where the index is no higher than 65 percent (Figure 58.C). At the same time, compliance with minimum wages among daily wage workers, who have lower wages than monthly wage workers, is low. Defining non-compliance as a daily wage level less than 95 percent of the province-specific minimum wage, then non-compliance is as high as 55 percent in the Northeast and declining, compared to no more than 15 percent in Bangkok (Figure 58.D). Most likely, this is not a reflection of differential enforcement but simply of differences in the wage scale.

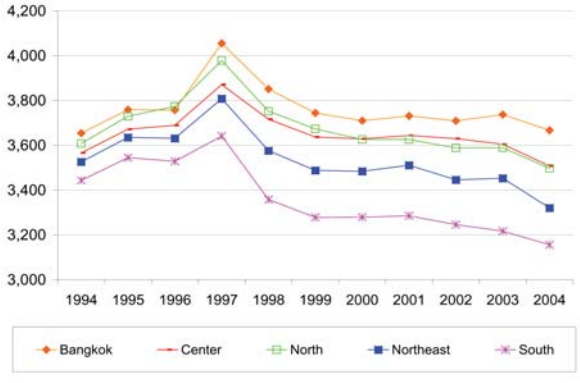
[24] Unionization rates are 9 percent in Malaysia, 11 percent in the Philippines and in South Korea, and 17 percent in Brazil.

Figure 58: Unionization and Minimum Wages

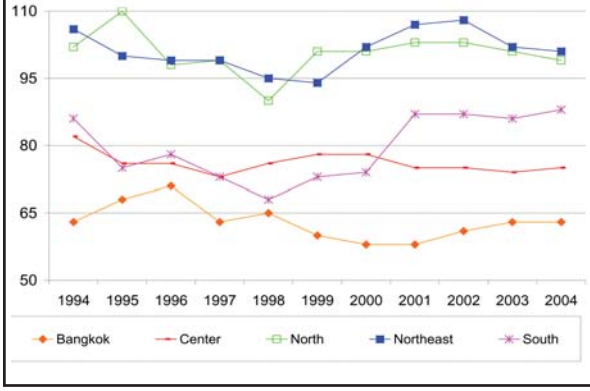
A. Unionization of Workers and Firms with Labor Unions, 1998 (Percent)



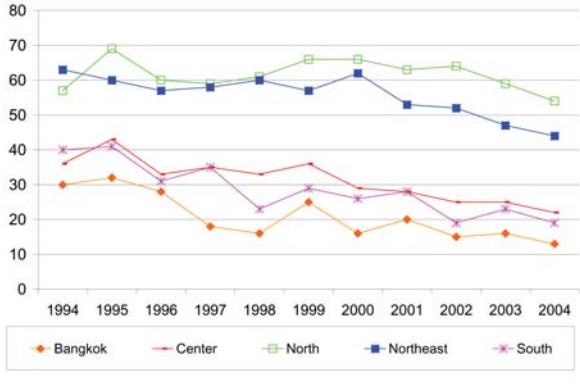
B. Real Minimum Wage, February 1994 to 2004



C. Ratio of Minimum Wage over Median Monthly Wage, February 1994 to 2004



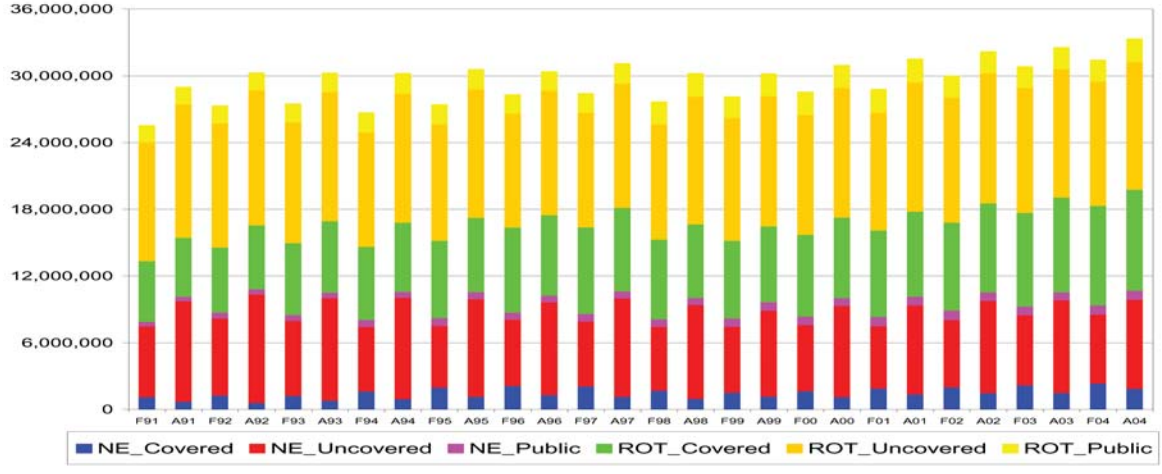
D. Non-Compliance with Minimum Wage Levels for Daily Wages, February 1994 to 2004



Labor Protection Legislation

Labor protection laws cover only a part of the labor market and enforcement is weak. Key legislation includes the 1990 Social Security Act and the 1994 Workmen's Compensation Act. The enforcement of severance pay during the Asian crisis as stipulated the Labor Protection Act was very low. In 1998, only one in 20 laid-off workers in firms with less than 10 workers, one in five laid-off workers in firms with 10 to 99 workers, and one in two laid-off workers in firms with more than 100 workers received severance pay. More recently, the 1975 labor protection law was amended in 1998.[25] It protects workers in terms of the general right of employees, working hours, wages and other payments, and other aspects. The 1998 Labor Protection Act applies only to private employees and employers in the industrial and service sector. Including government and state-enterprise employees, the covered sector comprises around 14 million people.[26] Excluded are the self-employed, agricultural workers and unpaid family workers, which amounted to 19.5 million or about 60 percent of all workers in 2004. While almost 99 percent of the monthly wage workers are either covered by the 1998 Labor Protection Act or employed in the public sector, the share drops to 70 percent for other wage workers and 6 percent for non-wage workers. The Northeast accounts one fifth of the covered and public sector workers, but two fifths of the uncovered workers.

Figure 59: Covered, Public and Uncovered Sectors according to the 1998 Labor Protection Act, Northeast and Rest of Thailand, 1991 to 2004



[25] In 2004, unemployment insurance was introduced, covering about 10 million people.

[26] Garen and Jeraputtiruk (2005) and Jeraputtiruk (2004) discuss in detail the provisions of the 1998 Labor Protection Act. They estimate that it increased labor costs by 5.8 percent in large covered firms and by 0,8 percent in small covered firms. Using a two-sector model of covered and uncovered sectors, they analyze the impact of the legislation on wages and employment comparing the pre-act period of 1994 to 1997 to the post-act period of 1999 to 2000. As predicted by theory under elastic labor demand, the imposition of labor protection leads to mobility out of the covered sector and a rising wage gap between covered and uncovered sectors. However, as they acknowledge themselves, the results are likely to be contaminated by the Asian crisis, which lead to an movement of workers into the informal sector.

Migration

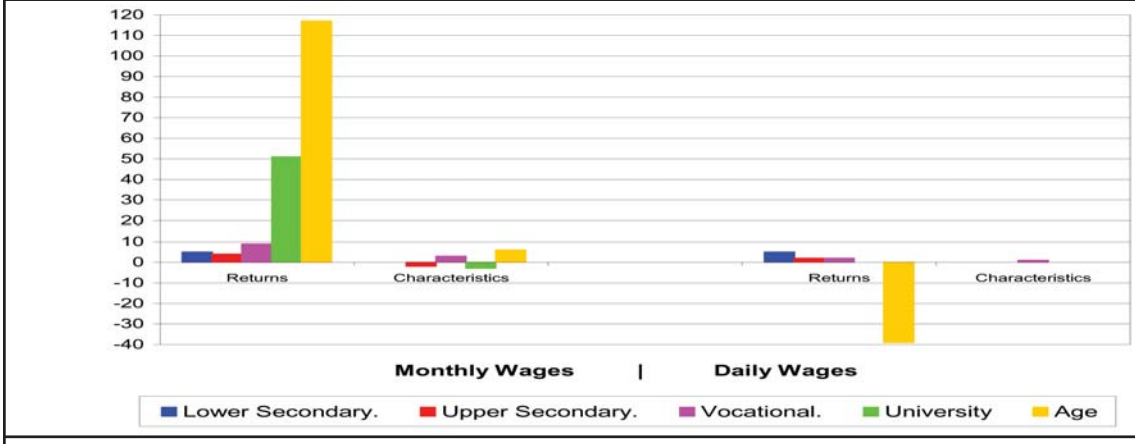
Workers migrate in search of high wages. Within-year variation in agricultural employment and better wage job opportunities have for a long time resulted in large inter-regional migration. Generations of Isan people have left their villages to seek employment in the service sector in Bangkok, in manufacturing in the Eastern Seaboard or in the tourist industry along the coast. The demand for low-skilled migrants in these regions is fuelled due to economic expansion and the diminished appeal of physical labor among the well-education local workforce. Villagers embrace migration reluctantly for economic reasons. According to the 2001 NRD2C, almost one in two Northeast villages report many problems with migration. This is the most pressing concern, aside from dry season farming, and compares to ratios of one in four to one in six in other regions.

Figure 60.A decomposes the wages differences between the Northeast and the rest of the country as of February 2004 into two parts. The first component tells us about the average wage premium due to higher returns for worker characteristics. The second component gives us how much of the difference is due to better characteristics for a given return. If the first component dominants the difference, then higher wages outside the Northeast are due to better returns to worker characteristics rather than better characteristics as such. This is indeed the case: the bulk of the monthly and daily wage differences are accounted by higher returns outside the Northeast. Among monthly wage workers, older and better educated do better outside the Northeast, while among daily wage workers, younger worker do better and education makes little difference. The Northeast and the North move a larger share of the workforce (turnover between 10 to 16 percent compared to a national average of 7 to 8 percent) across sectors and regions than other areas.[27] According to the 2000 Population Census, 18 percent of women and 15 percent of men born in the Northeast no longer reside there. This is about 4 percent higher than the shares in the North, and 10 percent to 12 higher than the shares in the South. Migration affects mostly young prime aged adults. This leads to a twin-peak population structure in the Northeast, with many children and adults of 30 years or older, and a single-peak structure in Bangkok, with a high concentration of 20 to 35 year-old (Figure 60.B). Aside from the young, mobility among other population groups in the Northeast is not particularly high. High shares of land ownership and agricultural rice farming lead to a sedentary lifestyle. Among the population that stayed in the Northeast, about two thirds stayed always in the same amphoe (district), and less than one in ten moved in the last decade. Other regions show higher between-amphoe mobility, with the highest incidence observed in the Center and Bangkok. Figure 60.C shows an increase in mobility during 2000. This is likely to be linked to return migration during the Asian crisis. As firms laid off especially the young and low-skilled in Bangkok, they returned to their home villages, triggering an increase in Northeast unemployment above Bangkok levels (Box 6).

[27] A 1995 survey by the National Statistical Office revealed that there were about 1 million migrant from the Northeast working in Bangkok. This accounted for about 40 percent of the whole country's migration of about 2.5 million.

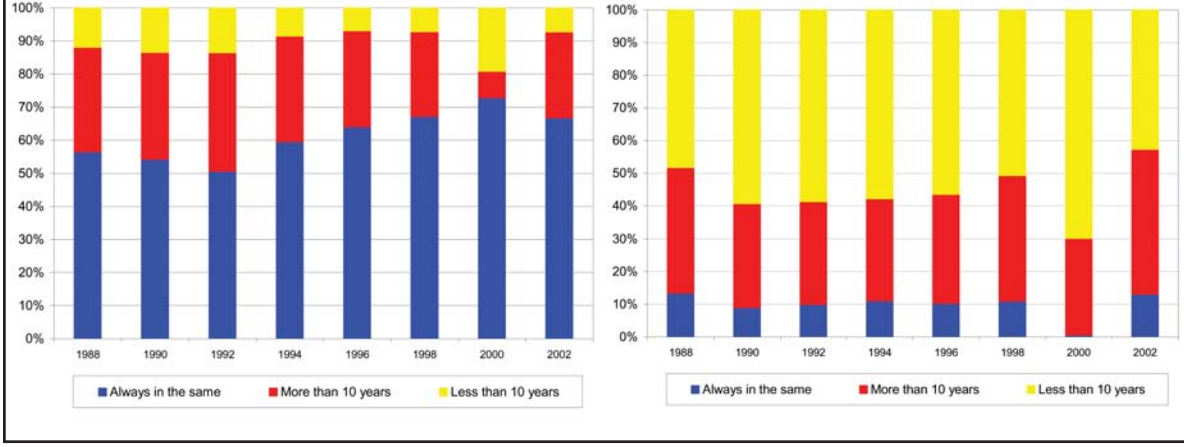
Figure 60: Migration

A. Oaxaca Decomposition February 2004: Rest of Thailand vs. Northeast



B. Population Pyramids in the Northeast and Bangkok, 2002

C. Amphoe Mobility in the Northeast and in Bangkok, Percent of Population, 1988 to 2002



Box 6: Return Migration and the Asian Crisis

Movement of workers across regions and sectors is an important adjustment mechanism to changes in the macroeconomic situation. This clearly happened during the Asian crisis. Even though Bangkok-based enterprises and financial institutions were at the core of the crisis, the Northeast was the hardest hit regions in terms of employment (World Bank 2000). Employment dropped about 4.2 percent from 1996/7 to 1998/9, compared to 2.6 percent in the North and increases of 0.6 percent in Central, 2.2 in the South and 2.4 percent in Bangkok. Aggregate wage earnings fell by 8 to 9 percent in the Northeast and Central, compared to 4 percent in the South, no change in the North, and an increase of 3 percent in Bangkok. During the first quarter of 1997, just before the crisis, 531,000 workers in agriculture moved to construction and 130,000 moved to the services sector. After the onslaught of the crisis in the first quarter of 1998, the net flow of workers out of agriculture declined by almost three fifths of the 1997 level in construction, and 100 percent in services. Clearly, reduction in labor flows out of agriculture was an important adjustment during the crisis. Return migration to rural areas is a reflection of the same phenomenon. In the first quarter of 1997, about 623,000 individuals reported having returned from Bangkok during the last year. This could be temporary migrants who move to Bangkok for contract work and return home upon completion of their contracts. This number increased in the first quarter of 1998 to 852,000 workers.

Remittances

Migration affects the Northeast not just through its impact on the demography. Perhaps the most important effect is through remittances.[28] Figure 61.A shows the differences in household income sources across regions. The Northeast has the lowest level and share of wages and salaries; the lowest level and share of non-farm profits; the highest share of non-monetary income; and, outside of Bangkok, the highest level and share of private transfers. The last feature points to remittances provided by migrant family members.

But how large are these remittances? Across all regions, the share of households receiving remittances increased between 1996 and 2002 (Figure 61.B). The proportion is highest in the Northeast. More than one in two households benefited from such payments in 2002, compared to around 45 percent in 1996. Among receiving households, these remittances amount to around one third of household income in the Northeast, Center and North (Figure 61.C). With the exception of Bangkok, these income shares increased between 1996 and 2002, even though more households became recipients.

Remittances lower poverty across all regions, and the reduction is largest in the Northeast. The poverty headcount in households without remittances is about 5 percent higher than in households without remittances (Figure 61.D). For 2002, this amounts to a drop in poverty by almost one third.

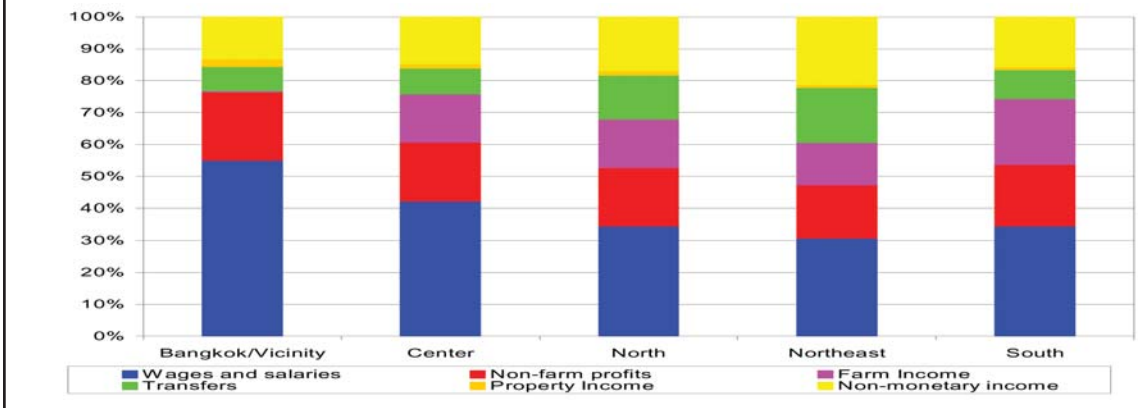
Can we be sure that the causality runs from remittances to lower poverty rather than the other way around? We can get an indication by comparing characteristics of households by remittance status. Figure 61.E looks at the education of the household head. Clearly, non-receiving household heads are better educated than household heads who receive remittances. Similarly, non-receiving households are more likely to live in urban areas than receiving households. Those characteristics would suggest higher poverty among receiving households, yet we find the opposite. This suggests that remittances help receiving households to escape poverty.

Overall, labor migration and remittances make the Northeast labor market as well as household living standards dependent on the rest of Thailand. Prosperous Bangkok and Center regions boost labor demand for Northeast workers who with their improved skill levels are in a better position to access well-paid jobs than in the past.

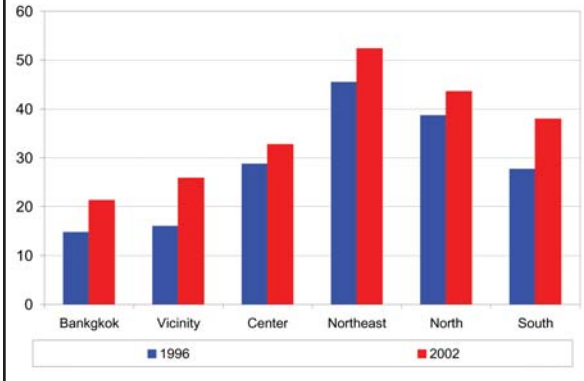
[28] Another important effect is the experience and assets that migrants bring to the Northeast if and when they return to their communities.

Figure 61: Household Remittances

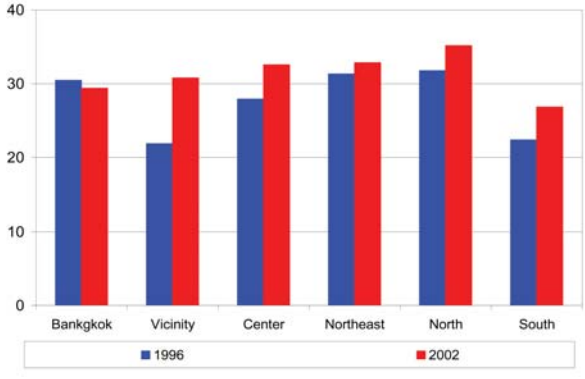
A. Household Income Sources, 2002



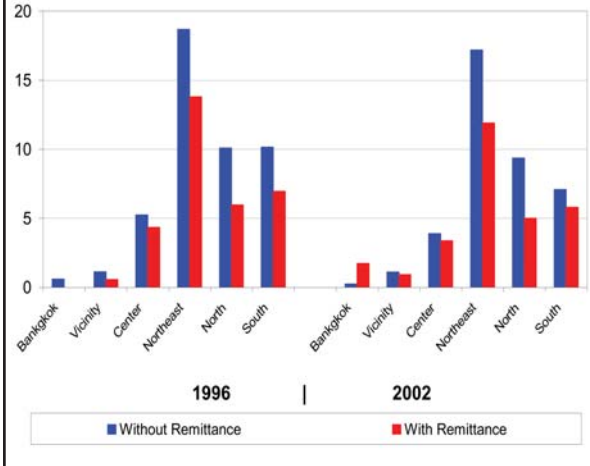
B. Share of Households Receiving Remittances (%), 1996 and 2002



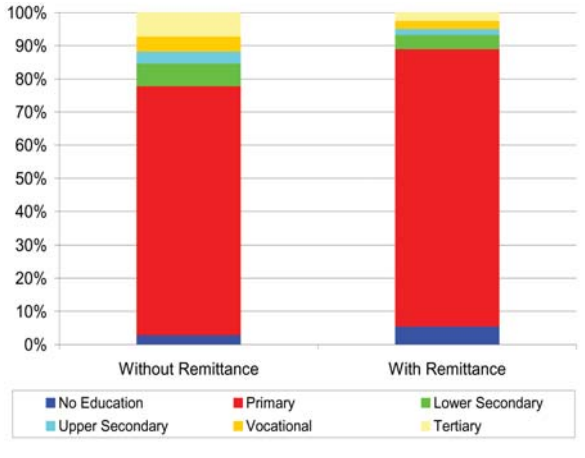
C. Remittances as Percent of Household Income among Receiving Households, 1996 and 2002



D. Poverty Headcount by Remittance Status (%) 1996 and 2002



E. Educational Status of Household Head by Remittance Status (%), 2002



Students

Access

Education is an end in itself and a vital part of individuals' capacity to lead lives they value. More education is associated with better family health and participation in society, higher productivity of farmers, workers and small-business owners alike, and thus lower poverty. The society as a whole benefits from an educated population. A skilled workforce contributes to higher economic growth, as East Asia's experience over the last decades demonstrates. If education is broadly shared across the population, chances are that growth will be as well. School participation rates have increased impressively over the last 15 years.[29] Thailand's primary school enrollments were already high in the early 1990s and have reached near-universal levels today. Secondary education outcomes were relatively low in early nineties but have shown noticeable improvements over the years. This trend is in line with the requirement of 9 years of mandatory schooling from 2004 onwards, as stipulated by the 1999 National Education Act.

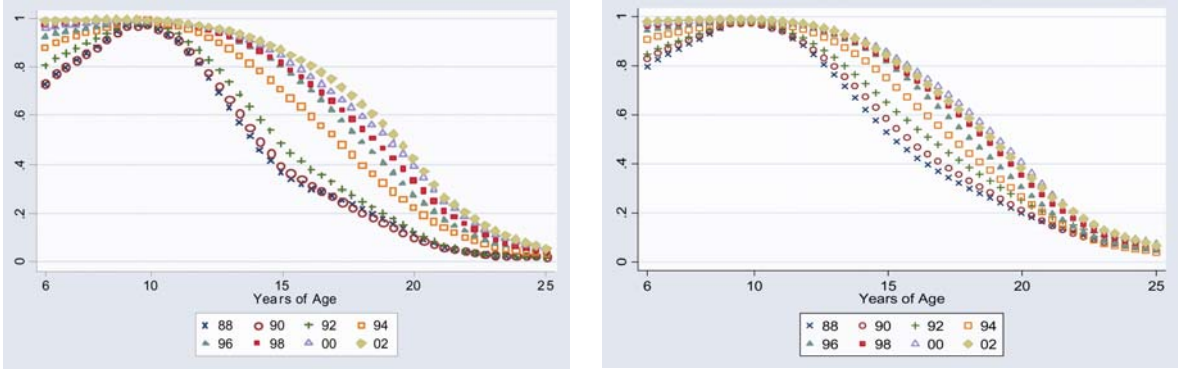
School participation rates for 14-year old children increased by almost 30 percentage points from less than 50 percent in 1988 to over 80 percent in 2002 (Figure 62.A). Remarkably, progress in the Northeast was even faster than in other regions, increasing from less than 40 percent in 1988 to over 80 percent in 2002. The enrollment gap has been eliminated for all age groups up to upper-secondary education (Figure 62.B). Even for students aged 18 to 21 years, the gap in the school participation rate dropped from 14 percent in 1992 to 3 percent in 2002. Access improved for children from poor and non-poor households alike Figure 62.C). Over the medium to long-run, the equalization of educational opportunities will be an important driver for regional convergence.

Higher school participations have substantially improved the skill levels of the young entrants of the job market. Among the 15 to 21 year-old, the share of Northeast students with at least lower secondary education increased from just over one half to more than 70 percent. In 1988, less than 5 percent attended upper secondary, vocation, or university education. By 2002, this share increased to over one quarter (Figure 62.D). Nevertheless, the Northeast continues to lag behind in access to vocational and university education. The share of vocational and university students are only 1 and 7 percent in the Northeast, respectively, compared to 5 and 11 percent in other regions.

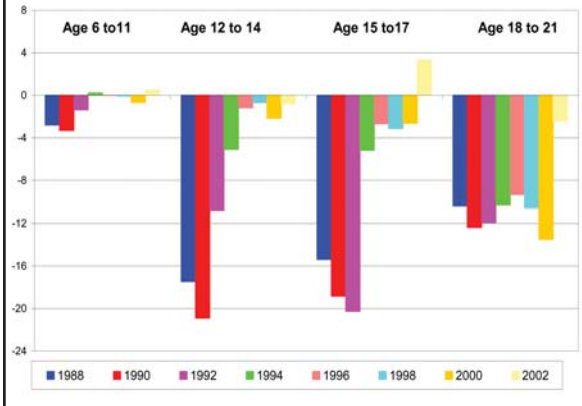
[29] The education system is organized into 6 years of primary education, plus 3 years in lower secondary, 3 years in upper secondary and 4 years of higher education. Thailand's education/age groups are grades 1-6 and 6-11 years old for primary school , grades 7-9 and 12-14 years old for lower secondary, grades 10-12 and 15-17 years old for upper secondary level. The statistics are based on the SES. The School Participation Rate (SPR) is defined as the proportion of a given age-group children that are enrolled in school regardless of their schooling level. Due to a modification in the SES questionnaire, net and gross enrollment rates from 2002 are not comparable to prior years. Vocational education covers lower, upper, and higher education. University education includes teacher training.

Figure 62: School Participation Rate, 1988 to 2002

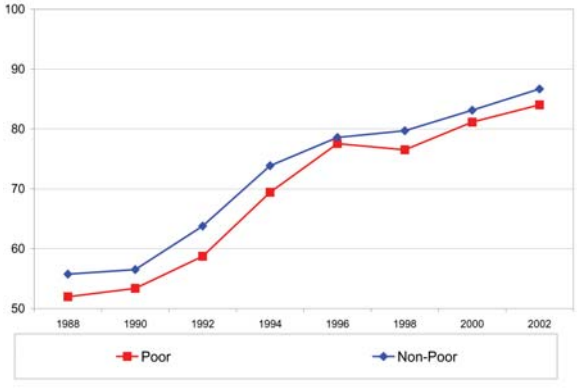
A. School Participation Rate: Northeast and Rest of Thailand



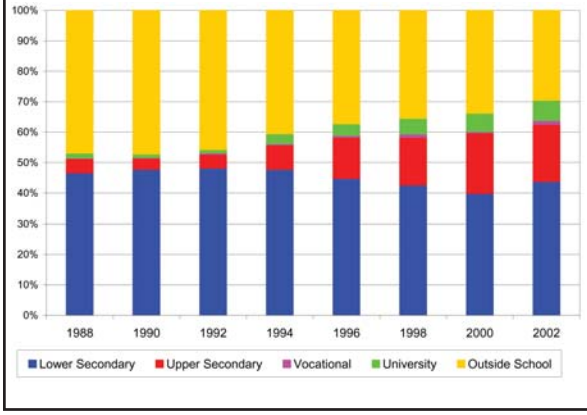
B. School Participation Rate: Gap of the Northeast to the Rest of Thailand by Age Group

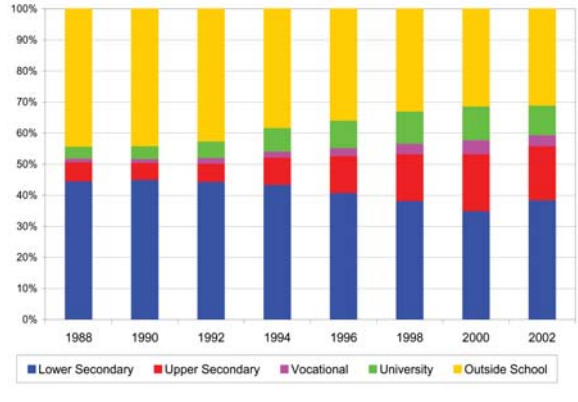


C. School Participation in the Northeast among 6 to 21 Year-Old: Poor versus Non-poor Students



D. School Attendance by Level among the 15 to 21 Year-Old: Northeast and Rest of Thailand





Private and Public Spending

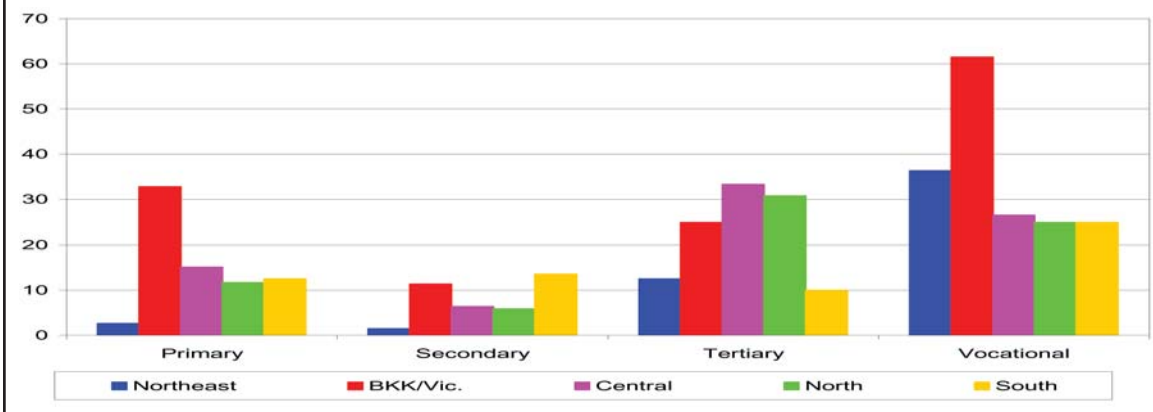
The 1999 National Education Act lays out an ambitious agenda of improving learning outcomes. The transition to a modern, child-centered and participatory education system is a difficult challenge, especially in the Northeast, which is struggling with the twin constraints of low private and public resources. Private schools play a limited role in Thailand's education system. In 2002, only 4 percent of Northeast pupils attended a private school, compared to between 12 percent and 28 percent in other regions (Figure 63.A). Similar to other regions, private school enrolment matters least at the primary and secondary level, and most at the tertiary and vocational level.[30] Costs are one of the reasons why private education is rare in the Northeast. While public education is provided free of charge, a 1999 survey on the demand for education identified financial constraints as the main reason why children aged 12 to 17 did not enroll in lower or upper secondary school. Northeast households spent less on education than other regions. Out-of-pocket expenses of households are substantially higher in private schools than in public schools. Low household income may prevent parents to send children to private schools. In 2002, a Thai student paid on average 6 times as much for attending a private instead of a public lower secondary school, and 5 times as much for private instead of public vocational education (Figure 63.B). Northeast households spent 14 percent of household income on private vocation education.

Another reason for the low private sector share might be that public schools provide better education. The RTG has traditionally been committed to fund adequately education. Education is the largest single sector in the budget. It expanded from 21 percent of total central government spending in FY1993 to 22.4 in FY1997, was effectively protected from expenditure cuts during the Asian crisis, and further increased to 23.8 percent in FY2003. This share is comparable or higher to allocations of many high-income countries, such as Korea, Japan and the United States. Education receives an even higher share of Northeast spending of the central government. More than two fifths of government spending go towards education. However, in terms of spending per pupil, the Northeast clearly lacks behind other regions outside of Bangkok. Combining data on public expenditure with data on household access to education from the household survey, the benefit incidence of public spending can be explored. Relative to the non-Bangkok average, the funding gap per pupil is 15 percent in primary, 29 percent in secondary, and 22 percent in tertiary education (Figure 63.C). Furthermore, the bulk of what is spent is allocated by salaries, leaving little to other, quality enhancing inputs. Total salary spending absorbs about two thirds of the recurrent education spending. Salary spending of the Northeast in FY 2002 accounted for about 81 percent of recurrent education spending expenditure on kindergarten/primary, 73 percent on secondary education; 52 percent on tertiary education, and 62 percent on tertiary education.

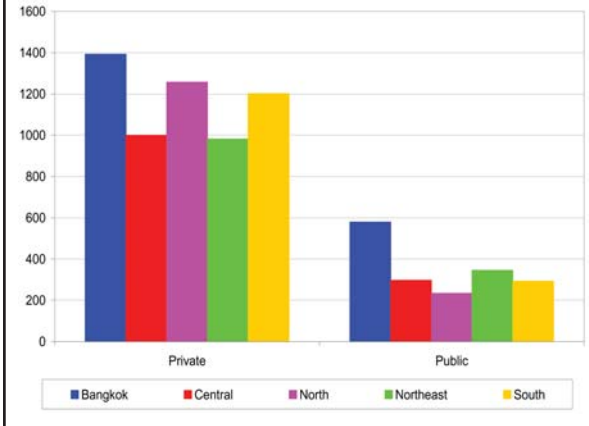
[30] The Northeast has 19 public and private institutions for tertiary education, in addition to extension campuses of a number of central and regional state universities.

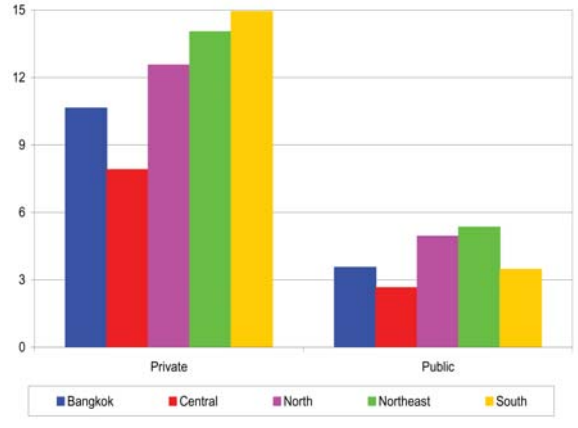
Figure 63: Private and Public Spending on Education, 2002

A. Private School Enrolment by Level (% of Total Enrolment)

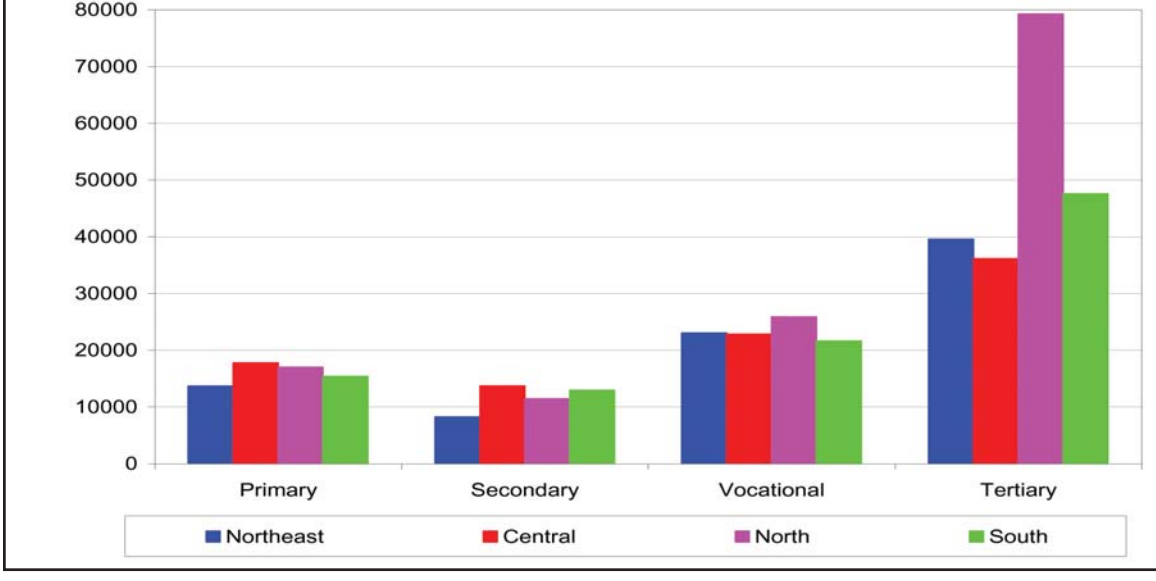


B. Household Education on Private and Public Vocational Education: Baht per Month and Share of Income





C. Central Government Spending on Education (Baht per Pupil)



Efficiency, Targeting, and Quality

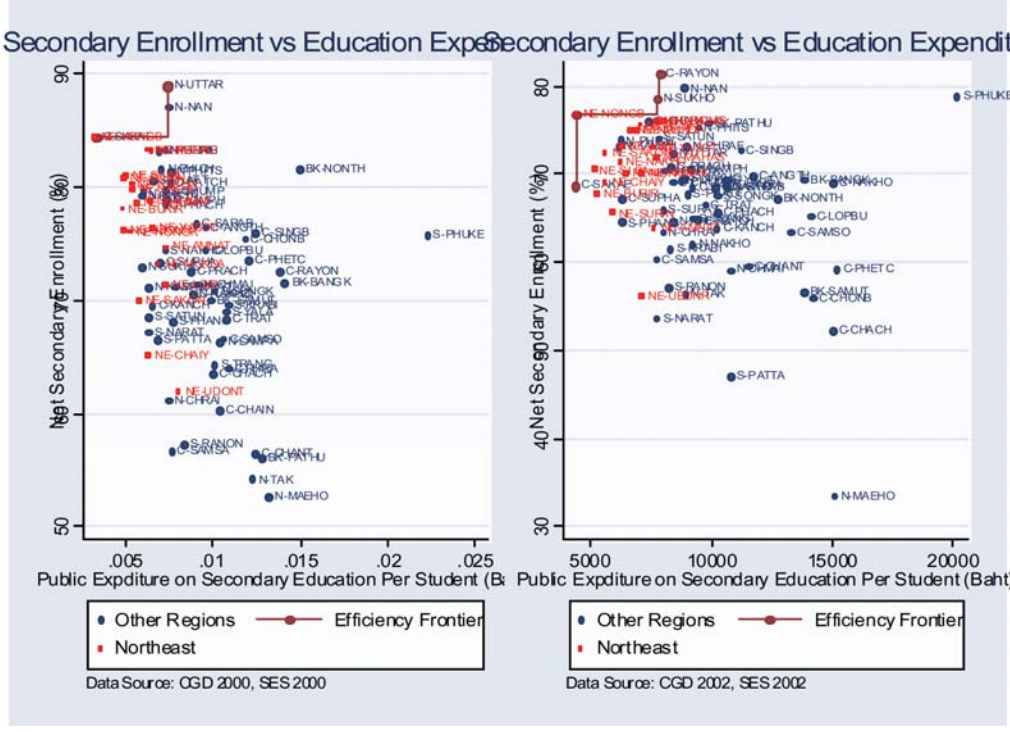
There is another way of looking at the data: the combination of high enrollment rates and low expenditures suggest a high efficiency of education spending the Northeast, at least for access. Figure 64.A shows such frontiers for per student secondary education spending versus net secondary enrolment.[31] Northeast provinces are placed close to the efficiency frontier. A vital part of the RTG's opportunity programs is access to education, supported by several targeted programs. The three most important RTG programs in education are the education loan; school lunch; and government scholarships. The school lunch program supports undernourished children in primary education. The Northeast enjoys better access than other regions, but poor and non-poor children benefit equally. Only students in primary and lower secondary school are eligible for the government scholarship program. The government scholarship program is insignificant, reaching less than 1 percent of all pupils. The Education Loans Fund was set up in 1996 to support destitute students from low-income families in pursuing higher level-education. The student loan scheme is open only to students at the upper secondary, vocational, and tertiary levels. Spending increased from Bt14 bn in FY00 to Bt27 bn in FY01 and to Bt28 bn in FY03. Levels of coverage are very low. About two fifths of student loan recipients are from non-poor households, indicating high levels of leakage. The Northeast does not fare worse in terms of pupil-teacher ratios or pupil per classroom ratios than other regions. They are around 20, low by international standards. However, teachers have generally a lower qualification than in other regions. While children in the Northeast perform similarly to other children at young age, their test scores fall behind as they go through the school system; the gap is widest at Grade 12, where the Northeast scores 1 to 1.5 points less for verbal skills and 4 to 5 points less overall than the other regions (Figure 64.B) (Punyasavatsut and Revenga 2003).

Thailand's reform agenda includes guaranteeing 12 years of schooling free of charge; providing 9 years of mandatory schooling from 2004 onwards, to be raise to 12 years from 2015 onwards; operating 175 Local Education Authorities; upgrading teacher training, modernizing curricula to meet international standards and promoting school accountability towards parents. The implementation of the ambitious education reform program will only be possible with a strong commitment by the RTG to education. Reaching universal schooling of 12 years will involve improving the targeting of key education programs, such as the education loan program. Providing quality education will entail attracting motivated and well-qualified teachers, as well as giving teachers adequate tools and technology in the class room. One source for funding such reforms would be to allow for increases in the student-teacher ratios (World Bank 2000).

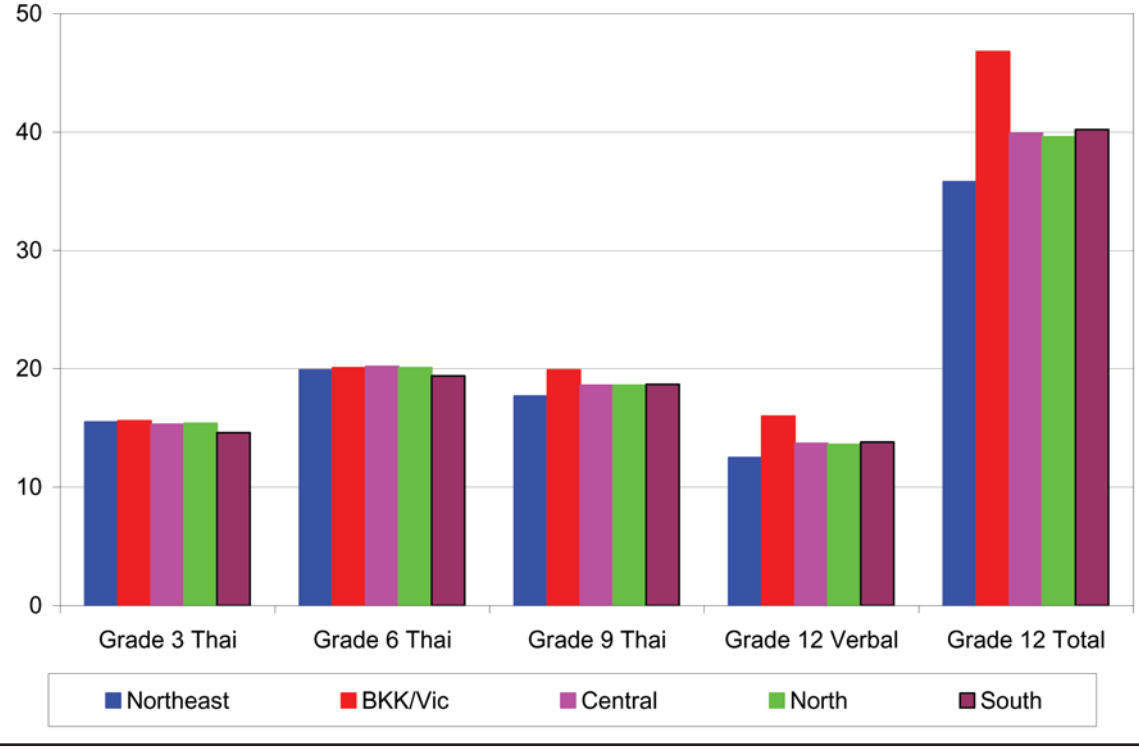
[31] Efficiency is measured by calculating the distance between observed input-output bundles and an efficient frontier, defined as the maximum attainable output for a given level of inputs. The frontier is constructed with the commonly used Free Disposable Hull technique. Input inefficiency refers to the excess input consumption to achieve a level of output; and output inefficiency to the output shortfall for a given level of inputs (Herrera and Prang 2005). Out of 11 regional indicators on gross and net primary and secondary enrollment rates averaged, the Northeast has the highest efficiency for 10 indicators.

Figure 64: Efficiency and Quality of Public Education Spending

A. Efficiency Frontier of Net Secondary Enrollment Rate and Public Secondary Spending Per Pupil in 2000 and 2002



B. 2001/2 Test Score Results by Level (Office of Education Standards and Evaluation, MOE)



Infrastructure

Roads and Phones

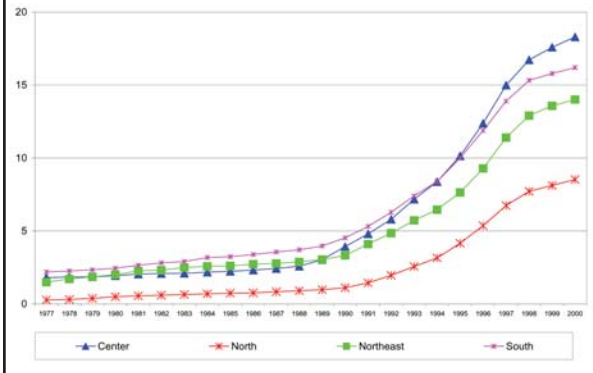
One important ingredient to Thailand's as well as East Asia's economic success story is infrastructure. But does it also explain also the Northeast's lack of economic convergence? Public investment focused on locations with high economic potential, but progress extended beyond Bangkok and Center to rural areas. The Northeast, an area of the size of the Netherlands (105 million rai or about 170,000 km2), is adequately endowed with transport infrastructure and has easy access to major urban growth centers. Road length, unpaved and asphalt, was expanded continuously in the Northeast, as in the rest of the country. The total length increased at an annual growth rate of around 10 percent in the Northeast, Center and South, and by 16 percent in the North, which had the lowest road length in the mid-1970s (Figure 65.A). Due to high population density (125 persons per km2, 10 percent higher than in the South and 70 percent higher than in the North), the Northeast has the lowest rural road density per person (Figure 65.B). Even so, much of the rural road network has small traffic volumes and suffers from neglect in upgrading.

Highway programs are recognized to be well planned and managed. There are 15,279 kilometers of highway (9 percent of the land area, compared to a national average of 10 percent), centered on the Thanon Mitraphap ("Friendship Highways") built by the United States in the 1960s and 1970s. A road bridge (the Saphan Mitraphap or Friendship Bridge) connects Nong Khai to Laos near Vientiane. Surface routes link the region to the Eastern Seaboard via Nakhon Ratchasima; to the network of roads in Lao PDR via Nongkhai; and to Vietnam via the routes of Mukdahan-Sawannakhet-Da Nang (discussed more in the section on the East-West Corridor) and Nakhon Phanom-Tha Khaek-Winh. The Northeast has two railway lines, in total 1,200 kilometers long, which connect the region to Bangkok. One runs eastwards from Khorat through Surin to Ubon; the other runs northwards through Khon Kaen and Udon to Nong Khai. There are also airports at Khorat, Khon Kaen, Ubon, Udon, Nakhon Phanom, Sakon Nakhon, Roi Et and Buriram, although none of them with international connections. Rural infrastructure extends to communication. Rural fixed telephone lines grew at around 20 percent per year from 1977 to 2000, although they remain more the exception than the rule. The rural Northeast has the lowest density, with 14 per 1,000 persons compared to 105 per 1,000 for Thailand. Yet, mobile phones are likely to make up for the low coverage (Figure 65.C and D).

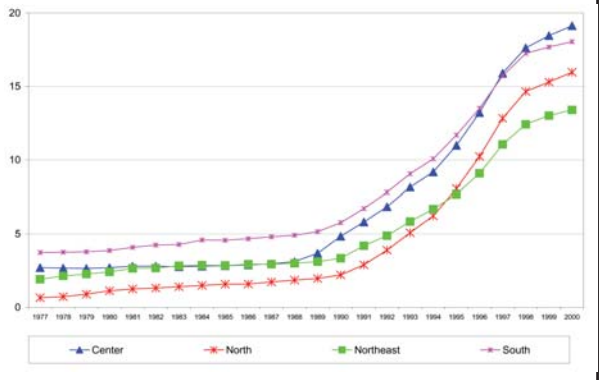
Responses of Thai firms to the 2004 PICS give a similar picture. Inadequate infrastructure is only the eighth most important concern among enterprises, with no more than one in ten enterprises placing it among their three most urgent investment climate concerns. However, more firms in the Northeast view poor infrastructure as an issue than in other parts of the country.

Figure 65: Rural Infrastructure, 1977 to 2000

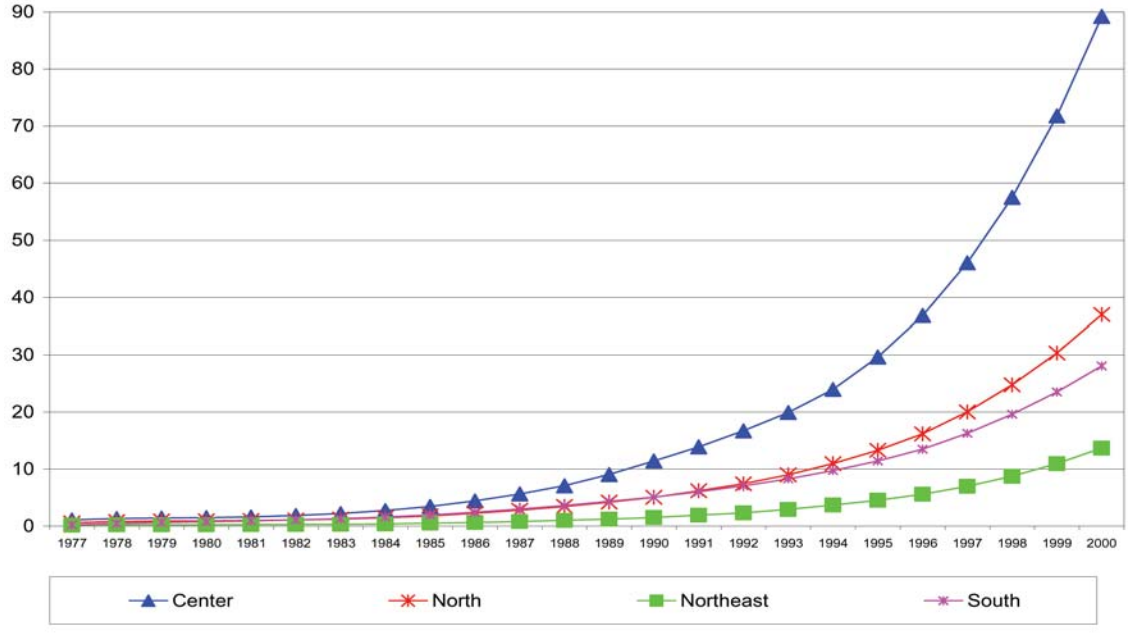
A. Rural Road (Per 100 km square)



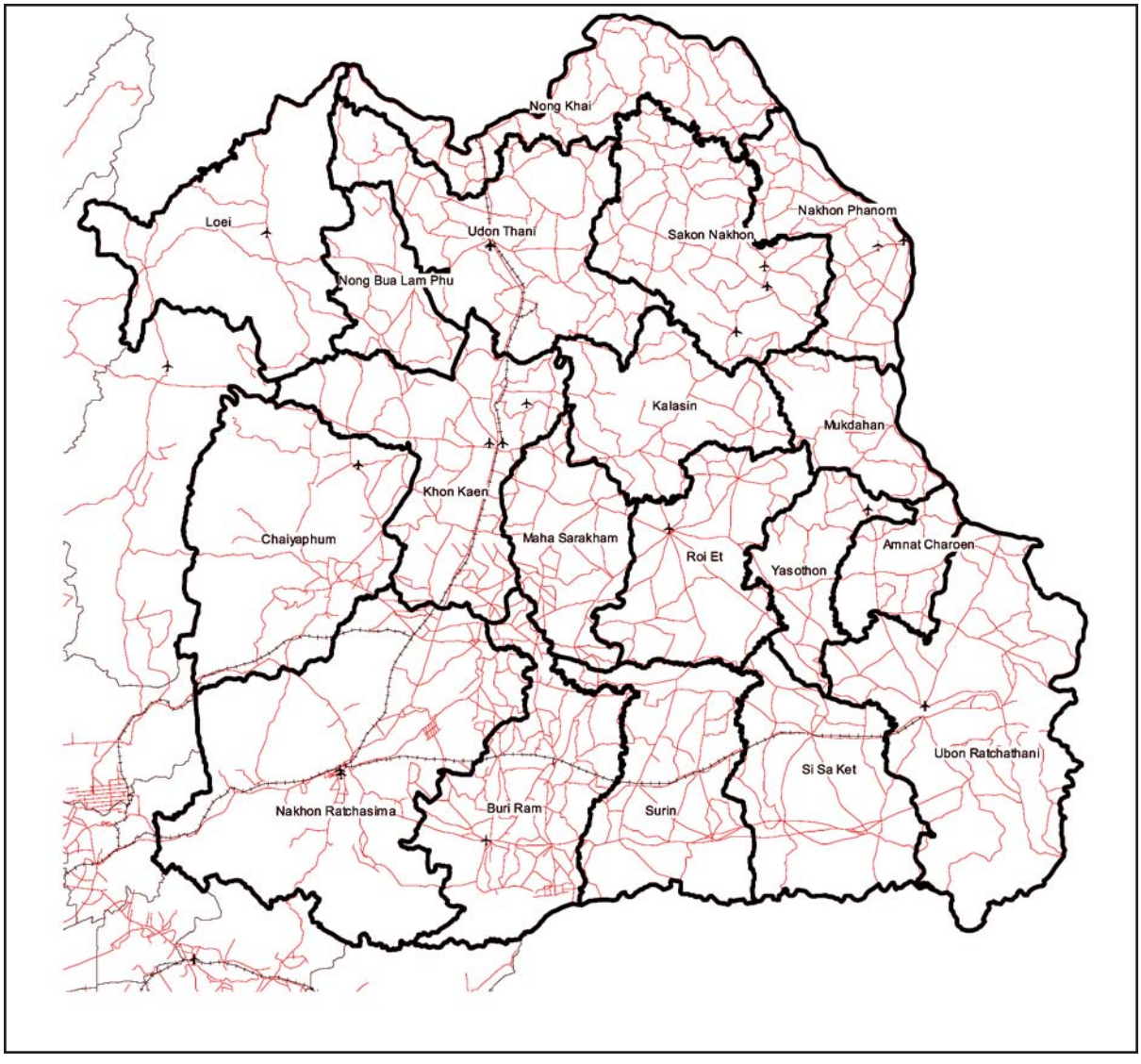
B. Rural Roads (Per 1,000 Rural Population)



C. Rural Fixed Telephone lines (Per 1,000 Rural Population)



D. Northeast Transportation Infrastructure



Household Access

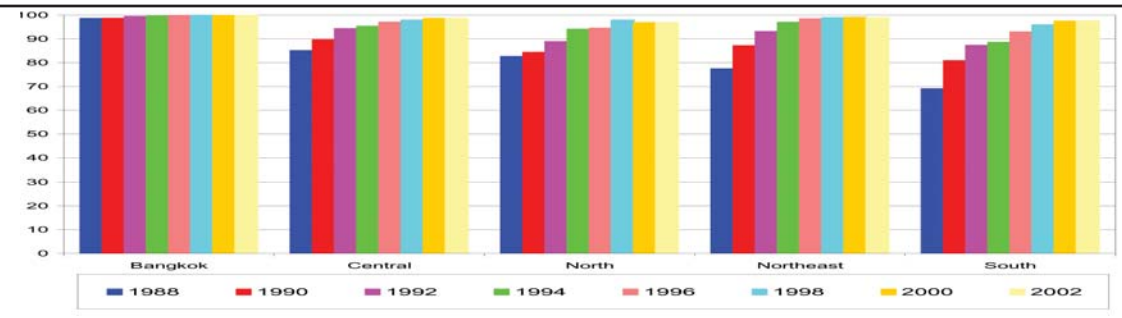
Rural economies depend on urban economies, for markets, financial capital, and migrant employment. But urban economies also depend on rural economies for human capital and agricultural products. Rural infrastructure can therefore benefit both rural and urban areas. For example, rural feeder roads can allows rural farmers to sell perishable foods in high-value urban markets, and this income can be invested in the education and health to boost productivity of the next generation of migrants. In short, rural infrastructure is not just to the benefit of rural areas. Nevertheless, many Northeast households still have not yet been connected. Progress was achieved in power, but less so in water, sanitation and communication (Figure 66).[32] Almost all Northeast households had electricity connections in 2002, compared to only three in four in 1988. Nevertheless, more than one third of Northeast households still use wood and charcoal fuel for cooking, which is more affordable than electricity or gas. Only one in ten persons lived in households with piped drinking water access, compared to one in four nationwide. The numbers are similar for mainline telephones.

But rural infrastructure is also more expensive to deliver than urban infrastructure. Given limited public resources, the challenge is to provide infrastructure as cost-effective as possible. This can involve making appropriate choices about technologies and service standards: decentralized solutions such as small-scale solar or diesel generation, water pumps, septic tanks, and satellite-based telecommunications can be preferable to network utility access. Furthermore, the external economic benefits of rural infrastructure need to be captured and channeled back into rural infrastructure financing. These objectives have to be reconciled with the decentralization of service delivery responsibilities to local administrative organizations. They will need material and technical assistance, including coordination support, to increase the accessibility of piped water in line with population's needs. As in most East Asian countries, public sector provision was for a long time the only service provision model. The costs of low tariffs were absorbed by government budgets, quasi-fiscal loans from state-controlled financial institutions, capital consumption or reducing operations. Private sector involvement in infrastructure provision in Thailand is limited both sectorally (expressways, electricity generation, water supply, telecommunications, and housing for workers) and spatially (extended Bangkok region, including the Eastern Seaboard, Ayutthaya, and Western Amenity regions) (Kaothien and Webster 1996). In fact, in 2003, private infrastructure spending amounted to no more than 7 percent of public and private spending. Increased private sector participation is constrained by the level of user charges and lack of clear regulatory environments both at the national and local levels (ADB, WB and JICA 2005). Thailand's utility tariffs, as set by state owned enterprises, are low by international standards. Political resistance to user charges even in urban areas limits the scope for price increases, which in turn restricts the interest of the private sector to become involved.

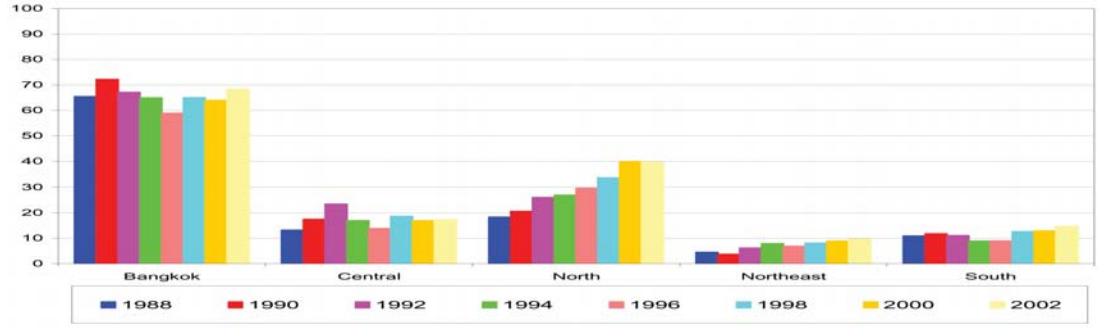
[32] The waste water sector has a very poor service record. Most of the approximately 160 waste treatments plants do not function at even 50 percent of their design capacity ((Webster and Theeratham 2004).

Figure 66: Regional Indicators of Household Infrastructure (Percent), 1988 to 2002

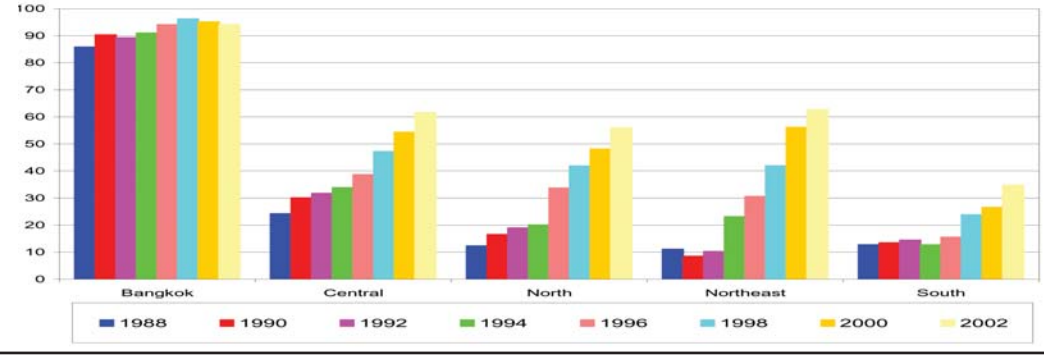
A. Electricity



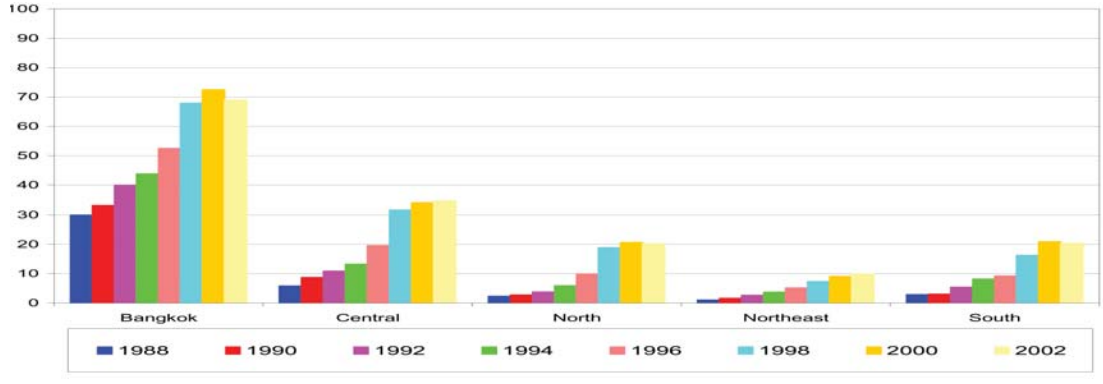
B. Piped Drinking Water



C. Piped General-Use Water



D. Telephones



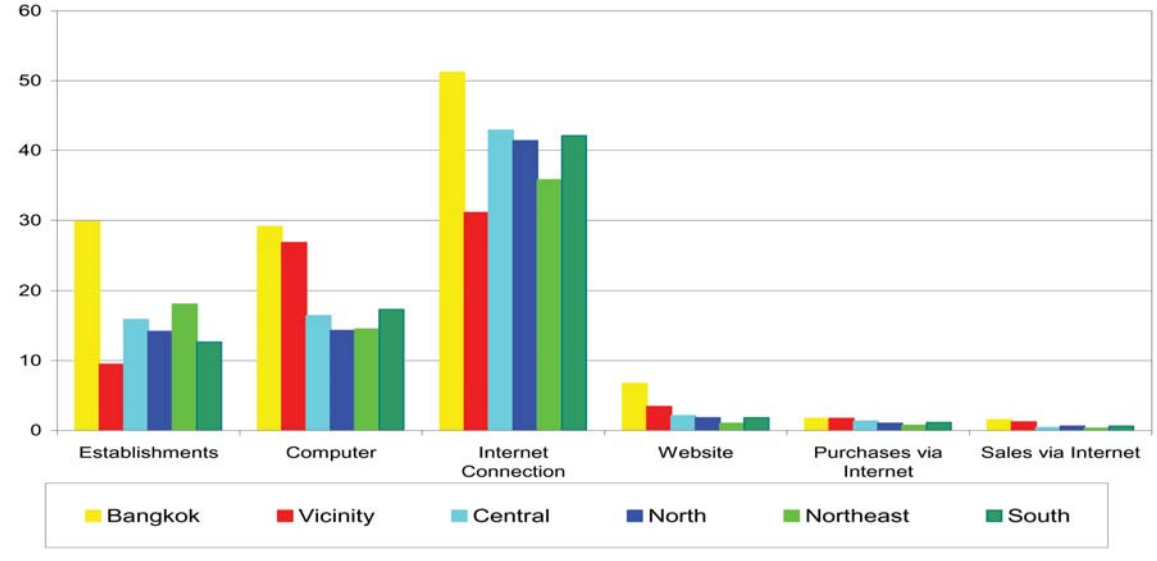
ICT

While Thailand's regions appear adequately endowed in traditional backbone infrastructure, how about the more recent information and communication technologies (ICTs)? They are viewed as vital for developing the "new economy" or "information society". Indeed, Thailand's ICT Master Plan and IT 2010 Policy Framework call for the development of the ICT industry and for promotion of ICT among businesses, small-and-median enterprises, public administration and Thai society at large.

The preliminary findings of NSO's 2004 ICT survey of business establishments provide a regional assessment of the current status. With the exception of finance, social services, and public administration, the survey covered almost all of non-agricultural sectors. It included manufacturing, construction, business trade and services, and land transport of travel agencies in municipal areas, which together accounted for over three fifths of national GDP in 2003. The data collection also included municipal areas only, where the bulk of the enterprises are located. Even in urban areas, the vast majority of businesses in Thailand in these sectors are small domestic enterprises. According to the survey, out of the 830,000 establishments throughout the country, no more than 2 percent have some foreign stake; 3 percent employ more than 15 persons; 8 percent are single units without branches or subsidiaries; 11 percent have registered capital and 17 percent have a legal form other than individual proprietor.

Almost one fifth of these establishments are located in the Northeast. Four fifths of them are engaged in business trade and services and 15 percent in manufacturing, similar to the national averages. Only 14 percent of Northeast establishments have access to computers, and just over one third of them have internet connections. These services are used predominately for information search and email rather than for website presence and sales or purchases via the internet. These figures are on par or slightly lower than those in the North and South.

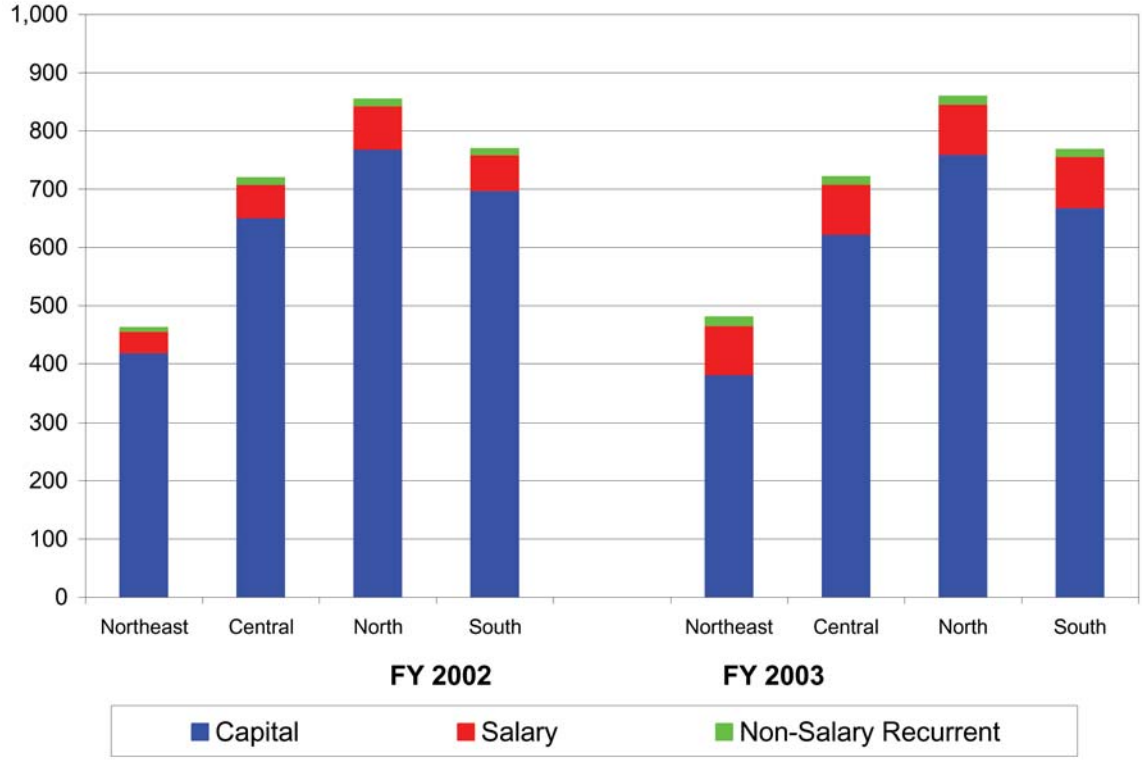
Figure 67 : ICT in Thailand's Regions (%)



Public Spending

The lower provision of infrastructure in the Northeast is related to less public spending. In FY 2002 and FY 2003, per capita expenditures on transportation and communication in the Northeast were about 40 to 50 percent below those in the North, South and Center (Figure 68). These gaps are similar for capital spending, which accounts for about 90 percent of this spending. The spending shortfall leads to less maintenance. Nevertheless, international experience suggest that infrastructure investment alone is unlikely to transform the economic fortunes of lagging regions (Box 7 and Deichmann et al 2005).

Figure 68: Public Per Capita Spending on Transportation and Infrastructure, FY 2002 and FY 2003



Mega-Infrastructure Projects

The Asian crisis triggered a sharp decline in investment. In 2003, private investment was just over half the 1996 level, accounting for 15 percent of GDP, compared to 32 percent of GDP in 1996 (Figure 69.A). Similarly, public investment in 2003 was no more than 60 percent of the 1996 level. There a signs of a recent pick-up. Private investment grew on average by 13.5 percent in 2003 and 2004, helped by capacity utilization rising above 70 percent and good corporate earning ratios (Figure 69.B). Domestic cement sales, imports of capital goods and construction permits are on the increase, and domestic car sales have already reached pre-crisis levels. Public investment expanded for the first time since the crisis in 2004, increasing from 6 to 7 percent of GDP.

The RTG argues that sustaining growth over the medium term requires a sustained rebound in capital expenditure. The government's plans to support investments foresee spending of up to 1.7 trillion Baht (US$43 billion), raising public investment by an average of 70 percent over the next five years (Figure 69.C and Figure 69.D). In real terms, public investment would exceed the 1997 peak from 2007 onwards.

The public resources will support the following development priorities. First, the government has identified high level business, professional and hospitality services as new growth areas, including fashion, advertising, health care, tourism, and conventions. Such services are primarily located in Bangkok and require dense, high transaction business environments with easy accessibility. This implies a focus on urban mass transit infrastructure and communication, accounting for close to half of the planned spending.

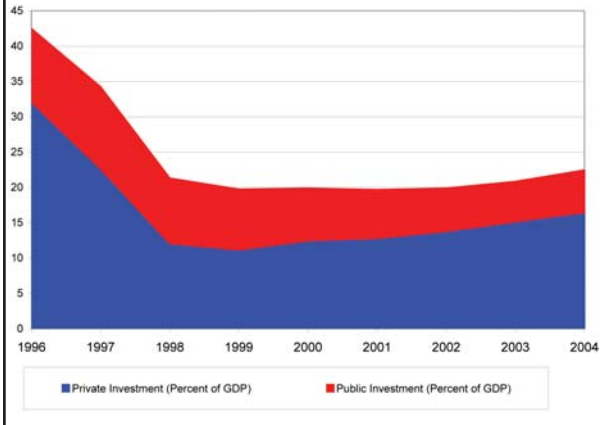
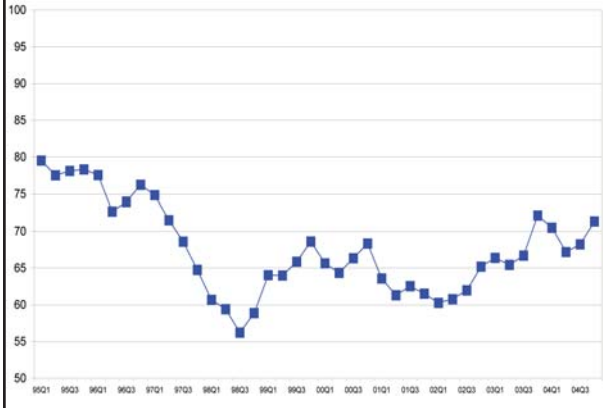
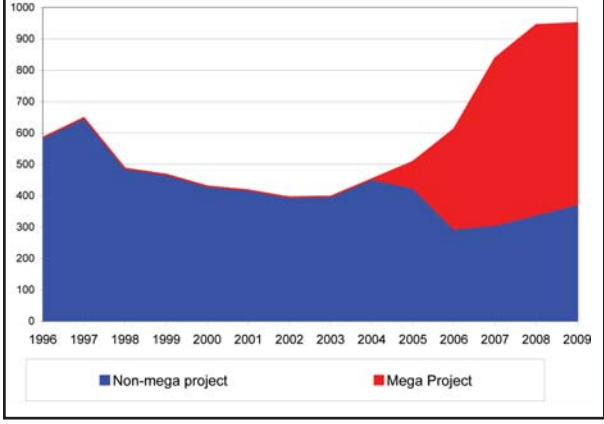
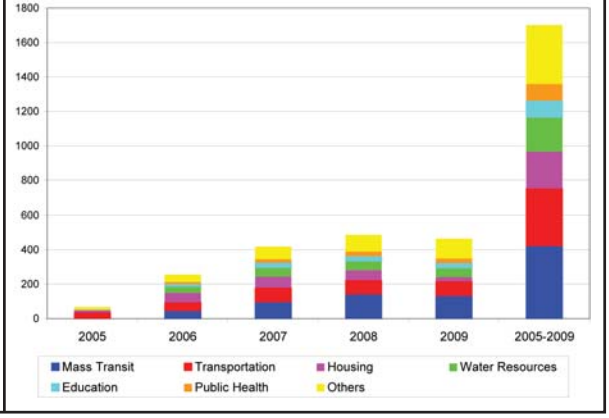
Second, the government views the industrial base in peri-urban areas centering on a few dominant clusters such as automotives and furniture. Improvements in the logistics system are to boost competitiveness and reduce the wedge between prices paid by consumers and received by producers.[33]

The third priority is to improve energy efficiency. Thailand spends a large share of GDP on power, and energy imports amount for around 5 percent of GDP. Indeed, one in four Thai firms consider electricity costs as among the three most urgent investment climate concerns. Indeed, in the 2004/5 Thailand Investment Climate Survey, one in four firms view energy costs as a serious business constraint.

The gist of these priorities, perhaps with the exception of water systems, addresses infrastructure bottlenecks in the growth centers of urban areas in and around Bangkok, while the direct impact on the Northeast, North or South is limited.

[33] Logistics costs (ports, air freight facilities, container depots, connections of road and rail networks etc.) are estimated to be 15 percent of GDP, compared to less than 9 percent in the USA.

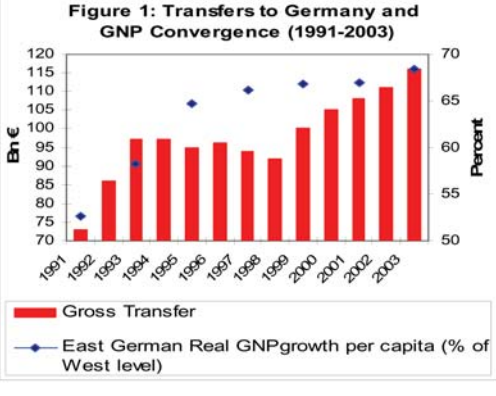
Figure 69: Investment Indicators and Planned Infrastructure Spending

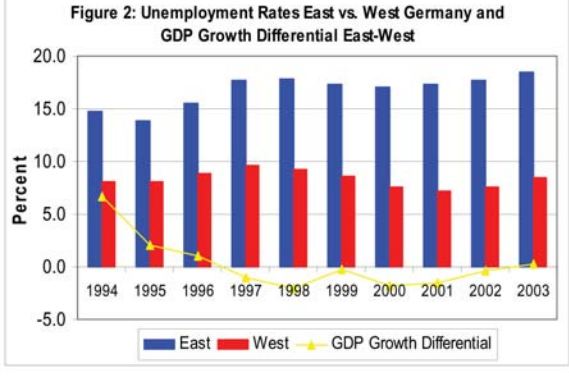
A. Private and Public Investment since 1996, Percent of GDP	B. Industrial Capacity Utlization
	
C. Planned Public Investment Spending (2004 Constant Prices Assuming 3 Percent Annual Inflation 2005 to 2009, Billon Baht)	**D.Mega-Project Investment(Current Prices, Billon Baht)**
	

Box 7: Infrastructure-Led Development - The Case of the Former East Germany

The reunification of Germany in 1989/1990 induced an unprecedented transfer of public resources to the regions of the former East Germany (i.e., Neue Länder) to bring about social and economic convergence. Since unification, estimated support to the former East Germany has totalled upward of 1.2 trillion-an annual net resource transfer of over 80 billion (about 4 percent of West German GDP) for over a decade. The transfers are channelled primarily through the social security system as pensions and unemployment benefits (45 percent); as untied assistance to the Länder through the intra-German mechanism that compensates Länder with weak tax revenues (20 percent); and through earmarked funds for infrastructure investments (13-15 percent). As a result, while the share of investment in GDP in West Germany was about 20 percent in the last decade, it was well above 40 percent in East Germany. In the years 1992 through 1995 peak levels were close to 50 percent and investments per capita exceeded the West German level by as much as 52 percent. The central government alone has spent more than 150 billion on infrastructure projects in the east since unification. This strong central government commitment to infrastructure investment raises a natural question about how these transfers have affected economic convergence.

The picture that has emerged over the last decade is at best mixed. Initially the convergence was very impressive. Until 1996 the East German real GNP per capita increased from 52.7 percent of the level in the West in 1991 to roughly 66.2 percent in 1997, and the East German economy outperformed the West German with high growth rates of 8-9 percent. Yet, surprisingly to many observers, the convergence process appears to have come to a halt in 1997. Since then, real per capita GNP in the east has remained by and large unchanged, despite an increase in annual gross transfers (Figure 1). This is particularly disturbing because the apparent small nominal convergence of 1.5 percentage points in real per capita GNP since can be attributed exclusively to demographic developments, mostly labour migration to the west. As matter of fact, since 1990 the population in the five new Länder has shrunk due to migration alone by more than 1 million, or roughly 7 percent of the East German population To make things worse, the East German economy has grown at a slower rate than the West, leaving little doubt that disparities between east and west will continue for the near future and prompting comparisons to the south of Italy, the Mezzogiorno, where the combination of high unemployment and economic stagnation has remained the dominant issue despite massive public transfers since the late 1960s. The data also suggests that the public transfers to the east might have become a structural problem for the West German economy which has shown a sluggish performance since unification and 'converged' with the East on growth rates between 0-1 percent of GDP in the last two years (Figure 2). While the underlying reasons for the economic slow-down are beyond the scope of this summary, the case of the former East Germany does show once more that achieving regional convergence is far more complex than is often thought. Central government transfers and infrastructure investments cannot by themselves engender regional economic convergence.





Global Trade Integration

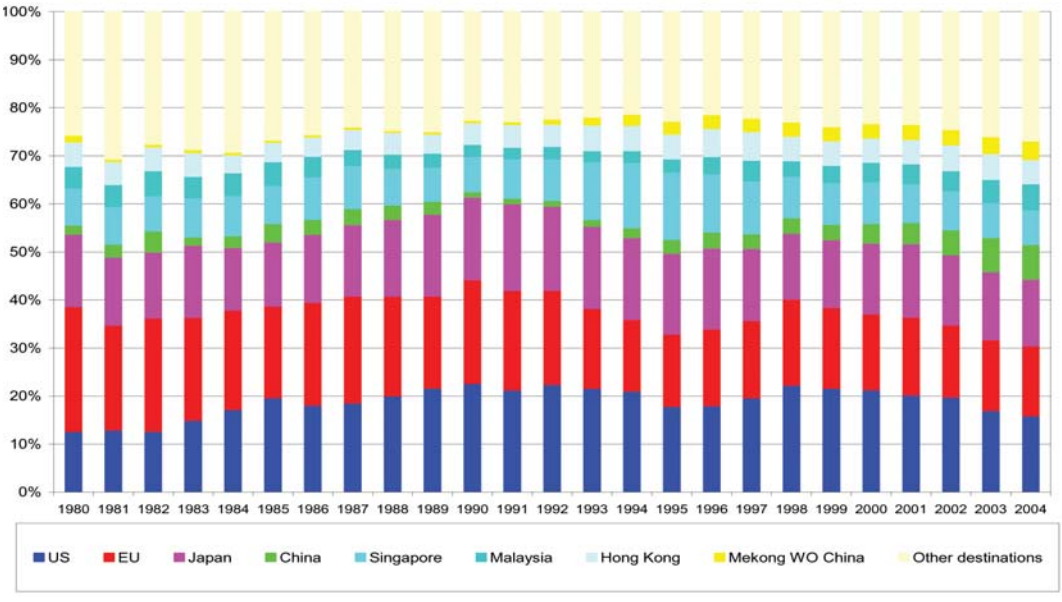
The countries in East Asia are not only growing rapidly but also integrating through trade (Krumm and Kharas 2004). The share of eight East Asia (defined as China, Hong Kong, Indonesia, Malaysia, Philippines, Singapore, South Korea, Taiwan and Thailand) in world exports rose from 3 percent in 1986 to 19 percent in 2002. There are two factors behind this trend (Pootrakool et al 2003). First, East Asian countries are more open now than they were 15 years ago. Exports as a percent of GDP equaled 65 percent in East Asia in 2002, compared to 54 percent in 1988. Second, there is more trade among East Asian countries. Intra-regional trade increased from 26 percent in 1988 to 39 percent in 2002. Thailand takes parts in these changes. Exports as a percent of GDP increased from 21 percent in 1980 to 65 percent in 2003, and the share of exports going to the eight East Asian countries increased from 25 percent to 35 percent over the same period. In other words, Thailand exported 5 percent of GDP to the eight East Asian countries in 1980, compared to more than 20 percent of GDP in 2003. As shown in Figure 70.A, the trend towards higher East Asian trade accelerated during the growth spurs from 1989 to 1996 and 1998 to 2004. For example, over the last five year, China's share in total exports increased by a remarkable 4 percent, Malaysia's share by 2 percent, and the shares of South Korea, the Philippines and Indonesia by 1 percent. The changes in import composition are similar or even larger (Figure 70.B). In 2003, three fifths of all imports came from East Asia, while just over one half of all exports went to East Asia.

China provides an important linkage between East Asia and the world market. The sharp rise of the Chinese exports comes along with the increase of exports from other East Asian countries into China. While China's economic success has raised concerns about competitive threats, its market of 1,250 million people offers also new opportunities. Furthermore, China provides the region with low-cost assembly lines that can help Thailand to remain competitive in the world market through re-exporting.[34] China's accession to the World Trade Organization opened up an enormous new opportunity for ASEAN. It presents a large, expanding market right at the doorstep that will be directly accessible through the planned ASEAN-China free trade association. Similarly, the rise of India's economy underscores the importance of strengthening ties with South Asia.

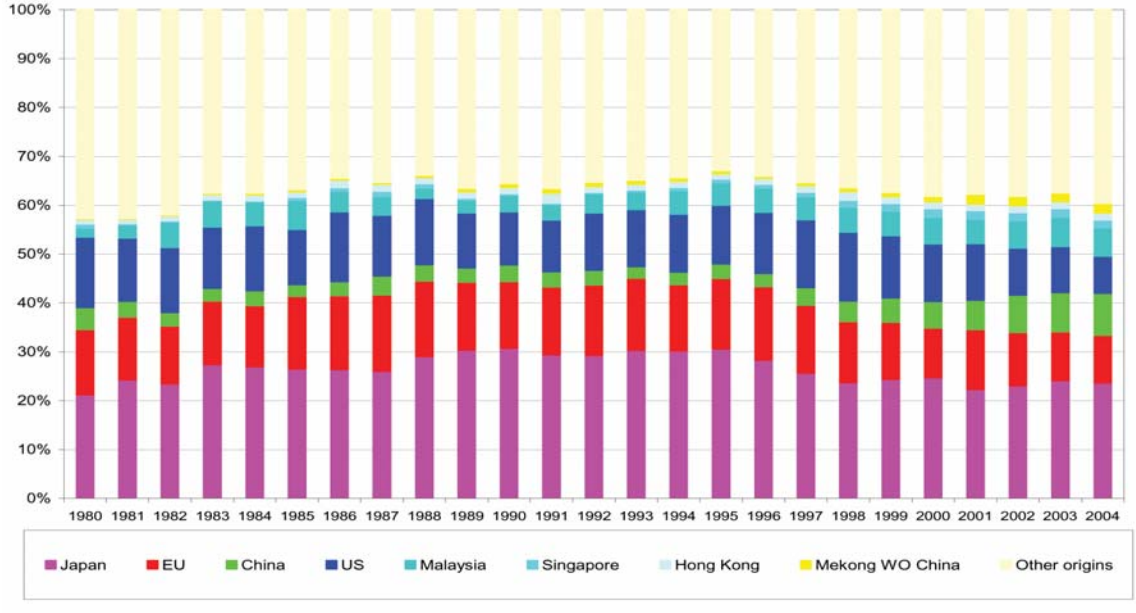
[34] Tzung-Ta Yen et al (2003) argue that more than half of Chinese imports and exports are accounted for by the reprocessing industries, most of which are enterprises in at least partly foreign ownership.

Figure 70: Thailand Trade by Country, 1980 to 2003

A. Exports by Country (Percent of Total Exports)



B. Imports by Country (Percent of Total Imports)



Growth

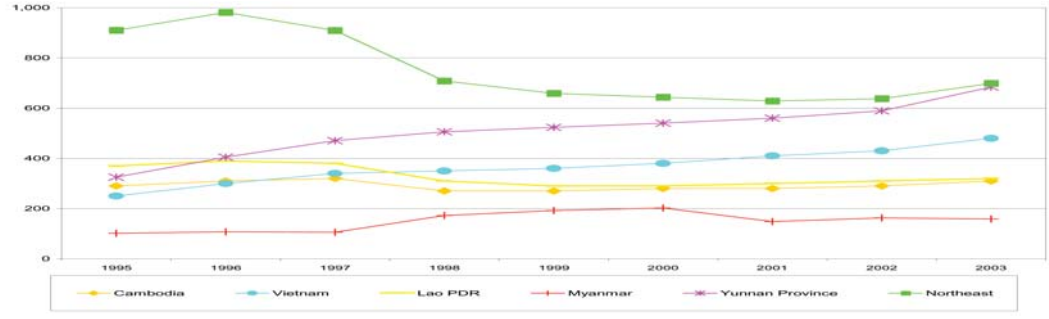
East Asia is sometimes quoted as an example for the "flying geese model of development". As countries become more sophisticated, the production of less advanced products relocates from the more advanced members of the region to the less advanced members (Vernon 1966). Japan is the leader, followed by the newly industrialized Economies of Korea, Taiwan, Hong Kong, and Singapore, which in turn are followed by the ASEAN members of Malaysia, Thailand, the Philippines and Indonesia, and finally the Greater Mekong Subregion (GMS) members Lao PDR, Cambodia, Vietnam and Myanmar. The GMS, which also includes the Yunnan Province of China and Thailand, covers 2.3 million square kilometers, or the size of western Europe, and is home to more than 250 million people, which share the Mekong River as common resource. About 180 millions live in the lowlands of the GMS, including the ethnic Khmers of Cambodia, the Lao of Lao PDR, the Burman of Myanmar, the Thai of Thailand, the Kinh of Vietnam, and the Han of the Yunnan Province. About 70 million people from around 200 ethnic groups live in remote mountainous areas, often along shared national borders, inhabiting the watersheds along the Mekong River and its tributaries. The GMS constitutes a diverse group of people and economies at different levels of development. With the exception of Thailand, they all undergo the transition from centrally planned economies to market economies. Myanmar is still mostly shielded from outside influences, while Cambodia and Lao PDR are slowly accelerating their economic reform process, aiming to emulate the successes of Vietnam and Yunnan Province. Over the last decade or so, these previously impoverished, disintegrated, and remote areas have become the latest frontier of economic growth in the region and are changing rapidly through expansion, integration, diversification and openness.

Differences in growth performance begin to unravel the basic income geography that had broadly remained unchanged for many decades in the GMS. Only ten years ago, the per capita income levels of GMS countries in Dollar terms were no more than one tenth to two fifths of the Northeast's level. By 2003, the gap had declined for all countries. This reflects in part the greater exposure of the Northeast to the Asian crisis. The high-growth economies of the Yunnan Province and Vietnam achieved the most rapid convergence (Figure 71.A), but also Cambodia and Lao PDR closed the gap considerably. Real per capita growth rates give the same picture: The Northeast's average annual growth rate of 2.5 percent lagged behind its neighbors, which expanded from between 3.5 percent (Lao PDR) to 7.3 percent (Yunnan Province) (Figure 71.B). Excluding the rest of Thailand, the Northeast's share in GMS GDP dropped from close to one third in 1995 to just over one seventh in 2003. This was only half the size of the Yunnan Province's economy, and two fifths the size of Vietnam's economy. Thailand's overall share dropped from four fifths to less than two thirds over the same period (Figure 71.C). Due to rapid growth and greater immunity to the Asian crisis, the GMS area has become more important at the regional level. Combining ASEAN and GMS, the GDP share of GMS increased from around 26 percent in 1996 to 28 percent in 2003 (Figure 71.D).[35]

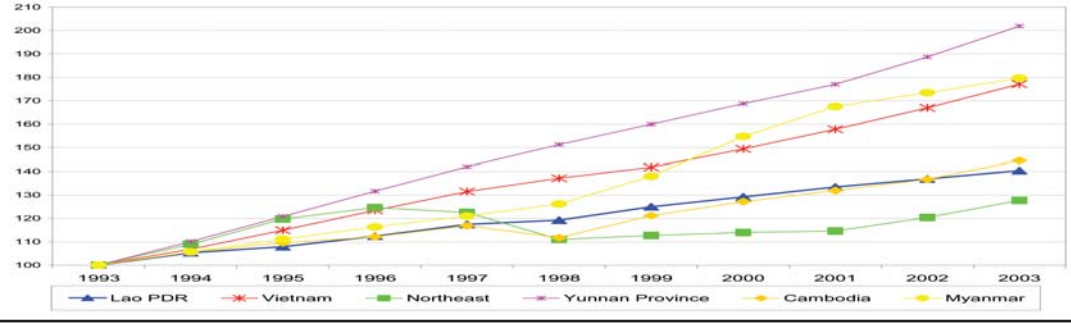
[35] In addition to the GMS countries, ASEAN members are Brunei, Indonesia, Malaysia, the Philippines and Singapore.

Figure 71: Growth in the Greater Mekong Subregion

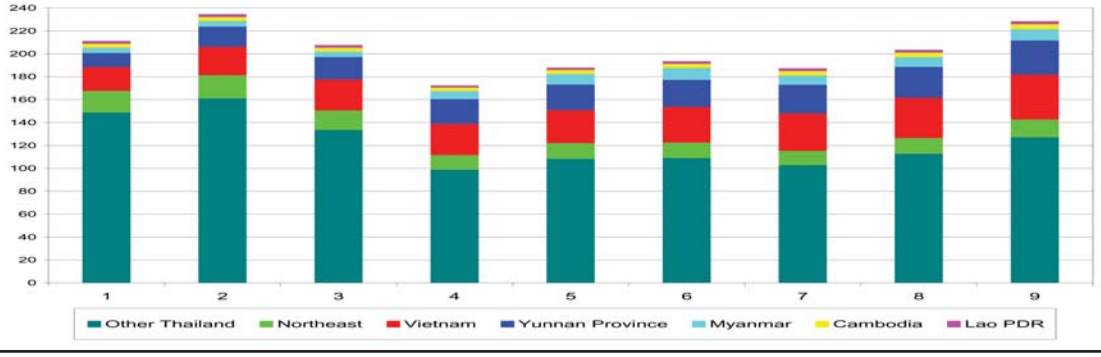
A. GNI Per Capita GDP, 1995 to 2003, Current US Dollar



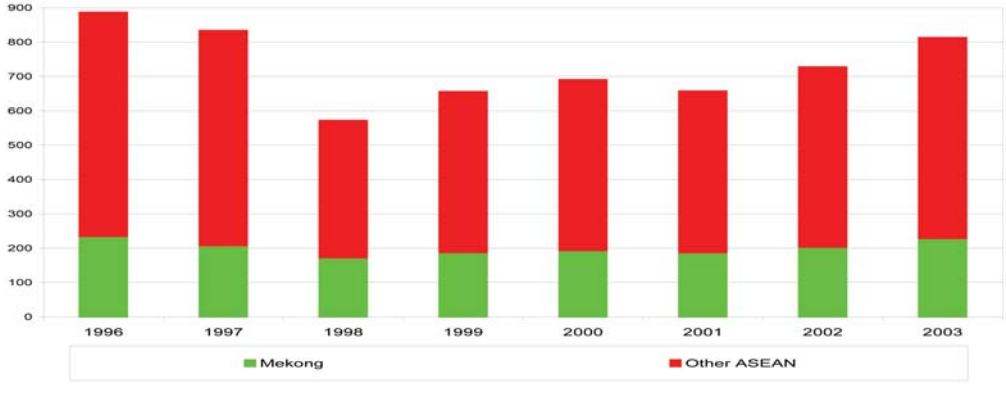
B. Real Per Capita GDP Growth, 1993 to 2003



C. GMS GDP (Current Dollar Billion), 1995 to 2003



D. GMS and Other ASEAN GDP (Current Dollar Billion), 1996 to 2003



Trade

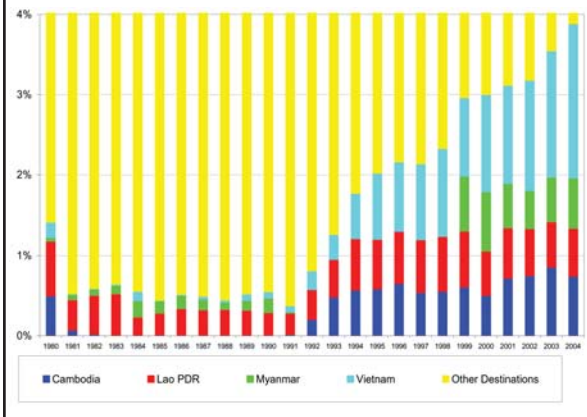
The growth in the GMS region has come with closer economic ties among member countries. Informal cross-border trade has always taken place, but subregional integration in formal trade is a more recent development. Complementary resources and income levels suggest opportunities for intraregional trade. The intraregional share of total trade in the GMS increased from 5.7 percent in 1992 to 12.6 percent in 2002. Thailand has benefited from this development. Since 1980, Thailand's exports increased in real terms annually by 1 percent to Lao PDR, by 13 percent to Cambodia, by 24 percent to Vietnam, and by 23 percent to Myanmar. The share of exports among Thailand's total exports going to these four countries increased by 2.5 percent from 1980 to 2004, and the import share by 1.8 percent.

These are encouraging developments but the direct benefits from trade integration to the Northeast are still limited. First, the Mekong countries still account for a small share of overall exports and imports (Figure 72.A and Figure 72.B). According to data from April 2004 of the Export Promotion Department of the Ministry of Commerce, less than one percent of the around 13,500 Thai export companies are located in the Northeast (Figure 72.C). The product structure of Northeast export companies, while somewhat less diversified, is rather similar to Thailand as a whole, suggesting the Northeast has not yet developed an export sector that builds on the specific resources offered by the region (Figure 72.D).

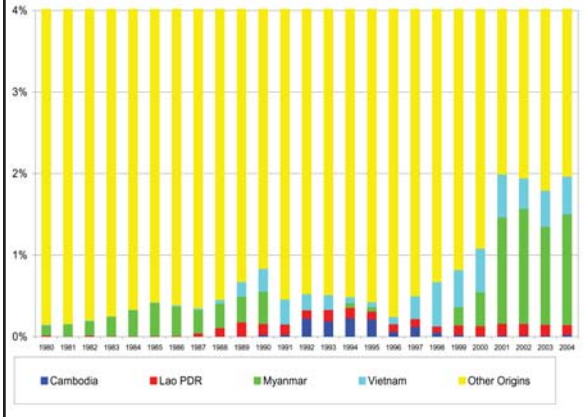
Second, the Northeast benefits primarily from cross-border trade rather than the overall trade flows between Thailand and the GMS countries. The Northeast shares common borders only with Lao PDR (coinciding for over 1,000 km with the Mekong River) and Cambodia, but not with China, Vietnam or Myanmar. While the bulk of exports and imports with Lao PDR go through customs in the Northeast (Figure 72.E), trade with Vietnam, which accounts for the largest part of exports to the Mekong region, takes place mostly through the sea-route, by-passing the Northeast. Finally, Thailand's trade regimes with key partners outside the GMS have improved rapidly, making it even more urgent to upgrade the GMS trade framework. The ASEAN countries aim to remove non-tariff barriers, quantitative restrictions, custom surcharges and reduce tariffs. ASEAN's Free Trade Agreement promotes a Common Effective Preferential Tariff (CEPT), which requires a reduction of tariff rates to 0 percent to 5 percent for the AFTA members over the next five to twelve years. By January 2005, about three quarters of the tariff lines in Thailand have been restructured into the CEPT rate system. The tariff reductions for Cambodia, Lao PDR, and Vietnam, ASEAN's newer members, follow delayed schedules. In addition, bilateral trade agreements strengthen trade relations with non-ASEAN countries. By early 2005, Thailand had signed at least 15 bilateral trade agreements, and others were under negotiation, including with Australia, Japan, Korea, New Zealand, and the US.

Figure 72: GMS Trade

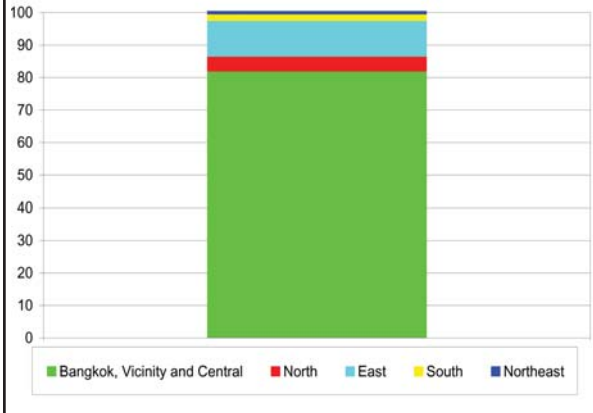
A. Thailand Export to Cambodia, Lao PDR, Myanmar, Vietnam and Other Destinations



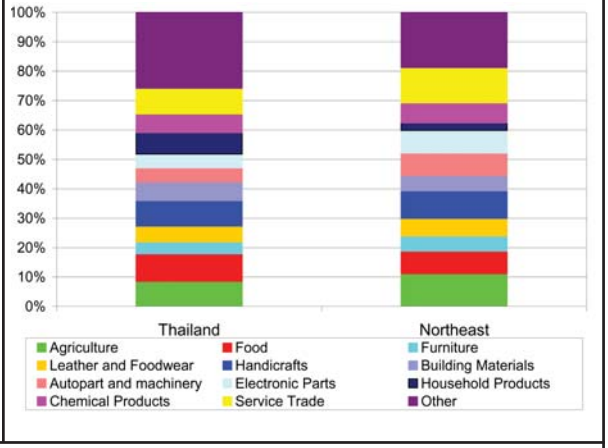
B. Thailand Import to Cambodia, Lao PDR, Myanmar, Vietnam and Other Origins



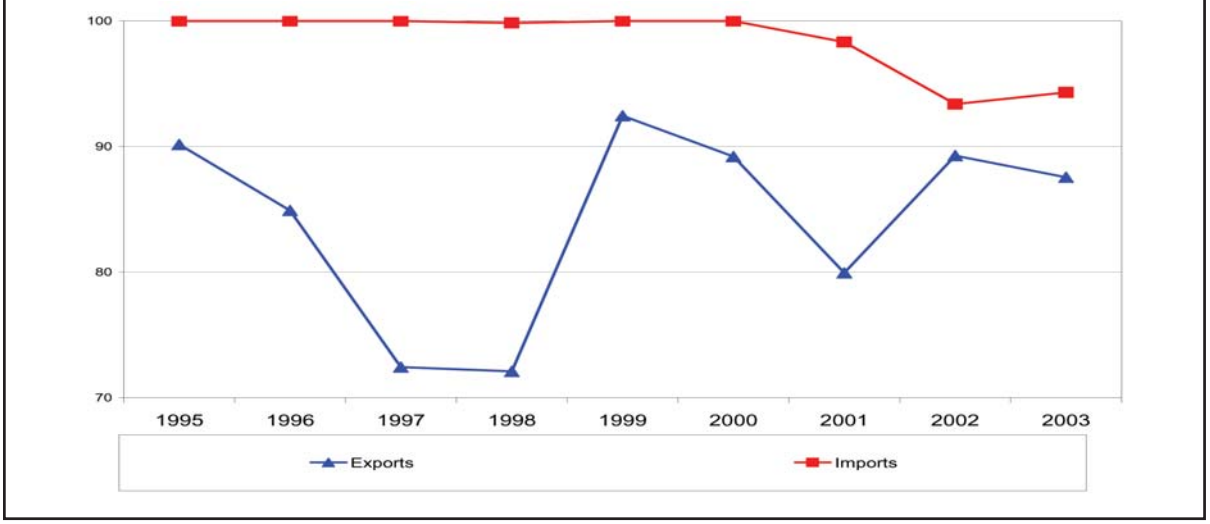
C. Regional Composition of Export Companies (%)



D. Product Composition of Export Companies (%)



E. Northeast Trade with Lao PDR (Percent of Thailand Trade with Lao PDR)



Agenda

Integrating the GMS will require lowering transaction costs by reducing structural and institutional impediments to the movements of goods, people, and capital. Economic cooperation can exploit economies of scale and competitive efficiencies that otherwise might not occur. This should also help GMS to follow the example of ASEAN, which was transformed through stable macroeconomic environments, reliable and transparent investment rules, and foreign investment in internationally integrated production systems. As wages rise in ASEAN countries, GMS economies will be well placed to receive investments if they offer a framework of good macroeconomic performance and strong regulatory systems. The Northeast will only capture a greater share of the expanding trade among GMS countries, if trade through the land route becomes less cumbersome. This requires improvements of infrastructure and custom regulations on just in the Northeast but also in other GMS countries.

At the first GMS Summit in Phnom Penh, Cambodia, in 2002, leaders of the GMS countries endorsed the GMS Strategic Framework. They launched 11 flagship programs to achieve the GMS development vision of enhancing connectivity, increasing competitiveness and promoting a sense of community in the region.[36] Seventeen investment projects, worth $3.4 billion, are either completed or under way, but additional projects of around $6.5 billion are still in need of funding. The first priority is to overcome inadequate transport and communication linkages and promote common networks in transport, power distribution, trade and commerce. This will help to boost competitiveness by integrating markets and exploiting scale economies. Furthermore, to allow the integration of markets for products and services as well as for inputs such as finance, labor and energy, physical investments should be accompanied by investments in easing processes and building capacity. This includes the harmonization of legal and regulatory frameworks and the facilitation of cross-border flows. A third priority is to manage GMS common resources. Perhaps the most obvious example is the Mekong River. It originates in the Qinghai-Tibet plateau at 5,000 above the sea level and passes snow-covered peaks, tropical rainforests, and marshland on its 5,000 kilometer trajectory through Yunnan Province, Myanmar, Lao PDR, Cambodia, the Northeast, and Vietnam to empty into the sea after splitting into numerous tributaries.

As part of the GMS flagship projects, economic corridors are promoted. They focus investments in priority infrastructure sectors on the same geographic space, in addition to developing common policies and regulations to facilitate cross-border trade and investment. The next section presents the East-West Corridor. This most advanced flagship initiative of several planned corridors crisscrossing the GMS is of particular relevance to the Northeast.

[36] Leading areas of cooperation are transport linkages (East-West Corridor, North-South Corridor, Southern Economic Corridor and facilitating cross-border trade and investment), energy (Regional Power Interconnection and Trading Arrangements), telecommunications and tourism.

East-West Corridor

The East-West Corridor, launched in 1999, will create a 1,500 kilometer road transport corridor between the Andaman Sea at Myanmar's west coast and to Da Nang Port in Vietnam's east coast, passing through Khon Kaen in the Northeast and Savannakhet in Lao PDR.[37] Da Nang is the third biggest international port in Viet Nam, currently handling about 2.4 million tons of cargo per year. The Lao PDR component will rehabilitate the 78 kilometer long Road 9 between Muang Phin and Dene Savanh at the border with Viet Nam. The Vietnam component comprises the upgrading of 83 kilometer road surface of Road 9 between Lao Bao at the border with Lao PDR and Dong Ha on Highway 1, in addition to the improvement of the Dong Ha Bypass. Thailand will fund the construction of the missing link connecting Mawalamyine at Myanmar's west coast to Mae Sot at the Thai border. In addition to road development, complementary investments are taking place. First, a $200 million Hai Van tunnel through a mountain north of Da Nang will be constructed. At present, using the steep, narrow, and winding 22-km road up and down the mountain can be hazardous and time-consuming. A heavy truck can take up to 2 hours to negotiate the pass. A two lane road through the new 6.3 km tunnel - billed as Southeast Asia's longest, will be safer and cut travel time and costs significantly. The tunnel is due to open in 2005. Currently, some 3,500 vehicles use the mountain road daily, expecting to rise fourfold as a result of the upgrading. Second, a new bridge will open in 2006 over the Mekong between Savannakhet in the Lao PDR and Mukdahan in Thailand in 2006. The $75 million bridge is expected to bring major changes to the town and the province. The bridge, a joint undertaking of the Lao PDR and Thailand and financed by the JBIC, The total length of the main bridge is approximately 1,600m, of which half is inside the Thai boundary. Third, Savannakhet, Lao PDR's most populous and economically successful province, will upgrade its airport, possibly to handle international flights. The airport will strengthen regional air and tourism links.

Fourth, on the east side of Savannakhet Province near the Vietnamese border, Lao PDR established the special economic zone Lao Bao. Fifty foreign companies have already invested, including the Australian gold and copper producer Oxiana. It will rely on the East-West corridor to export its projected production of 60,000 tons of copper in 2006 through Da Nang Port to the Asian markets. Finally, as part of the GMS Cross-Border Transport Agreement, one-stop customs procedures are expected to be launched in 2005 at the Lao PDR-Vietnam border check-point between Dansavanh and Lao Bao. The aim is to reduce waiting time from several hours to 30 minutes. Such cross-border movement of people as well as goods is expected to increase dramatically within the next decade.

[37] This section draws on ADB (2004). The East-West corridor will intersect with the North-South Corridor in Thailand. The North-South Economic Corridor will provide Kunming of Yunnan Province and northern Lao PDR access to important sea ports. The potential market coverage is extensive, given the excellent state of the road network from Singapore via Malaysia to Chiang Rai, and from Kunming to Beijing.

The East-West Corridor and Khon Kaen

The Chairman of the Khon Kaen Chamber of Commerce, Prayoon Angsanant, reported the impression of a delegation which attended a 2004 trade fair in Kunming, capital of the Yunnan Province, to explore trade possibilities. They were delighted to find a warm welcome for their fish sauce and dried shrimp. "With the East-West Economic Corridor and other infrastructure opening up markets in China, Lao PDR, and Vietnam, Khon Kaen wants to be the logistical supply center for the region, which is a gateway to the northeast and east" says Mr. Prayoon. The reduced transport costs will make us more competitive."

One of the city's main exports is fishing nets. A nearby factory, Khon Kaen Fishing Net Factory Co., produces and exports high-quality nets. The company plans to expand main markets in Cambodia, Myanmar, and Vietnam. Vinai Sereeyothin, human resources manager, says: "We need a lot of skilled people. So if everything opens up. I hope we can bring some Lao people here, give them training, and hire them".

Source: ADB 2004.

Thailand and Regional Initiatives

Thailand has actively pursued progress of the GMS. As the wealthiest GMS country, it is an important financier of projects beyond its borders. Thailand has ratified the Inter Government Agreement (IGA) on Regional Power Trade in the GMS and the GMS Cross-Border Transport Agreement. It has also provided numerous training courses for personnel from the GMS countries. These include the training for development managers in support of the Phnom Penh Plan at the Mekong Institute (in Khon Kaen province) and the training for trade officials at the Institute for Trade and Development in Bangkok.

In addition to GMS and ASEAN, Thailand is playing a leading role in a wide range of regional and subregional cooperation initiatives. A recent example is the Ayeyawaddy-Chao Phraya-Mekong Economic Cooperation Strategy, initiated in April 2003 by Thailand, Cambodia, Lao PDR and Myanmar. Its aim is to generate growth and promote peace and stability along the border. Other initiatives include the Asia-Pacific Economic Cooperation; the Indonesia-Malaysia-Thailand Growth Triangle; the Bangladesh, India, Myanmar, Sri Lanka, Thailand Economic Cooperation; the Mekong-Ganga Cooperation; and the Asia Cooperation Dialogue.

Source: NESDB 2004.

Villages

Agricultural economy

While cities are important growth drivers, the bulk of the Northeast population resides in villages. Over four in five families live in rural areas, accounting for about half of the country's village population. The Northeast contributes a good part of Thailand's agricultural commodities, much of which is exported. It produces two fifths of the rice, three fifths of the cassava, one fifth of the maize, one tenth of the sugarcane and the whole supply of kenaf.

Almost nine in ten households in the rural Northeast have an agricultural enterprise; this compares to 75 percent in the North, 73 percent in the South and 62 percent in Central. Every other agricultural enterprise in Thailand is located in the Northeast. By comparison, less than 3 percent of rural Northeast households have a manufacturing business, and only one in ten a service business. The share of agriculture in regional GDP is about twice the national average, but it dropped from 27 percent in the late 1980s to 19 percent in 2004, while industry expanded over the same period from 18 percent to 28 percent. However, the industry remains primarily focused on agro-business. The three leading sectors are rice milling, cassava processing and jute processing, and rice mills alone account for over two thirds of all factories.

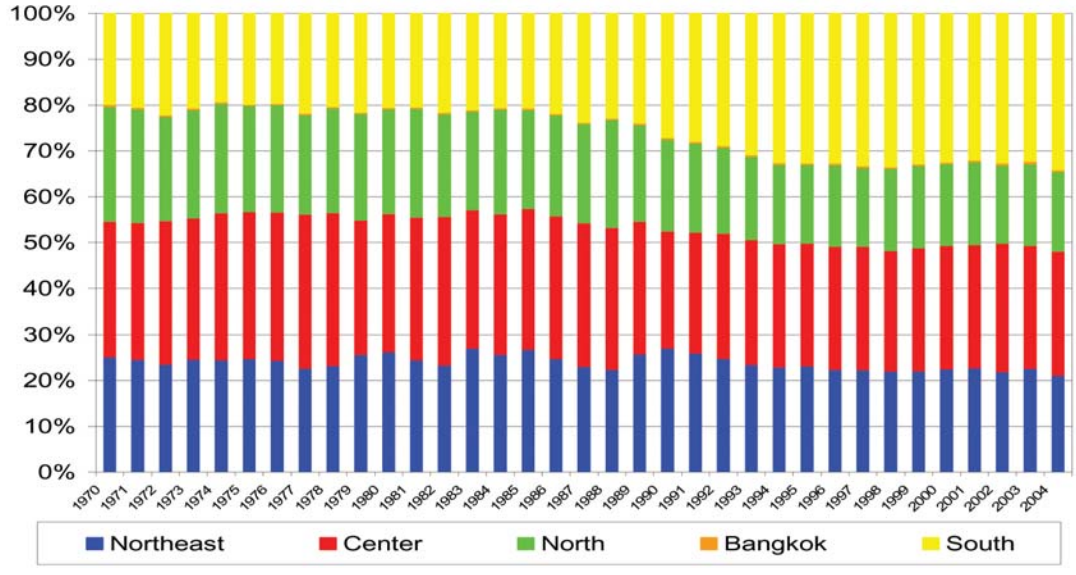
If Northeast farmers were as productive as farmers in other regions, the Northeast should contribute about half of Thailand's agricultural output. The Northeast generated only just over one fifth of agricultural GDP in 2004 (Figure 73.A). The Center produced a quarter more output, and the South a remarkable 60 percent more output, even though their populations were 30 percent and 60 percent smaller than the Northeast's 21 million.

In 1990, Northeast agriculture was still on par with Southern and Central agriculture, contributing 28 percent of Thailand's produce. Another 20 years back, in 1970, the Northeast farmers generated about one quarter more than those of the South, although the Center was already ahead then. Overall, while Northeast agriculture grew on par with the South and Center up until the late 1980s, it fell behind the South since then (Figure 73.B). And the performance deteriorated not just relative to the South, but also in absolute terms: while real agricultural growth rates averaged 4.2 percent during the 1970s and 1980s, they dropped to no more than 1 percent since 1990. This compares to 4.5 percent in the South, 3.3 percent in the Center and 1.7 percent in the North over the last 14 years. The drop in growth rates reflects a switch from extensive to intensive production. Until the early 1980s, agriculture expansion depended on increased area, but when land became a constraint, growth had to rely on productivity increases.[38]

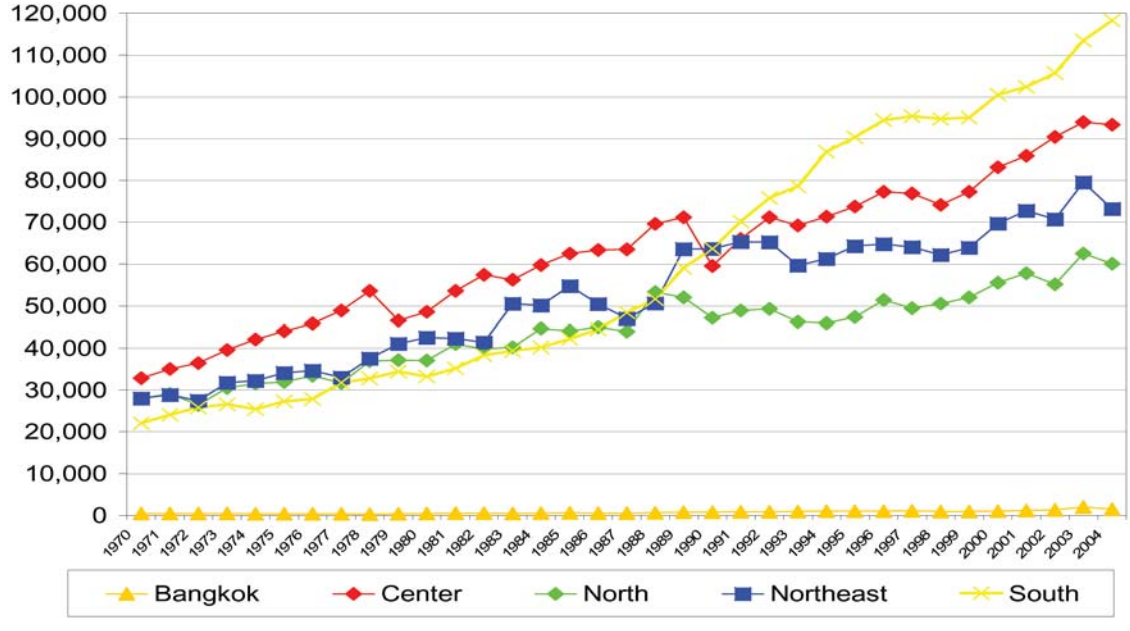
[38] During the 1960s and 1970s, the government intervened to discriminate against agriculture and labor-intensive manufacturing to support capital-intensive industry. A neutral policy would have raised agricultural productivity by raising agricultural prices and encouraged exit from agriculture into manufacturing. Price controls favored urban areas, where the goods were purchased, and demand stimuli primarily benefited the modern industrial sector (Christensen et al. 1993).

Figure 73: Agricultural GDP, 1970 to 2004

A. Regional Contribution (Percent of Total)



B. Million Baht in 1988 Prices



Labor Productivity

While the Northeast depends more than other regions on agriculture, labor productivity is lowest. In 2004, agricultural value added per agricultural worker was 50 percent higher in the North, 230 percent higher in the Center and 340 percent higher in the South. The productivity gap increased over the last 14 years (Figure 74.A). Since 1991, labor productivity grew annually by 2.3 percent in the Northeast, compared to 3.1 percent in the North, 4.1 percent in the Center and 4.2 percent in the South. Labor productivity of Northeast workers in 2004 was 250 percent higher in industry, and 500 percent higher in services than in agriculture. Thailand's land-labor ratio is more favorable than Korea or Taiwan, creating a weaker incentive to leave agriculture. Indeed the ratio of cultivated land to labor rose until the early 1980s. While one would expect agriculture to be more important than in Korea, there is no reason to see such large productivity gaps between agriculture and industry.

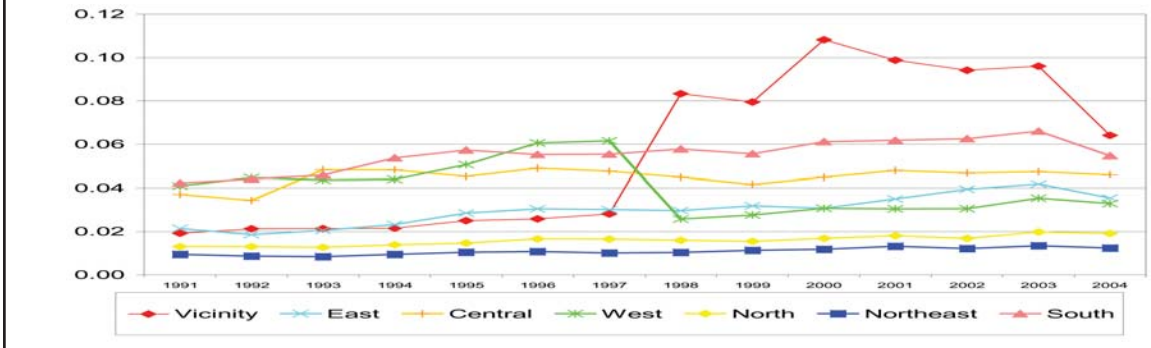
More encouragingly, Northeast productivity growth was faster in agriculture than in other sector. Industry expanded annually by 0.2 percent and services declined 2.2 percent. However, such differences are in part due to differences in capital and other complementary inputs and differential adjustments of such inputs during the Asian crisis. They are also a reflection of the Northeast's poor performance in industry and services, where labor productivity growth lacks behind other regions as it does in agriculture.

We can confirm the evidence on agricultural productivity from the micro perspective of farming households with the 2002 Socio-Economic Survey.[39] They account for over 60 percent of all Northeast households, compared to just over 42 percent to 45 percent in the North and South and one quarter in the Center (Figure 74.B). Farming households in the Northeast have smaller land plots than those in the North and Center (Figure 74.C), as widespread household ownership of land has limited consolidation of land holdings. While Northeast household have more farm labor than in other regions (Figure 74.D), their agricultural productivity is lowest, regardless of whether it is measured in terms of revenues or margins per land or per labor (Figure 74.E). The gaps are especially large relative to the Center and the South, but even the North is 60 percent to 80 percent more productive.

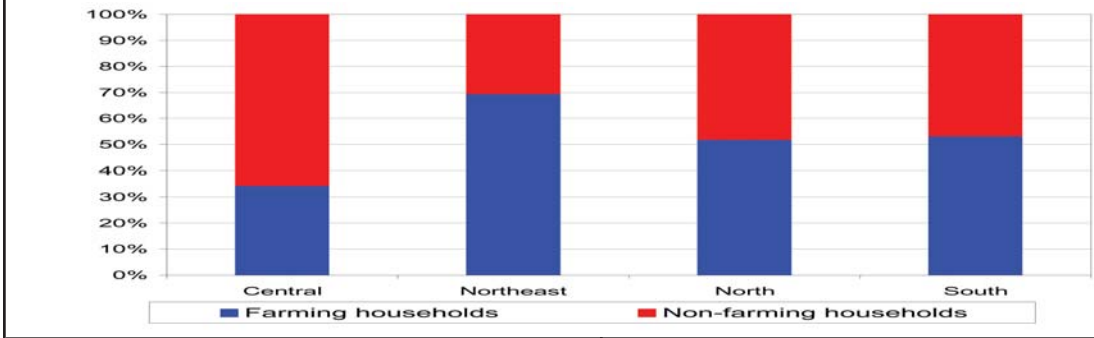
[39] The analysis draws on data on household enterprises and farms entered in addition to the standard SES modules by the National Statistical Office for the NEED project. Gross revenue is the sum of total operating costs and the margin (profit).

Figure 74: Agricultural Labor Productivity

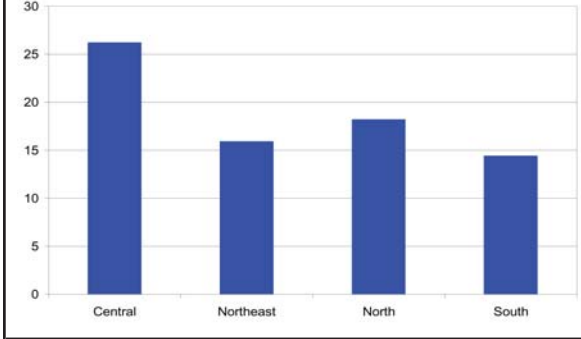
A. Agricultural Value Added by Agricultural Worker, 1991 to 2004



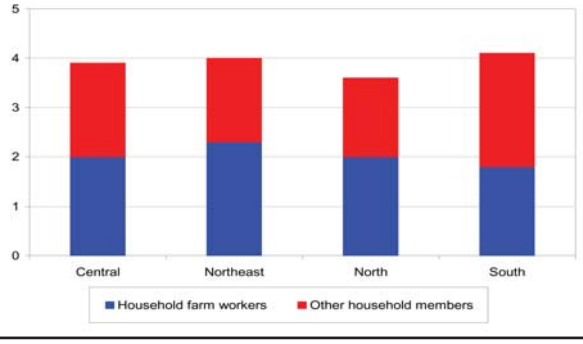
B. Farming households as a Percent of All Households



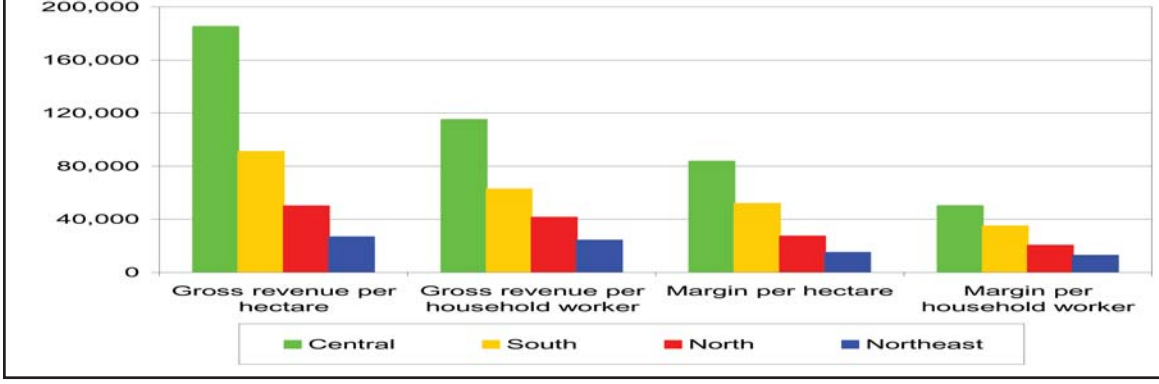
C. Farm Size (Rai)



D. Farm and Non-Farm Workers per Household



E. Gross Revenue and Margin per Hectare and per Household Worker



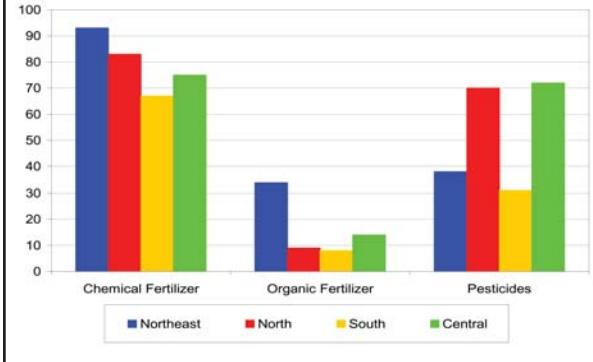
Land Quality

One important factor behind low agricultural productivity is the weak natural resource base. The soil is sandy with low water holding capacity. Unsustainable farming systems have contributed to high salinity levels and soil erosion which further lowered fertility levels. Soil salination is the result of the interaction of groundwater flow systems with widespread deposits of rock salt. Over one third of all crop land suffers from high saline content. Soil erosion is aggravated by a declining forest cover which acts as a natural barrier for soil conservation. The forest cover fell from around 6 million hectare in 1990 to only 2 million hectare in 2002.

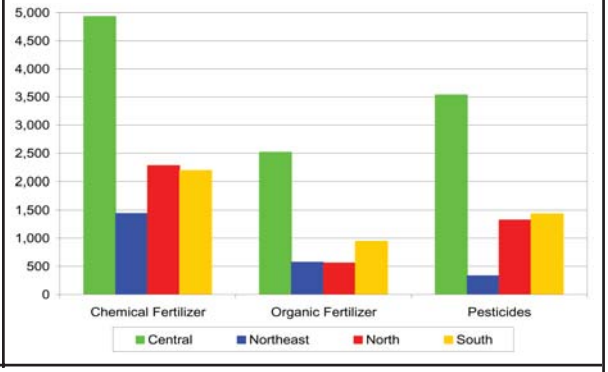
Farming households in the Northeast use little inputs, such as fertilizers and pesticides, to improve farm yields. While more farmers in the Northeast apply such inputs, the amounts among users are only one third to one ninth of the levels observed in the Center. The shortfall to other regions is largest for pesticides. Farming households using fertilizers and pesticides are less poor than those who do not use these inputs. Poverty headcounts in the Northeast increase from 4.5 percent to 6 percent for the non-users, implying poverty among farming households operating without these inputs is at least 20 percent.

Figure 75: Fertilizer and Pesticides Use and Poverty among Farming Households, 2002

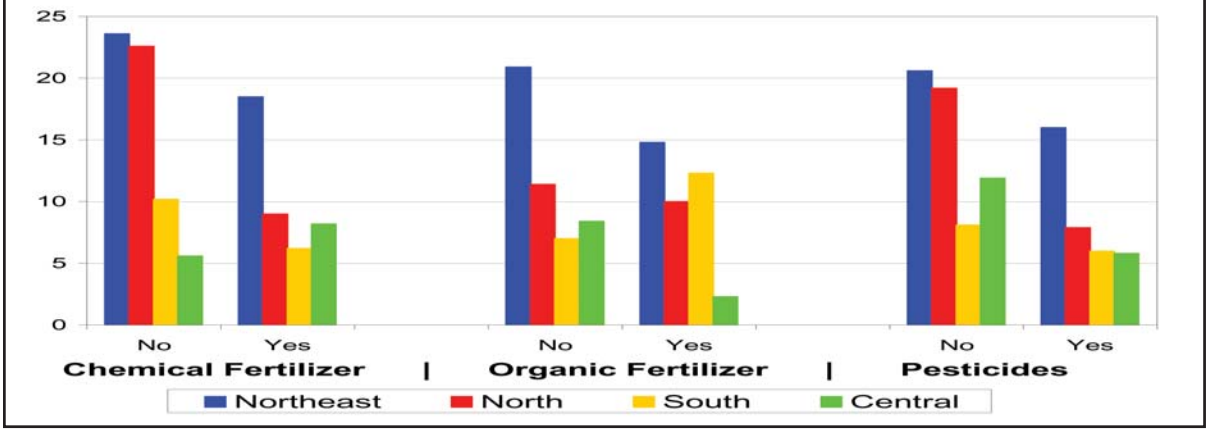
A. Percentage of Household Using Farming Input



B. Baht spent on Farming Input among Users



C. Poverty Headcount by User Status, Percent

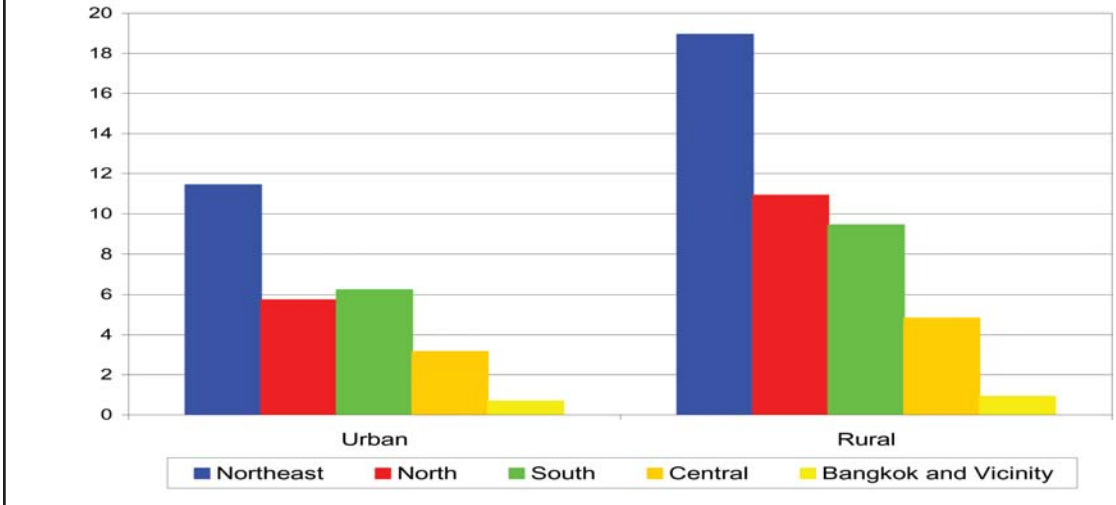


Rural poverty

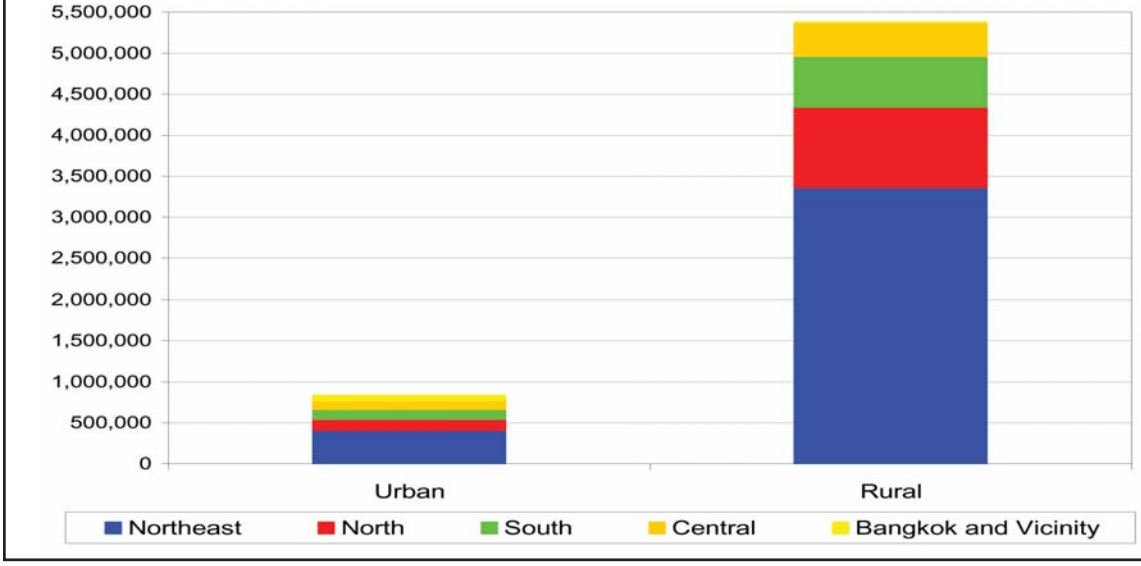
Low productivity leads to high poverty. Poverty is more severe in rural areas, where livelihood depends foremost on agriculture, than in urban areas, which offers employment opportunities in industry and services (Figure 76.A). Across the regions, the poverty headcount in villages is between 30 to 90 percent higher than in cities. Two thirds of the population live in rural areas, rising to over three fourth in the Northeast, North and South, where the poverty incidence is especially high. Hence, almost nine out of ten poor live in villages, and more than half of all the poor in Thailand live in rural Northeast (Figure 76.B).

Figure 76: Poverty in Urban and Rural Areas, 2002

A. Poverty Headcount (Percent)



B. Number of Poor

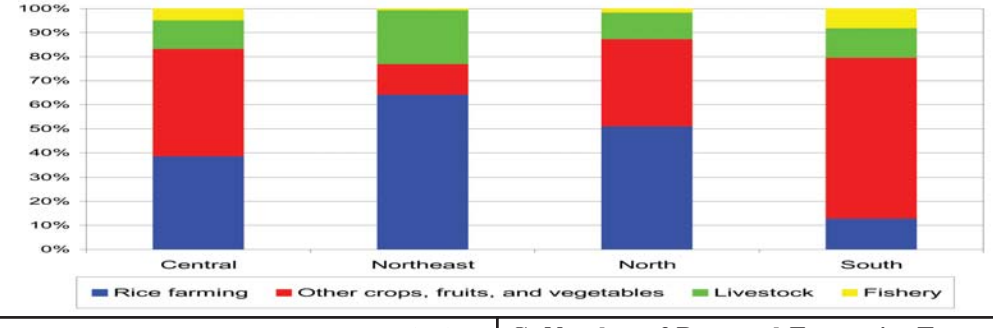


Farming, Enterprises, and Poverty

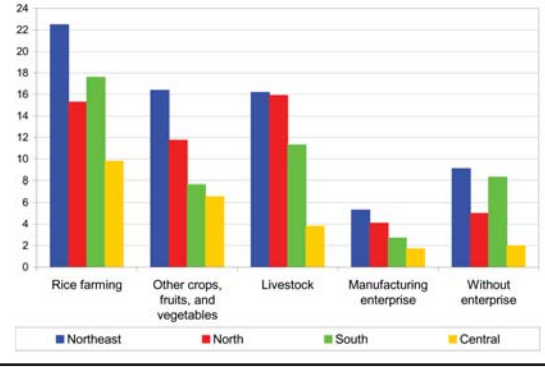
Another cause for low living standards is the high dependency on low-yield and low-price varieties of rice. The Northeast is more dependent on rice than any other region. Almost two in three farmers produce mainly rice. This compares to one in two in the North, two in five in the Center, and one in seven in the South. Similarly, land use statistics from the 2003 agricultural census show that 70 percent of all land holdings are under rice, compared to 54 percent in the North, and two 43 percent in Central. By the same token, only 13 percent of the Northeast farmers specialize in non-rice crops, such as cassava and maize, or fruits and vegetables, the lowest share in the country. Perhaps due to the low land quality, more than one in five Northeast farmers specialize in livestock, at least twice as much as in the other regions. According to the 2003 agricultural census, almost every other agricultural holding both cultivate crops and rear livestock in the Northeast. In contrast, one third of holdings in the South, one quarter of holdings in the North, and less than one fifth of holdings in the Center reported such activities. Finally, fishery plays no role in Northeast agriculture, while it provides an income for 5 percent of agricultural households in the Center and 8 percent in the South. Agricultural households are poorer than non-agricultural households, and rice farming households are poorer than agricultural households specializing in other sectors. As a result, rice farmers in the Northeast alone account for 44 percent of Thailand's poor. Northeast households are poorer than other households not just in agriculture but also outside of agriculture.

Figure 77: Farming, Enterprises, and Poverty, 2002

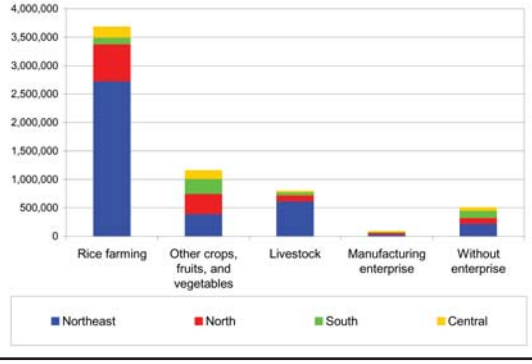
A. Farmers by Type (Percent)



B. Poverty Headcount and Enterprise Type (%)



C. Number of Poor and Enterprise Type

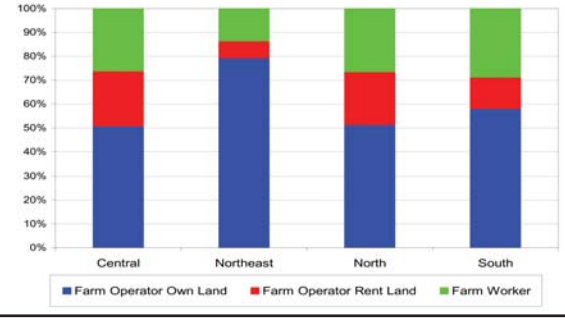


Subsistence

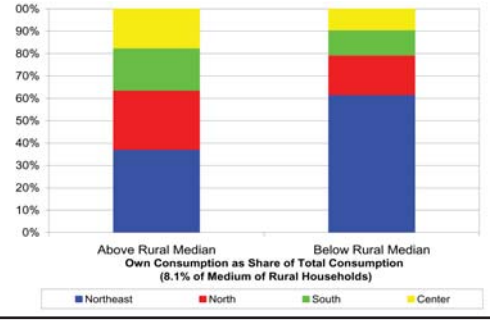
Land ownership is more widespread in the Northeast than elsewhere. Four in five farming households own the land, compared to 50 percent to 60 percent in other regions. sLack of income and high income volatility prevents farmers from increasing the size of landholdings via renting. Only 5 percent of agricultural land is rented, compared to 17 percent in the North and 24 percent in the Center. Similarly, fewer households work on other farms in the Northeast (Figure 78.A). About 14 percent of farming households engage in this activity, compared to 26 percent to 29 percent in other regions. Northeast farmers use more of their produce than farmers in other regions. Over three in five farmers with own consumption above the rural median of 8.1 percent of total consumption live in the Northeast, compared to less than two in five of farmers whose own consumption share is less than the median (Figure 78.B). They consume about one quarter of their yield, which in turn contributes about 13 percent of their total consumption (Figure 78.C). The North's shares are about one half, and the Center's and the South's about one quarter as large. An average agricultural household in the Northeast consumes Bt8,200 worth of its own production, while rural households consume around Bt5,000 in the North and Bt3,000 in the Central and the South. Subsistence is a strong predictor of poverty across all regions (Figure 78.D). Remarkably, more than half of all households whose consumption is based at least 20 percent on own produce are poor. There is little variation across regions, suggesting that subsistence farmers face a similar predicament regardless of their location.

Figure 78: Households Type and Land Size, Percent, 2002

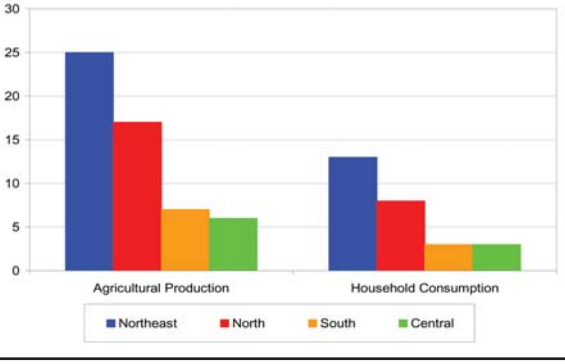
A. Farming Households by Type



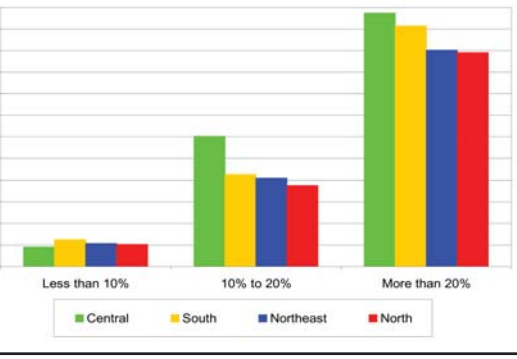
B. Subsistence Farmers



C. Own Produce in Production and Consumption



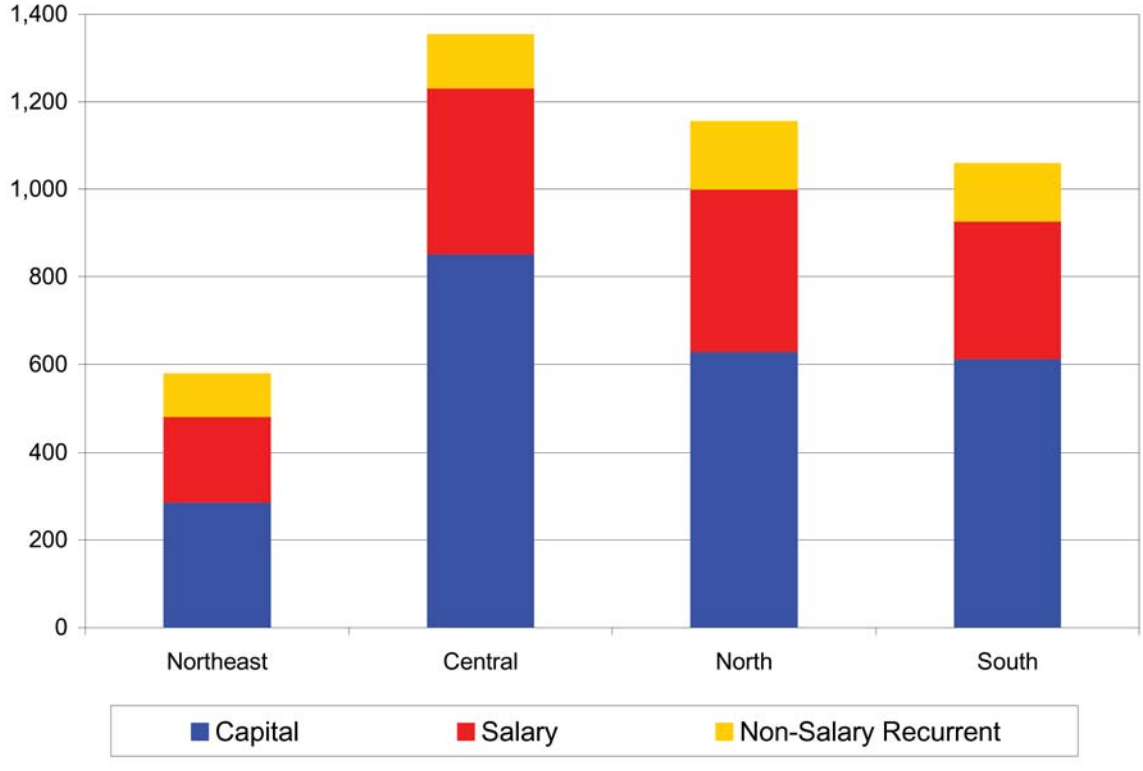
D. Income Poverty Headcount by Own Produce



Public Spending

While the rural Northeast has lagged behind other regions in terms of productivity and commercialization, the RTG has allocated fewer resources in the agricultural sector than in other regions. In FY 2002, the Northeast spent Bt577 per capita on agriculture, only about half the amount of the North and the South, and two fifths of the amount of the Center (Figure 79). The gap is wider for capital spending, which accounts for about half of agricultural expenditures, than for recurrent spending. Since the Northeast is less urbanized than the other regions, these shortfalls are even larger in terms of spending per rural person.

Figure 79: Public Spending on Agriculture, FY 2002



Rural Programs

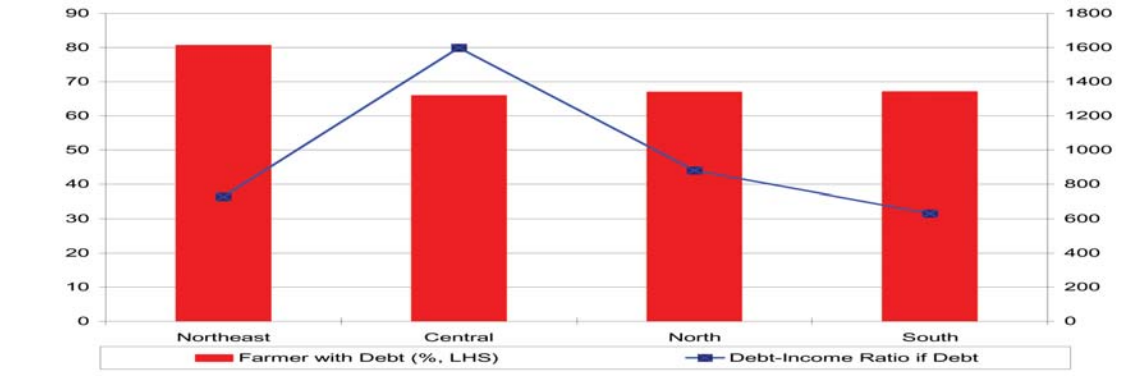
While the marketing of agricultural inputs and outputs is largely in private hands, the public sector assists farmers through the provision of subsidized inputs and credit, debt moratorium programs and village funds. Total public expenditures on agricultural subsidies in FY2003 amounted to Bt11,500 million, equal to about 15 percent of spending on agriculture. The main channel of subsidies is the Bank for Agriculture and Agricultural Cooperatives (BAAC), which allocated Bt6,000 million for the Debt Moratorium Scheme to 1,200,000 farmers, and Bt900 million in interest compensations. It is also in charge of the paddy pledging scheme, which we will discuss later in the report. Another important subsidy is the rubber subsidy, provided through the Rubber Estate Organization and Office of Rubber Replanting Aid Fund. The main recipient of this subsidy is the South, which accounts for 85 percent of rubber cultivating areas in Thailand. It is beyond the scope of this report to discuss these programs in detail. The following paragraphs will focus on one aspect only: access of poor and non-poor farmers to the debt moratorium and the village fund programs.

About two in five farmers in the Northeast had farm debt in 2002, similar to the Center and North, and more than the South. It amounted to 6.2 times their monthly household income, the lowest share of any region (Figure 80.A). However, farmers with debt tend to be less poor than farmers without debt, as access to credits is restricted for low-income farmers due to lack of collateral. Under the debt moratorium program, the Bank for Agriculture and Agricultural Co-operatives suspended the repayment of principal on small-amount loans for three years, starting from July 2001.[40] Eligibility requires that farmers have to be borrowers from BAAC with a credit line of no more than Baht 100,000 and no history of deliberate default. The Northeast accounts for the largest share of participating farmers. Unsurprisingly, the program suffers from high leakage to non-poor farmers. About 8 percent of non-poor farmers with farming debt benefited from the debt moratorium program in 2002, compared to 7.4 percent of poor farmers, which implies that about one in ten beneficiaries of the program are poor (Figure 80.B). The Village Fund, launched in 2002, is a revolving fund of one million Baht (about $25,000) to each of the 70,865 villages and some 2,000 urban communities. Village Fund committees hand out small short term loans (less than one year) at low interest rates (around 6 percent) to village members. As long as village size does not vary systematically across regions, the Village Fund is designed to allocate the same per capita amounts across all regions. However, the extent to which this program benefits poor farmers depends on how funds are distributed by the village-level committees. The access of non-poor farmers to the village fund loans is about 4 percent to 5 percent higher than for poor farmers across all regions. Similar to the debt moratorium program, this implies that more than 90 percent of the beneficiaries of the Village Fund program are non-poor households (Figure 80.C).

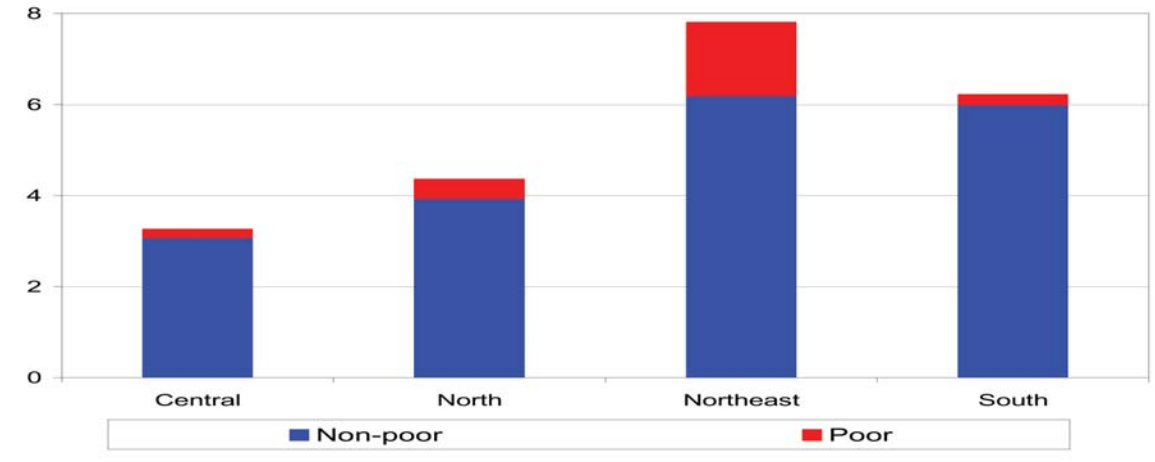
[40] After the moratorium has expired on March 31, 2005, a large number of distressed farmers were still unable to start repaying BAAC loans as a result of this year's severe drought.

Figure 80: Farmers Debt Moratorium and Village Fund, 2002

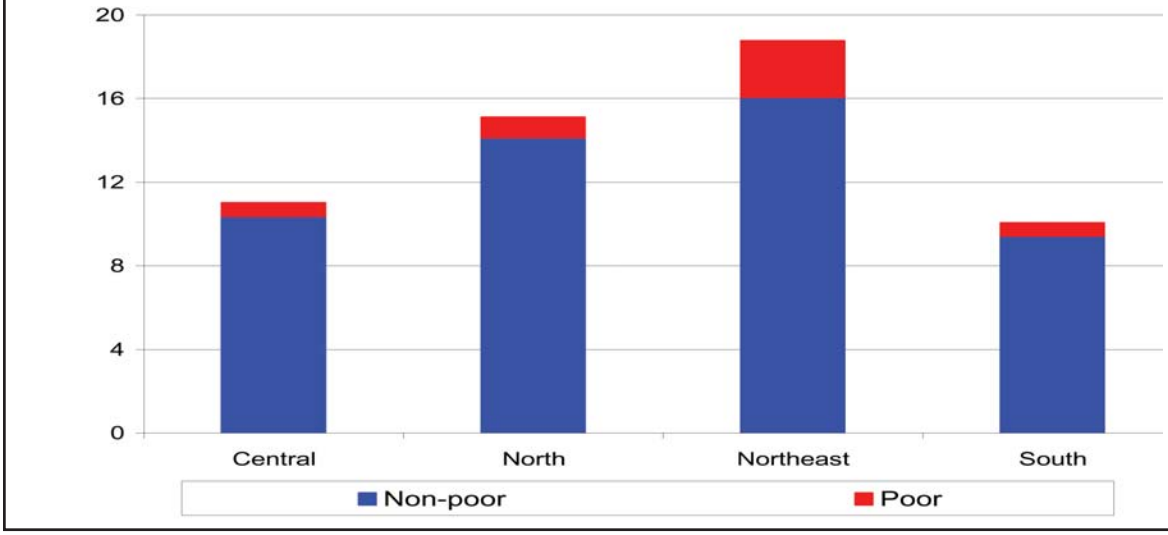
A. Farm Debt



B. Beneficiaries of Debt Moratorium Program among Farmers with Debt



C. Recipients of Village Fund Loans



Irrigation

Low agricultural productivity and high poverty is linked to lack of water and irrigation. While annual rainfall in the Northeast is not lower than in other parts of Thailand (about 1,300 millimeters per year), the region suffers more due to its poor distribution over the growing periods. The region is drained by two rivers, Nam Mun and Me Chii rivers, but they have few tributaries and vast tracts of land are beyond their reach. Unsustainable water extraction rates (21,000 and 9,300 cubic meters per year, respectively) have led to declining water balances. While average landholdings are small, lack of water results in one third of the land not being cultivated.

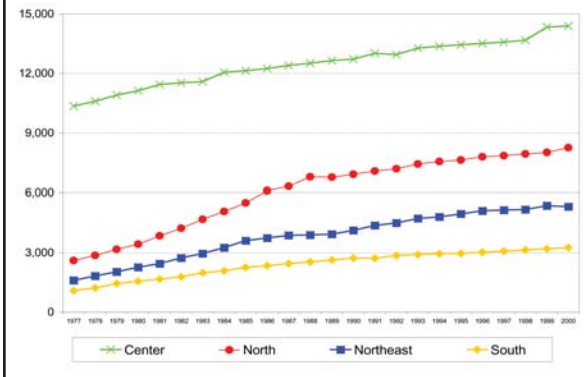
Irrigation in the Northeast has lacked behind the rest of the country, and the gap relative to the North and South has remained unchanged in the last 25 years (Figure 81.A and Figure 81.B). In addition, only one third of irrigated lands are actually used during the dry season, as the bulk of the irrigation system is not suitable for non-rice crops. According to NRD2C data, 84 percent of the Northeast villages experience problems for farming in 2001 during the dry season, compared to 80 percent in 1996. This is more than twice the share as in the Center and South, and 28 percent higher than in the North.

The low level of irrigation is reflected in low public expenditures. Irrigation spending is the most important type of agricultural expenditure, varying from 44 percent in the Northeast and North, to 53 percent in the South and almost 70 percent in the Center. The Northeast is disadvantaged in all types of irrigation services (Figure 81.C). Even though it accounts for 45 percent of agricultural land, it receives is only 18 percent of irrigational expenditure (Figure 81.D). The Royal Irrigation Department in the Ministry of Agriculture, which accounts for over 90 percent of irrigation expenditure, shows that the Northeast had completed only 12 large scale irrigation projects compared to 48 in the Center by FY 2001, and they covered only 14 percent of the project area in the Center. In spite of its already superior water access, new large-scale developments take place mostly in the Center. Smaller irrigation programs are prominent in the Northeast. These projects, managed often by communities, provide typically wet season irrigation only. Only one third of irrigated lands are actually used during the dry season, as the bulk of the irrigation system is not suitable for non-rice crops.

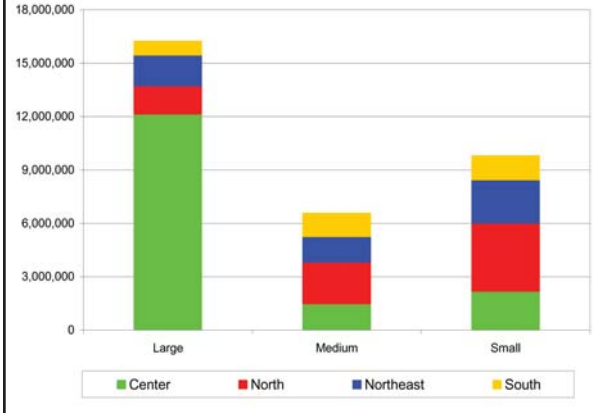
While the Northeast has less irrigation than other regions, irrigation is also more expensive. The unit cost of management and maintenance in the Northeast is higher than in any other regions (Figure 81.E). A lack of attractive sites and concerns about environmental and social impacts has made future investments problematic. Relative to expansion investment, improvements in the management of sca Arce water resources have received insufficient attention, especially in view of growing competition with industrial and household uses and growing water disputes.

Figure 81: Irrigation

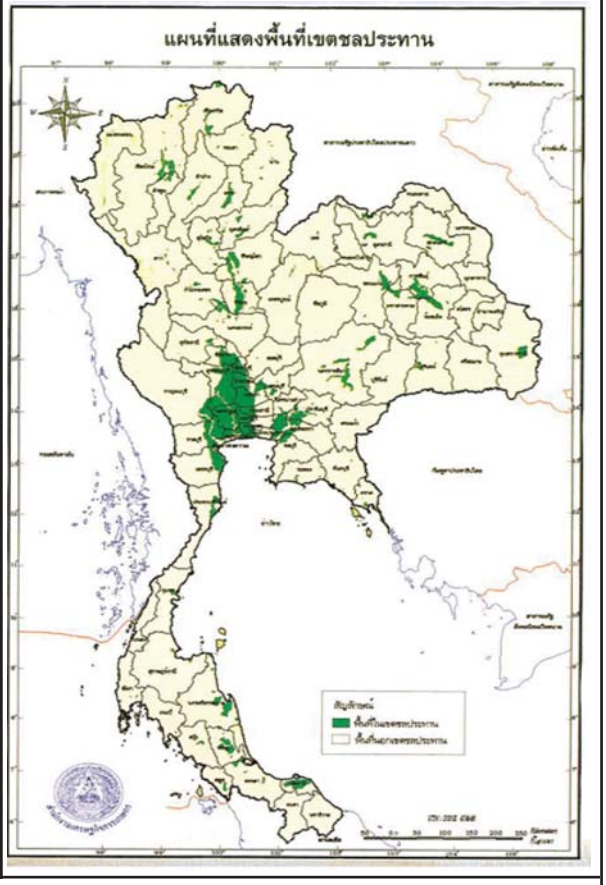
A. Irrigated Area (1,000 rai), 1977 to 2000



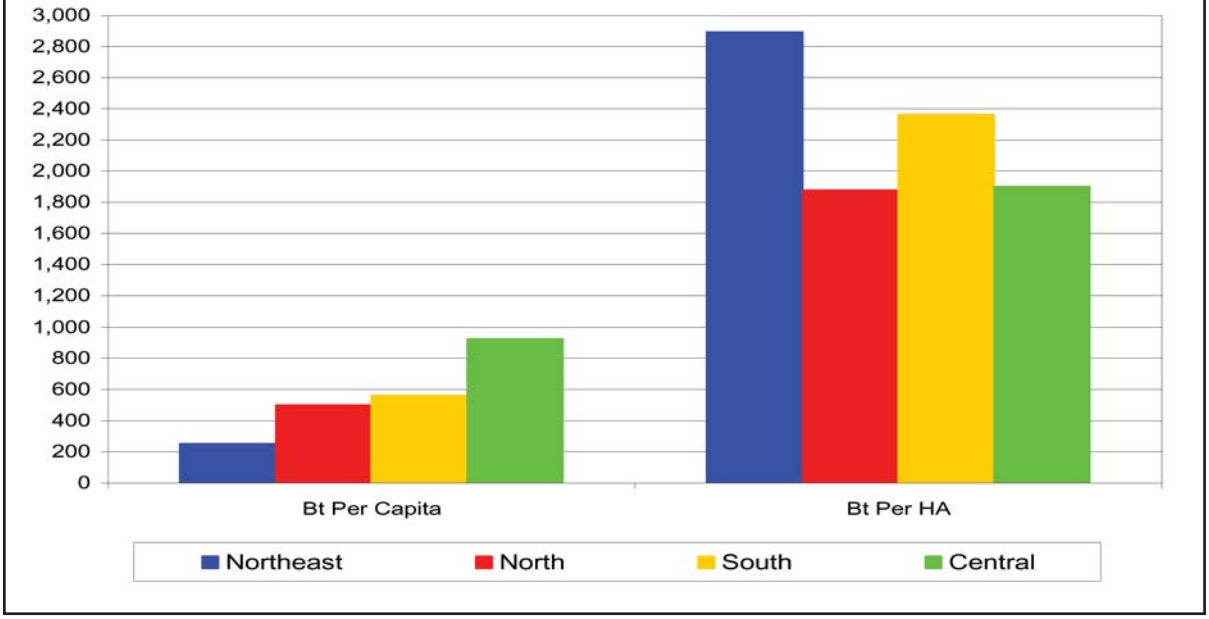
B. Irrigation Area by Scale of Irrigation Scheme, 2001



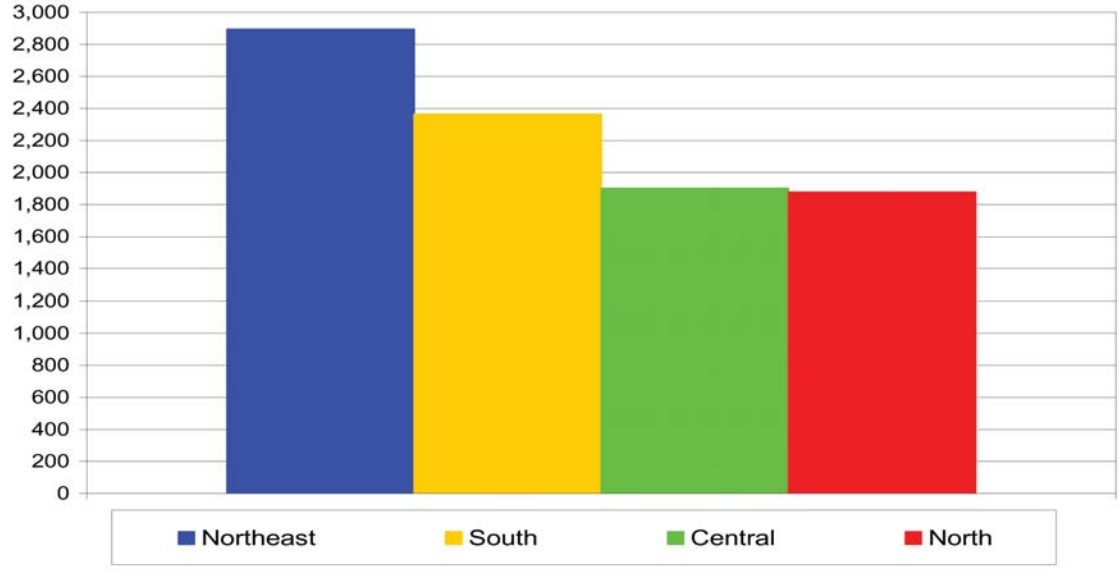
C. Irrigated Areas Zgreen-shaded



D. Public Irrigation Spending, Baht Per Capita and Baht per Hectare, FY 2003



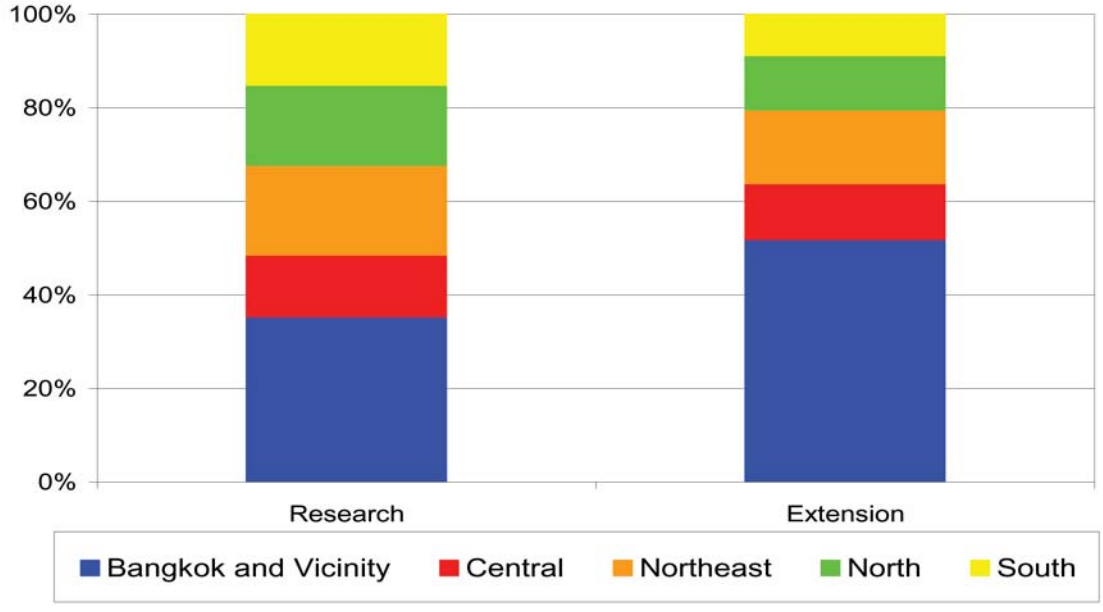
E. Maintenance and Operation Cost per Hectare of Irrigation, 2001



Research and Extension

Agricultural research has a long history in Thailand, dating back to the establishment of the Rangsit Agricultural Experimental Station in Bangkok in 1916. Still today, public research accounts for almost 90 percent of all agricultural research (Fuglie 2000). The public goods nature of much agricultural research explains the small share of the private sector. Public research funding concentrates on rice, cassava and sugarcane, while private sector research focuses on corn and vegetables. The Ministry of Agriculture and Agricultural Cooperatives administers the bulk of the research and extension work, in addition to public universities that draw on government research grant. Extension accounts for over 90 percent of the expenditures on agricultural research and extension. Half of all funds are spent in Bangkok and Vicinity, where some of it benefits national level research (Figure 82). The Northeast receives just over one seventh, even though it home to one in two farms. The regional distribution matters as agricultural innovation has to take into account regional conditions and crop varieties. For example, the Northeast has a different climate and ecological system as well as different rice crops than the Central plain. International evidence suggests that the rates of return to agricultural research and development are substantial. Fan et al (2004) argue that in Thailand government spending on agricultural research and development improves agricultural productivity more than other public investments.

Figure 82: Public Expenditure on Agricultural Research and Extension, FY 2003 (%)



Weather Risk

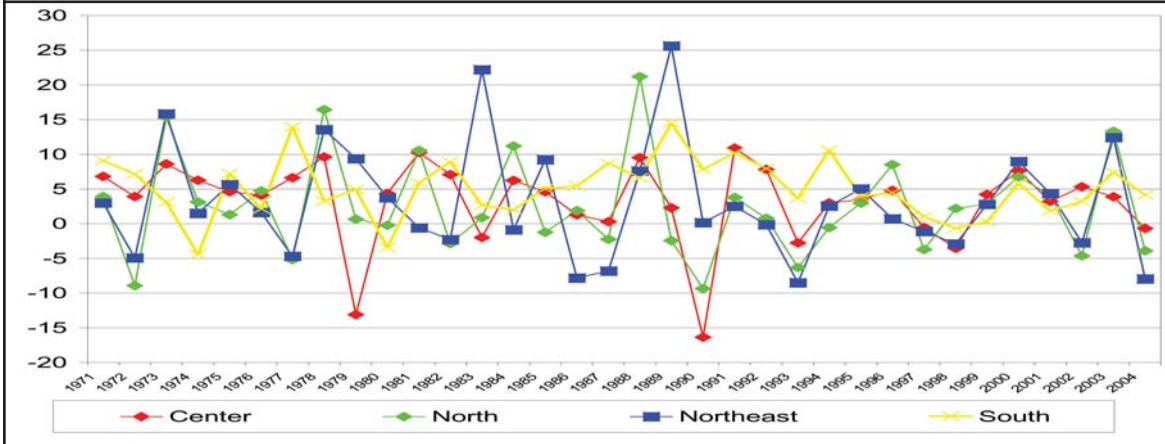
Risk is a pervasive characteristic of life in Thailand's countryside, especially in the Northeast. The rural economy depends heavily on weather conditions, and experience frequent weather hazards, like drought and floods. Agricultural growth fluctuates widely from one year to the next due to changing weather conditions (Figure 83.A). The Northeast suffers from relatively harsh climatic conditions which often result in floods and droughts. Unlike the more fertile areas of Thailand, the Northeast has a long dry season and its red, porous (laterite) soils retain water poorly, limiting their agricultural potential. The short monsoon season brings heavy flooding in the river valleys. However, only two provinces receive more than 1500 mm of rainfall per year, while five provinces receive less than 1300 mm (Figure 83.B). The mid season dry spell is one of the major constraints in rice production that often prevents farmers from planting rice in their upper paddy fields. During the harvesting season in 2002, late rainfall resulted in a low quality paddy and low quality milled rice. The 2003 crop year was a fairly good season, but last year a dry spell during the flowering stage damaged more than 2 million rai in 28 provinces, most of which from the Northeast. The RTG was forced to provide more than Bt827 million to support around 330,000 farmers in November 2004. This year, the country experienced a particularly severe drought. It affected 70 out of 76 provinces, 59 of which are agricultural areas producing major rain-fed cash crops including rice, maize and sugar cane etc (Figure 83.C and D).

The large fluctuations in agricultural value added indicate that traditional coping mechanisms do not protect rural households from sudden income loss. Since weather shocks typically affect most households in the same area at the same time, farmer communities have difficulties mitigate the shock without help from outside. Without risk transfer mechanisms, farmers have to constantly absorb the economic impact of successive weather shocks in addition to facing the prevalent price instability in the markets. But as the example above shows, the risk exposure does not stop at the farmer but includes the RTG. The Ministry of Finance spent approximately $100 million on ad-hoc disaster relief, usually in the form of in-kind grants (food or farm inputs) to weather-distressed farmers (Lorchirachoonkul and Chaisilaparungruang 2002).

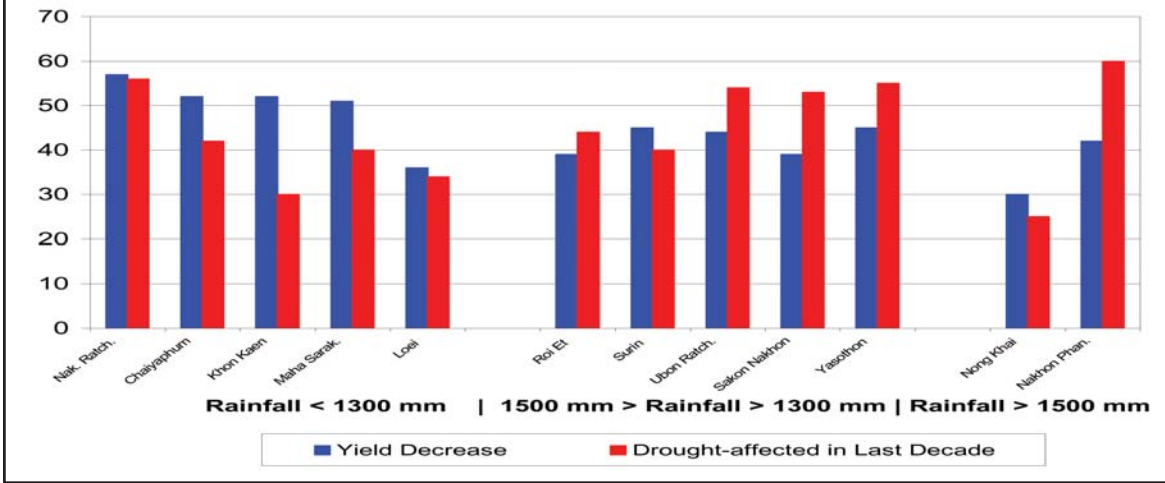
In addition, the Ministry of Agriculture and Cooperatives compensates production costs to farmers who lost their crops due to drought or flood, and the BAAC regularly experiences lower repayment rates during bad- weather years as crop failures reduce or eliminate yields and farm incomes. After the moratorium has expired on March 31, 2005, a large number of distressed farmers were still unable to start repaying BAAC loans as a result of this year's severe drought.

Figure 83: Agricultural Growth and Weather Risk

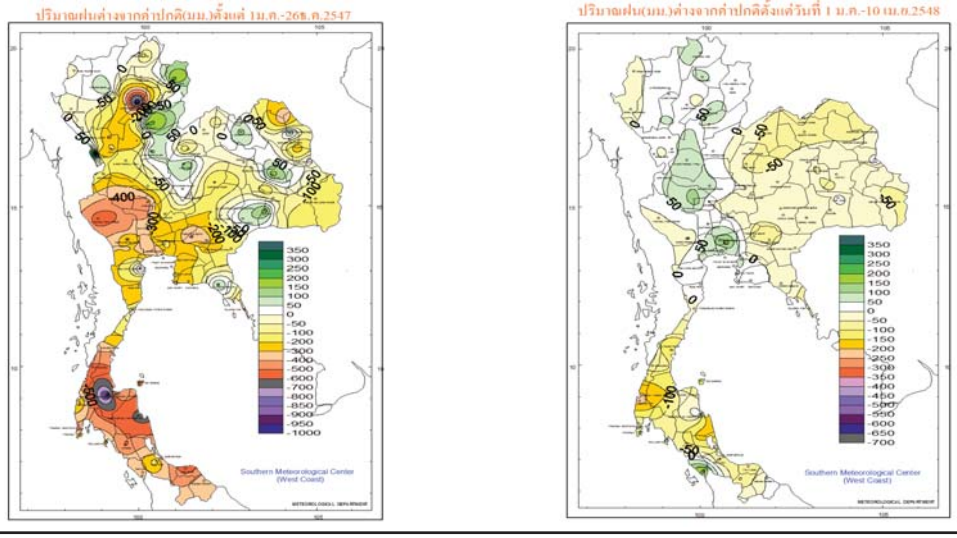
A. Real Agricultural Growth Rates, 1971 to 2004



B. Drought Statistics among Rice Farmers for 1991 to 2001 in the Northeast (Polthani 2002)



C. Deviation of Rainfalls from the Means (in mm.) in 2004 and 2005



New Weather Insurance

Index-based weather insurance products are contingent claims contracts for which payouts are determined by an objective weather parameter (i.e. rainfall, temperature or soil moisture etc.) that is highly correlated with farm-level yields or revenue outcomes. Rainfall-indexed insurance is well-suited to agricultural production in regions where there are widespread crop losses due to drought. In such regions, rainfall could potentially be used as a good proxy for the actual losses incurred by farmers. Index-based insurance is less susceptible to some of the problems intrinsic in traditional multi-peril crop insurance. Since payouts for indexed contracts are automatically triggered once the weather parameter reaches a pre-specified level, the insured farmers receive timely payouts. The automatic trigger also minimizes administrative costs for the insurer by eliminating the need for tedious field-level damage assessment. The objective and exogenous nature of the weather index prevents both "adverse selection" (farmers know more about their risks than the insurer, leading the low-risk farmers to opt out and leaving the insurer with only bad risks) and "moral hazards" (farmers' behaviors can influence the extent of damage which qualifies for insurance payouts). Indexed products also facilitate risk transfer to the international markets, as international reinsurers are likely to provide better terms when the insurance is based on measurable weather events and not farm-level losses. World Bank pilots in developing countries suggest that weather-indexed insurance is a promising new instrument for agricultural risk management (Box 8). Thailand has the right infrastructure (numerous localized weather stations, local institution with distinct intermediary capacity, and a developed insurance market) to make such a scheme work.

Box 8: Rainfall-indexed Insurance for Indian Farmers

In 2003, the World Bank provided technical assistance in designing and developing rainfall-indexed insurance products to BASIX, a leading agricultural finance institution in India. The pilot was launched in Andra Pradesh where BASIX intermediated to castor and groundnut farmers weather insurance contracts that will trigger prompt payouts when rainfall falls below the trigger level in each respective crop-specific rainfall index. The policies were underwritten by ICICI Lombard, a leading Indian insurance company, which subsequently reinsured the risks with an international reinsurer. The deal marked the first time that an agricultural finance institution in a developing country transferred the systemic risk of its crop lending portfolio to the international weather risk markets. The World Bank and BASIX consider the pilot experience very successful. During the first year, BASIX sold 230 rainfall-indexed policies in 2 Andra Pradesh districts, which substantially rose to 427 in 3 Andra Pradesh districts in 2004. A number of farmers who purchased rainfall-indexed policies for the 2004 monsoon season were repeat buyers from 2003, indicating the value of the products to farmers. With the success of the first two years, BASIX is currently scaling up the scheme, with a target of selling 7,000-10,000 weather insurance policies across its 50 branches in 7 states in 2005. The pilot experience has proven to be crucial for the emergence of a weather insurance system in India. First, valuable inputs received during the pilot stage have contributed to a more sophisticated product design that better covers the weather risk exposure of farmers. For the 2005 monsoon season, BASIX and ICICI Lombard have designed a deficit rainfall insurance product that includes a dynamic starting date, a feature which results directly from farmers' feedback. Second, the 2003 pilot also seemed to have sparked much broader interest in weather-indexed insurance in India. This risk management vehicle was explicitly mentioned in the 2004-05 Government of India budget, and offered during the 2004 monsoon season by a number of companies, including the government-owned Agricultural Insurance Company and IFFCO-TOKIO General Insurance Company, an Indian-Japanese joint venture.
Source: CRMG 2005.

Value Chain

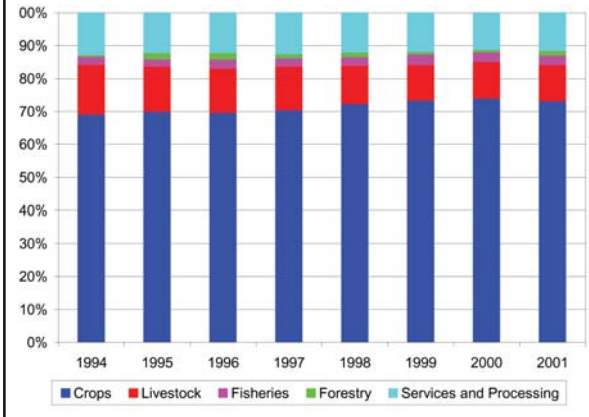
Promoting sustainable production systems for small-scale farmers is a major policy issue. Small landholdings, low yields and lack of storage facilities lead to a large dependency on middlemen who often reap most of the gains from high crop prices. Although these farms may not contribute much in terms of market value and export earnings, they are the backbone of the Thai rural society and make important contributions in terms of self-reliance, food security, and environmental conservation. These farmers are under pressure to commercialize through contract farming and linkages to large-scale agribusiness. At the same time, they also search for appropriate farming systems that would be more in harmony with the natural resource base. Innovation and governance along the value chain are key elements of any strategy aimed at reducing costs, increasing profitability, and above all raising the returns to the products being sold.

The large number of small scale producers living in farming communities scattered through the region and working on small land plots, practice overwhelmingly raw material production. Over 70 percent of agricultural value added comes from crops, some 10 percent from agricultural services and processing, about 10 percent from livestock, and the rest from forestry and fishery. The main change since 1994 is the increase in crops at the expense of livestock (Figure 84.A). At this aggregate level, the Northeast differs from Thailand only through the absence of a significant fishery industry (Figure 84.B) which is compensated for by a greater reliance on crops and livestock.

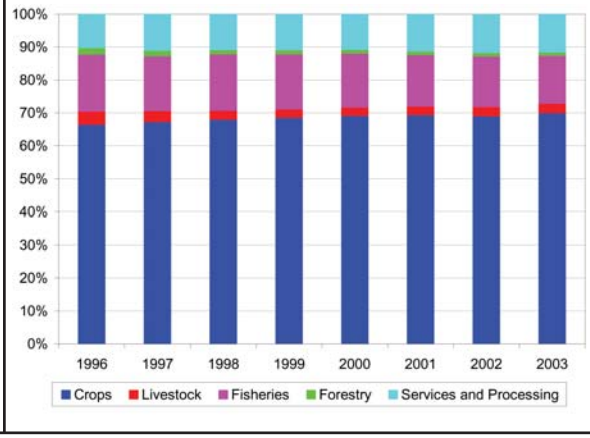
In the following, we will take a close look at the value chain for two commodities: rice and silk. While rice is the single most important crop for Thai households (Figure 84.C), silk is a niche product of particular relevance to the Northeast with large potential for value added (Figure 84 D). The value chain is defined as "the full range of activities which are required to bring a product or service from conception, through the intermediary phases of production, delivery to final consumers, and final disposal after use" (Kaplinsky 1999).

Figure 84: Agricultural Value Added and Household Production of Key Commodities, Percent

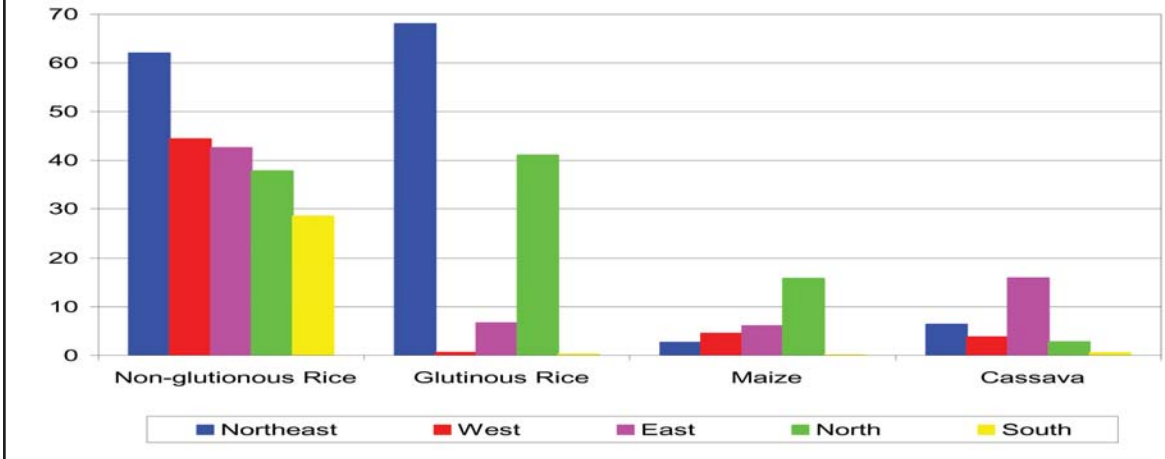
A. Composition of the Value Added of the Agricultural Sector, Northeast (1994 to 2001)



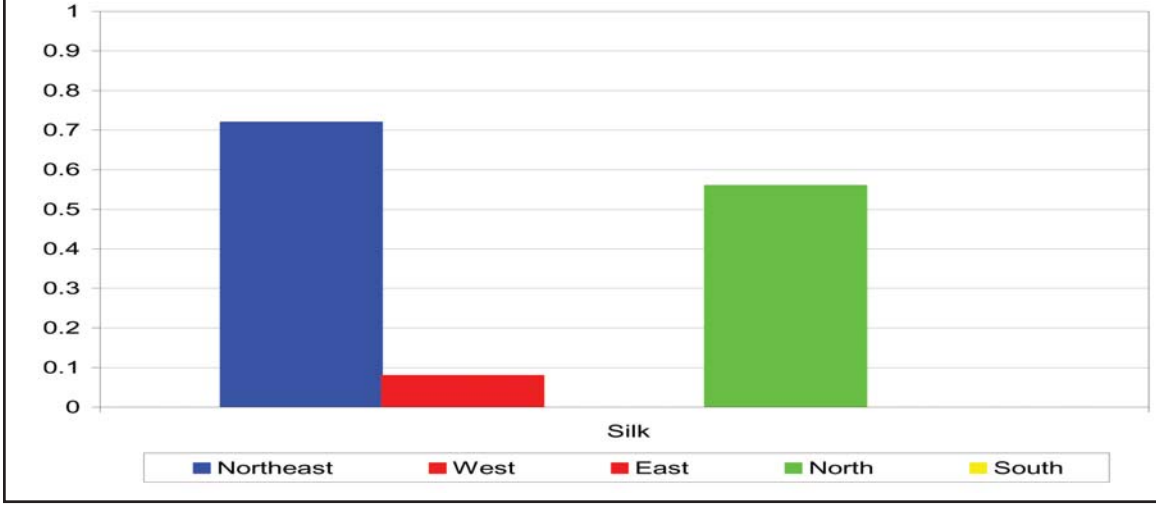
B. Composition of the Value Added of the Agricultural Sector,Thailand (1996 to 2003)



C. Share of Households Producing Rice, Maize and Cassava among Farm Households, 2002



D. Share of Households Producing Silk among Farm Households, 2002



Rice

Global Commodity

Production, consumption and trade of rice are highly concentrated in Asia. The major producers of rice include China, India, Indonesia, Bangladesh, Vietnam, and Thailand. While global production of rice is significant, the majority of rice production is consumed in domestic markets. Worldwide production of paddy was about 580 million tonnes in 2003, compared to around 600 million in 2000. The global trade in rice has averaged around 25 million tonnes over the past five years. This makes the international rice market one of the smallest in the world compared with other grain markets such as wheat (113 million tonnes) and maize (80 million tonnes). Similarly, only a fraction of total production is processed and used by the food industry. In addition, the global structure of commercialization is not uniform. Global rice trade is segmented by rice type, degree of processing, and quality. Due to the small size and segmentation of the international rice market, international prices are highly volatile.

Rice is a very politically sensitive product in many countries. Because of its central role in the national diet, farmers' livelihoods, as well as potential for exports, domestic rice markets are generally highly protected. Governments in major rice consuming countries invariably intervene to shield their domestic paddy and rice markets from the volatility of supplies and prices in the global rice market. For example, most countries in Asia have listed rice as a High Sensitive List (HSL) product. Governments have also controlled trade through marketing enterprises. Even though the role of state enterprises have diminished at the global level, they remain relevant in some country, notably in China, Indonesia, India, Japan, South Korea, Vietnam and Australia.

Rice is the major agricultural crop in Thailand, grown by about three quarters of all farm households and providing almost half of the caloric requirement in the national diet. Roughly 9 million hectares were devoted to rice production in 2003. With annual production fluctuating around 25 million tons of paddy, Thailand is the world's number one exporter, trading around 7.5 million tons of milled rice annually. During the past three years, two fifths to one half of the domestic production was exported. Thailand began the process of liberalizing its international rice trade much earlier than other countries in the region. The taxation of rice exports was effectively abandoned by 1976. Since 1999, there has been no change in Thailand's export duties and licensing system. The applied rate of export taxes is zero. The share of private trading exportation has risen over the past ten years from 20 percent to 80 percent, as the role of state companies and large trading companies has diminished. Although Thailand is fully self-sufficient in rice, the milling sector is working significantly below-capacity. This potential demand from the milling sector has provided incentives for import, processing and re-export of possibly large volume of rice from neighboring countries. This issue is of particular relevance to Northeast millers, where there are indications of Cambodian paddy imported in Thailand, milled and then re-exported to Cambodia.

Yields and Varieties

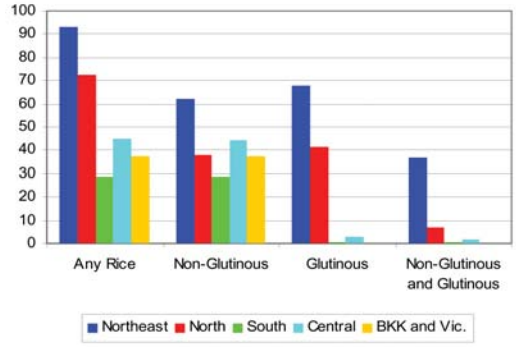
The Northeast region is the main area of production of rice in Thailand. According to NSO 2003 data, the Northeast contributed approximately 9.5 million tonnes of Thailand's 26 million tonnes. Over the period from 1997 to 2003, the national growth rate of rice production was an average of 2.8 percent per year, driven by increases in yield (2 percent per year) and to a lesser degree by the extension of harvest area (0.7 percent per year). The pattern of production growth varies between regions. Production growth was highest in the Center (4.3 percent per year) and negative in the Southern region (-3.1 percent per year). Output in the Northeast increased on average 2.8 percent per year, and yield improvements accounted for 2.2 percent per year, slightly above the national average. Despite these improvements, Thailand's yields remain low. At about 2.3 tonnes per hectare, they are no more than a third of high yielding countries such as Taiwan and South Korea. In the past, low productivity was attributed in part to the now abolished government policies of suppressing consumer rice prices, although these policies affected commercial farmers more than the subsistence farmers who produced only small surpluses. More relevant is that almost the entire production of rice is from the main season crop. Most rice is rain-fed, as only one quarter of the rice areas are irrigated-and most of those are located in the Central plains. At the same time, paddy fertility is low, especially in the North and Northeast, due to a long history of poor soil management.

Differences in rice varieties are perhaps the most important explanation for low yields. Thailand specializes in the production of low-yielding traditional and high-quality (and hence high-price) varieties. Within Thailand, the Northeast stands out for both a large share of rice producers among households and a particular focus on such varieties (Figure 85.A). In 2002, more than 90 percent of all rural households produced some rice, compared to 70 percent in the North, 45 percent in the Center and less than 30 percent in the South. While Bangkok and Vicinity, the Center and the South produce almost only non-glutinous varieties, the share of non-glutinous rice producers is less than 45 percent in the Northeast and the North (Figure 85.B). Furthermore, about two thirds of Northeast farmers produce glutinous rice and two-fifths cultivate both glutinous and non-glutinous varieties, compared to no more than 40 percent and 10 percent, respectively, in the North. Similarly, 2002/3 production data from the Ministry of Agriculture shows that non-glutinous rice is almost exclusively Jasmine ("Hom Mali") rice in the Northeast but not elsewhere (Figure 85.C). Northeastern farmers compare poorly to other regions in terms of yield and value for both glutinous and non-glutinous rice.[41] Across all regions, yields for glutinous varieties are lower than for non-glutinous varieties. In terms of yield per hectare in 2002, the Northeast reached less than half the level of Central for non-glutinous rice, and only 80 percent of the level of the North for glutinous rice (Figure 85.D). In terms of production value, the gaps are similar relative to the Center, but the Northeast falls behind the North for both glutinous and non-glutinous rice (Figure 85.E).

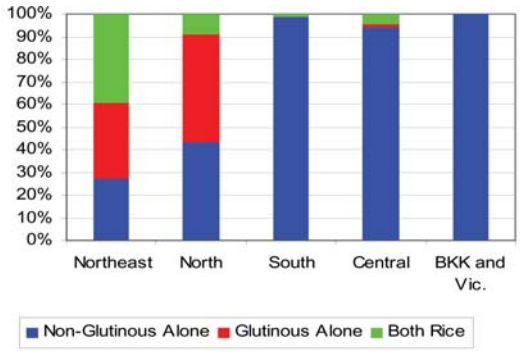
[41] The agricultural statistics include Hom Mali rice into the non-glutinous rice category. The data refer to the 2002 Socio-Economic Survey, a regionally and nationally representative household survey. The numbers can deviate substantially from aggregate statistics on production volumes.

Figure 85: Glutinous and Non-Glutinous Rice, 2002

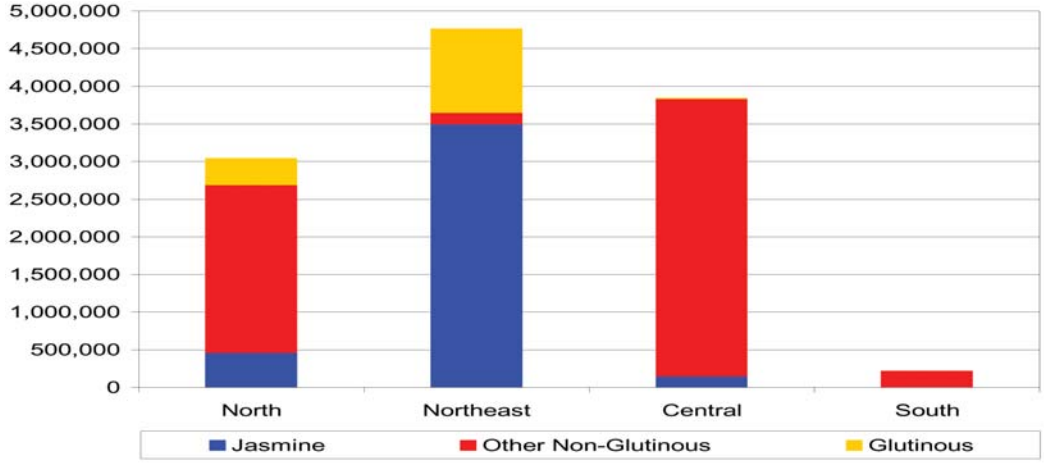
A. Share of Farming Households Producing Rice (%)



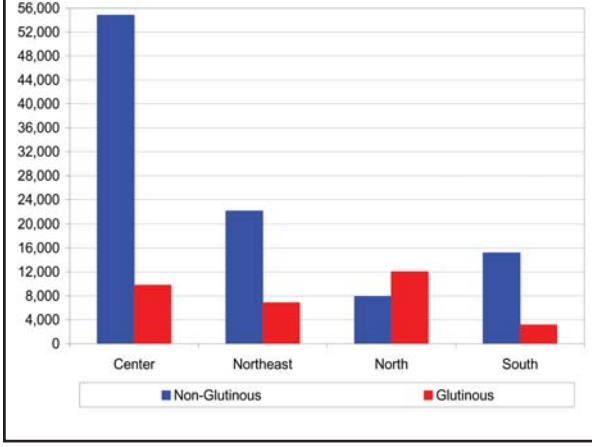
B. Composition of Rice Producing Households (%)



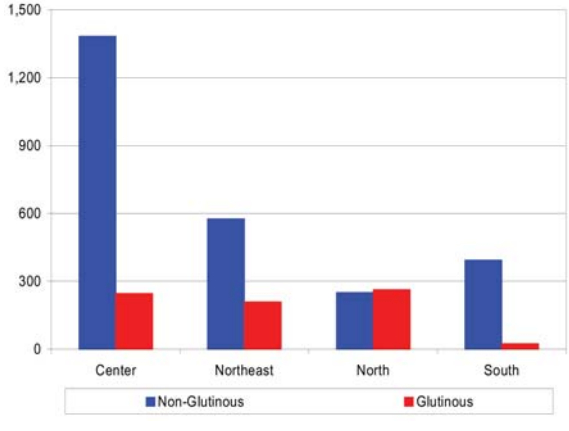
C. Production by Rice Variety, 2002/3



D. Yield Per Hectare



E. Baht Value Per Hectare



Producers, Collectors and Millers

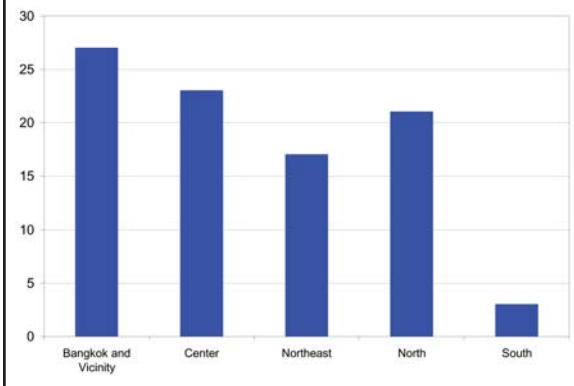
Rice production in the Northeast is characterized by a dual production system, where small-scale subsistence farming exists alongside with commercial production systems. While almost all Northeast farming households grow some rice, only some of them rely heavily on rice production to make ends meet. Less than one in five Northeast farming households obtain more than half of their income from rice production (Figure 86.A). This is below the shares in the North and the Center. Survey data from Northeast provinces suggests that around one quarter of household income comes from rice production (sales or own consumption), about ten percent each from other crops and from livestock, and over one half from off-farm income (Figure 86.B). Rice subsistence is related to glutinous rice production. Across all regions, the share of glutinous rice production that is for home consumption is larger than the share of non-glutinous rice production. In the Northeast, almost half of the glutinous rice produced is consumed by the household, compared to no more than 20 percent of non-glutinous rice (Figure 86.C). This implies that changes in the benchmark market price of white rice (5 percent broken) will affect predominantly non-glutinous rice producers rather than glutinous rice producers both in terms of living standards as well as production decisions.

We have seen already that rice production is associated with poverty. Among household above the poverty line across the country, only one quarter produce rice, compared to three fifths among households below the poverty line. Furthermore, rice subsistence farmers are poorer than other rice farmers. For example, while the non-poor consume only 20 percent of their non-glutinous rice production, and 46 percent of their glutinous rice production, the corresponding numbers for the poor are 30 percent and 57 percent, respectively (Figure 86.D). In addition, the poor are less productive per hectare than the non-poor for non-glutinous, although the differences in glutinous rice are small to negligible (Figure 86.E).

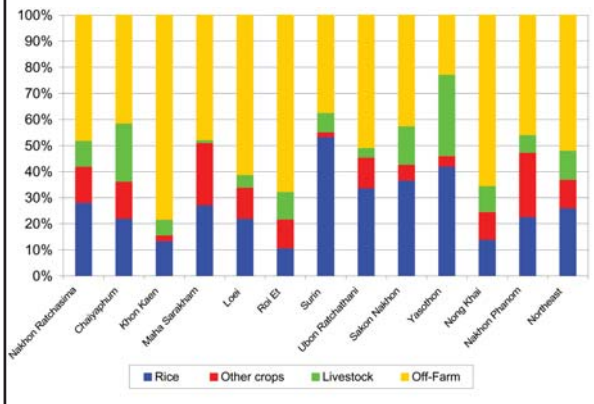
Collectors of paddy in the Northeast are usually divided into two groups - village collectors without their own storage facilities and collectors at the district and provincial levels who are larger and generally have their own storage facilities. Milling is the most important value added process for paddy. There are more than 24,000 milling plants in the region in 2003. About 98 percent of millers are small-scale or village custom mills (less than 5 tons per day). The remaining 2 percent are medium to large scale private or cooperative mills. Only about one percent of rice mills have a production capacity of more than 50 tons per day; and two milling plants can operate at 1,000 tons per day. Village level mills catering for milling farmer's own rice operate on a system of free milling services. They provide milled rice to clients and retain the by-products for sale to livestock producers or brick factories. Since the mill owners make their living through the by-products, there have a distinct disincentive to upgrade the milling technology. In contrast, commercial mills' primary business is rice milling and lowering the percentage of broken rice and by-products increases their returns to the milled rice component. Hence, commercial mills have clear incentives to upgrade their milling technology.

Figure 86: Rice Subsistence Farmers and Poverty. 2002

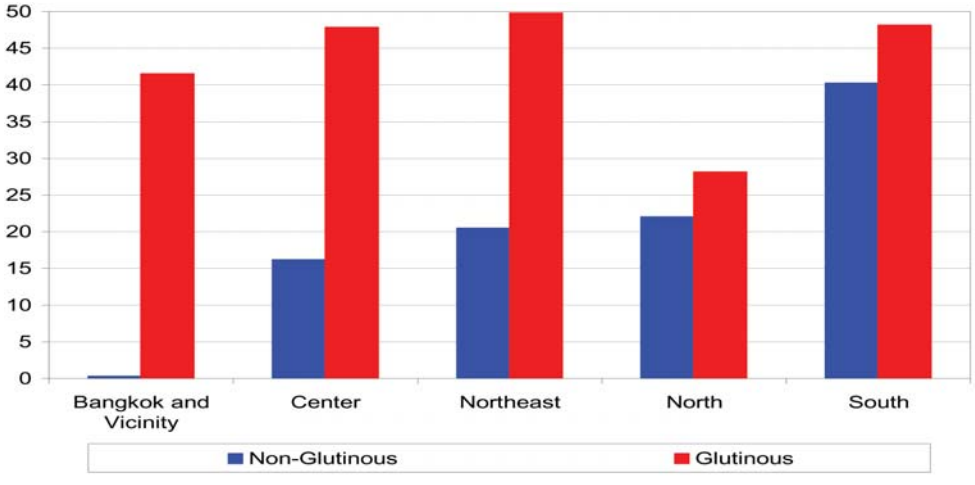
A. Farm Households whose Rice Production is at least Half of Household Income (%)



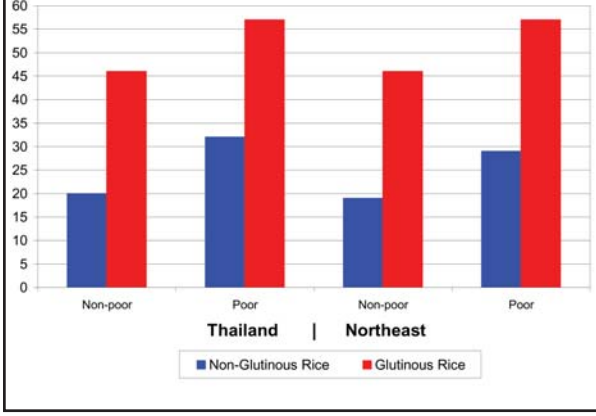
B. Farm Household Income by Sources in the Northeast



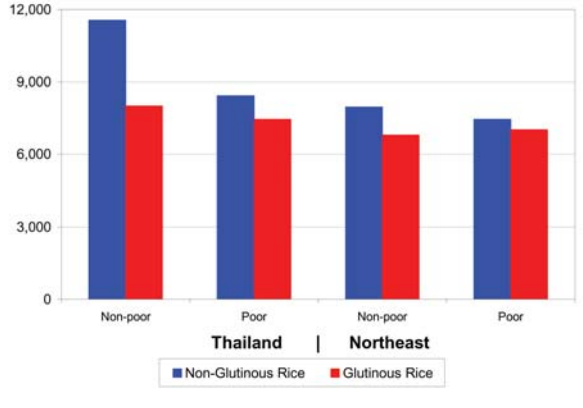
C. Share of Home Consumption of Glutinous and Non-Glutinous Rice Production



D. Share of Home Consumption of Glutinous and Non-Glutinous Rice by Poverty Status



E. Yield Per Hectare of Glutinous and Non-Glutinous Rice by Poverty Status



Wholesalers, Retailers and Exporters

Every province in the Northeast has a number of wholesalers. The introduction of supermarkets in the Northeast has reduced the number considerably, but wholesalers have broadened the number of commodities that they deal with in order to maintain their business operations. The major cost for wholesalers is the cost of rice, while operational costs only account for less than 5 percent of total costs.

The food retail distribution system is undergoing rapid changes in Thailand, which are likely to affect also rice retailing. There are two main food retail systems: the traditional food distribution system, or so-called 'wet markets', and the emerging modern distribution, comprising supermarkets, superstores, and convenience store chains. Available estimates indicate that 75 percent of the Thai food retail trade is still through traditional markets. The modern distribution is mostly limited to major urban centers. For instance, it is estimated that as much as 60 percent of the food retail trade in the Bangkok area is now through modern distribution. To open a retail rice shop requires little more than some space for storage, a weighing machine and casual labor to handle big bags of rice. Rough estimates suggest that there are approximately 300,000 small stores in Thailand selling rice and dry grocery products and some 600,000 "wet market" vendors selling food products.

There are approximately 160 exporters of rice in Thailand. The majority of exports are handled by the private sector, with only around 5 percent of exports being carried out by the government. Most exporters are located in Bangkok and surrounding areas. Flexible export regulations enable some millers in the Northeast to start exporting rice directly. An exporter can load milled rice into a container from the province for agents who can manage all logistics for shipping including arranging for inspection certificates. Nevertheless, most millers in the Northeast still lack the marketing capacity to engage directly in export activities. Many exporters in Thailand have their own rice mills. Those who do not own rice mills usually also export other food processing products or develop a long term relationship with overseas importers. Exporters without milling plants depend greatly on the help of brokers who can guarantee an adequate supply of specified rice. Hom Mali rice comprised only 14 percent of the total export volume in 2003, ordinary white rice for 49 percent, and parboiled rice for 30 percent. Glutinous rice amounted to only 4 percent of exports, providing only a small market for the 40 percent of Northeast farmers that are planting Hom Mali.

Marketing Chain

The following sections present a representative value chain for rice in the Northeast of Thailand based on field surveys of 50 farmers, collectors, millers, traders and exporters during 2004. It concentrates on the linkages between each of the actors along the value chain, from input supplies for rice production, through to the final milled product and all the associated by-products and value added products derived from rice. The emphasis is on stylized features, since there is no such thing as the value chain, especially in a highly developed sector as rice in Thailand. They differ along various dimensions, such as rice variety, main and dry season, and farmer type. Figure 87 summarizes the quantity flows.

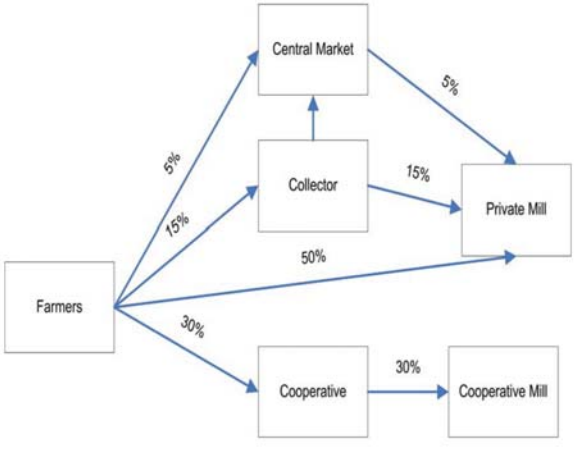
Farmers can either mill their own rice at the local village mill for own consumption, providing the husk, bran and broken rice to the mill in lieu of cash payment; sell to primary collectors in the local town; or, if the farmer has enough surplus paddy, sell directly to the central market exchange or to commercial rice mills. Commercial rice mills can also receive paddy from primary collectors or the central market exchange. Milled rice is then distributed from mills back to collectors and traders and to wholesalers in towns and larger markets. From these wholesalers the rice is distributed to consumers through retailers. Mills are involved directly and indirectly in the export trade, shipping milled rice through transporters to wholesalers in Bangkok who then distribute the rice in Bangkok and also overseas. Larger mills are fully integrated into this export chain.

The regional paddy production of about 9.5 million tonnes in 2003 moves along two major channels: subsistence and marketed production. Of the 8.5 million of paddy available after deducting losses, animal feed use and seed uses, about one fifth is retained by the farmers for own consumption and four fifths is marketed commercially. Paddy for on-farm consumption is taken directly by the farmers to either village mills or small commercial mills. Given an estimated recovery rate of 65 percent for village mills, approximately 1.1 million tonnes of milled rice is consumed on-farm. Approximately 6.8 million tonnes of paddy are available for private and cooperative milling. Sales of paddy to primary collectors and through the central markets in the region are about 15 percent and 5 percent, respectively; direct sales of farmers to millers about 50 percent; and sales from cooperative farmers to their mills around 30 percent. Using a recovery rate of 65 percent, this amounts to 4.4 million tonnes of milled rice.

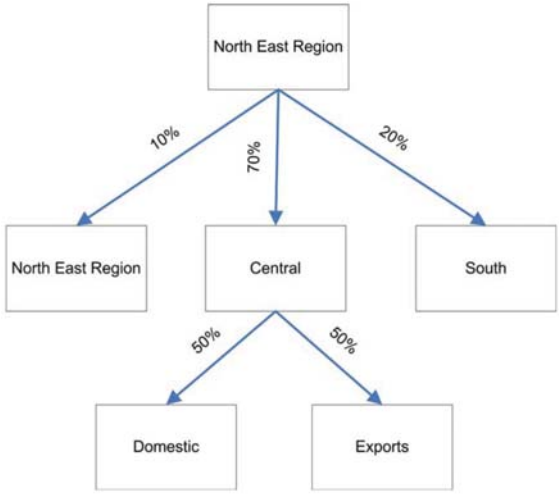
After the milling stage, rice is marketed through different channels with a major distinction between domestic and export channels. The milled rice for the domestic channel is marketed to traders, direct sales to retailers, and wholesalers. There are various markets for by-products. Of the 4.4 million tonnes of milled rice produced in the Northeast, about one quarter goes into the regional market for retail sales (90 percent) and for further processing (10 percent). The remainder goes through traders and wholesalers to markets outside the region. Approximately 10 percent is shipped to Southern retail markets (0.34 million tonnes), about one third is used for domestic consumption in Bangkok and surrounding areas and one third is exported.

Figure 87: Marketing Channels for Rice in the Northeast, 2004

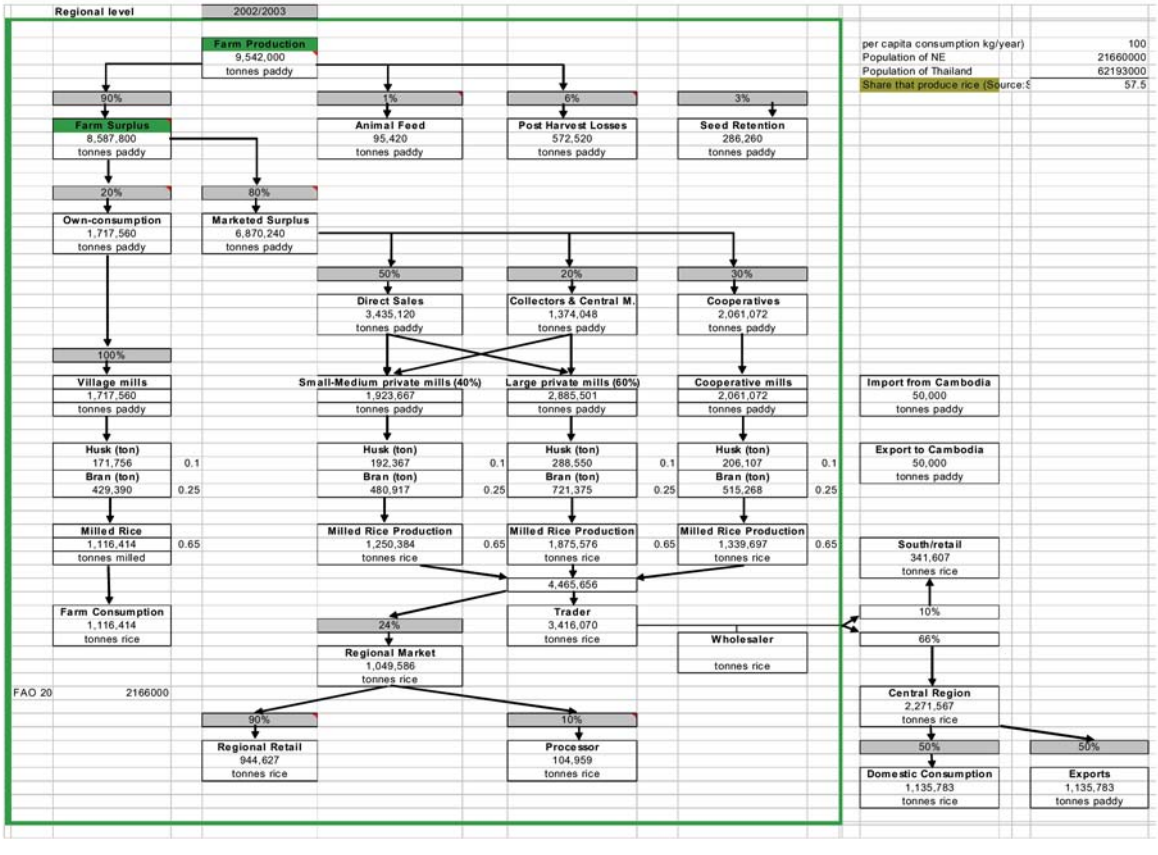
A. Flow of Main Season Paddy to Mills



B. Regional Rice Flows



C. Flows of Paddy and Rice



Costs and Margins

This section presents the marketing margins and profits for the three main varieties of rice and for alternative marketing chains. Since the cropping 2003/2004 season had record high prices, the marketing margins are computed under two scenarios. The 2003 scenario uses the price data recorded during fieldwork, while the 2002 scenario uses the average price in the previous year reflecting a more typical situation. Following standard practice, the scenarios are based on typical costs and returns, as it is very difficult to follow the same physical product along the entire value chain.The calculations include estimates for the opportunity cost of labor. Figure 88 shows the division along each stage of the value chain of marketing margins, defined as the percentage of the final selling price, and profit margins, calculated as the difference between total revenue and total costs,. These margins are greater than 100 percent due to the receipts of millers from the sales of by-products. The distribution of benefits along the chain is represented by the shares of total profit and marketing margins. As these are calculated for one tonne of paddy, they do not indicate absolute profitability. Farmers may produce one tonne of rice for sale, while millers may process tens of thousands of tonnes.

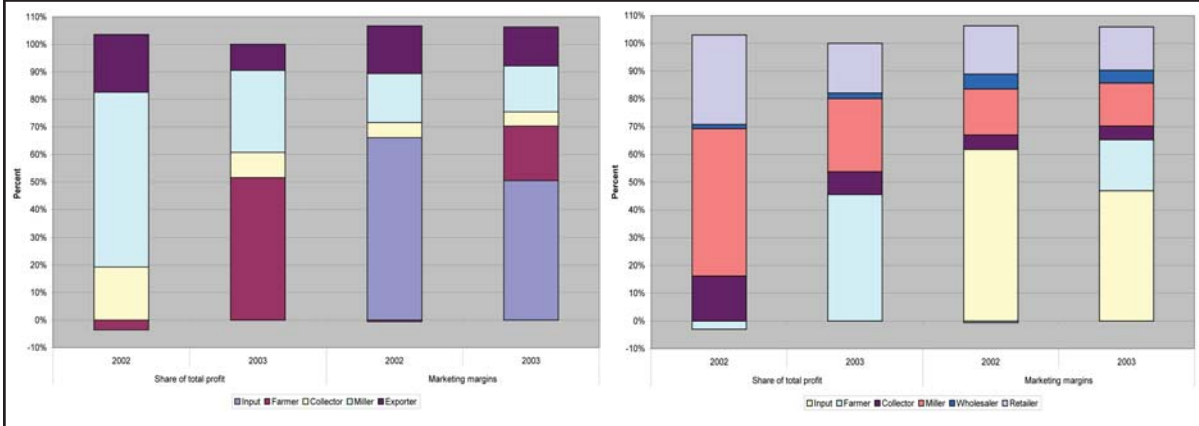
Figure 88.A looks at the Hom Mali value chain. The marketing margins for farmers differ between 2002 and 2003 while they remaining fairly similar for other stakeholders. For export Hom Mali, millers and exporters obtained the largest margin. Farmers accrued a large margin in 2003 but not 2002. The situation for domestic Hom Mali was similar, with millers and retailers obtaining the largest margins in both years, while farmers accrued a large margin only in 2003. For export Hom Mali, millers received the largest share of total profit. Exporters and collectors accrued approximately the same share, but the size of the benefits accruing to the millers, collector and exporters varies with changes in farmer shares. The picture is similar for domestic sales of Hom Mali. The only difference is that retailers in the domestic market have higher profit shares than collectors. In 2002 farmers actually lost money due to adverse farm gate prices, while they made large profits in 2003.

Figure 88.B shows the marketing margins and distribution of benefits in the glutinous rice value chain. Millers and retailers received the largest marketing margins, and farmers obtained larger margins in 2003 than in 2002. Farmers accrued the largest share of total profit, followed by millers and retailers, with little change between 2002 and 2003.

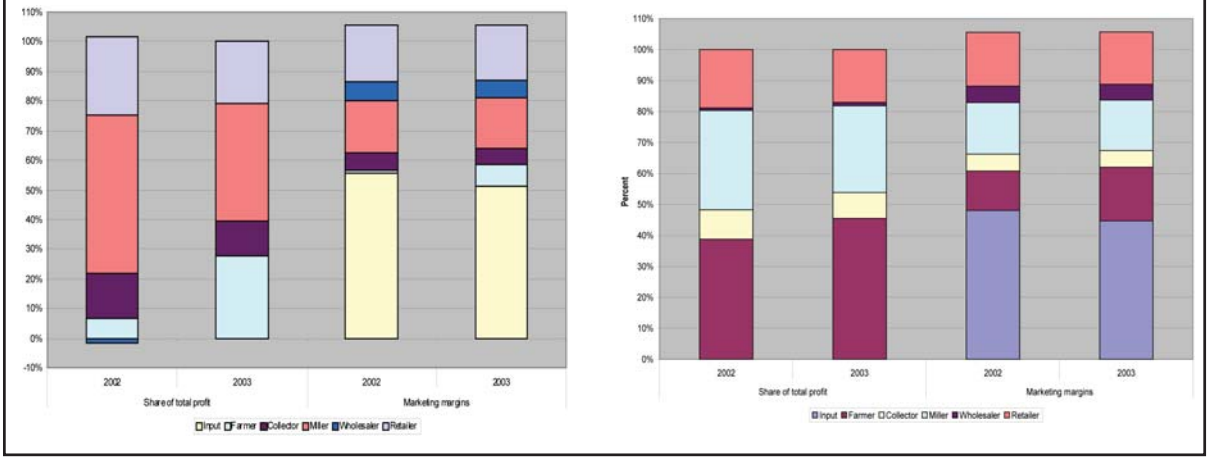
The results demonstrate two important features. First, stakeholders further downstream tend to be better protected in their profit margins against changes in prices, whereas farmers absorb much of the price changes. Second, the relatively stable returns to glutinous rice for farmers could explain the popularity of glutinous rice production in the Northeast compared to the other two varieties.

Figure 88: Distribution of Benefits and Margins along the Marketing Chain

A. Export and Domestic Hom Mali Rice



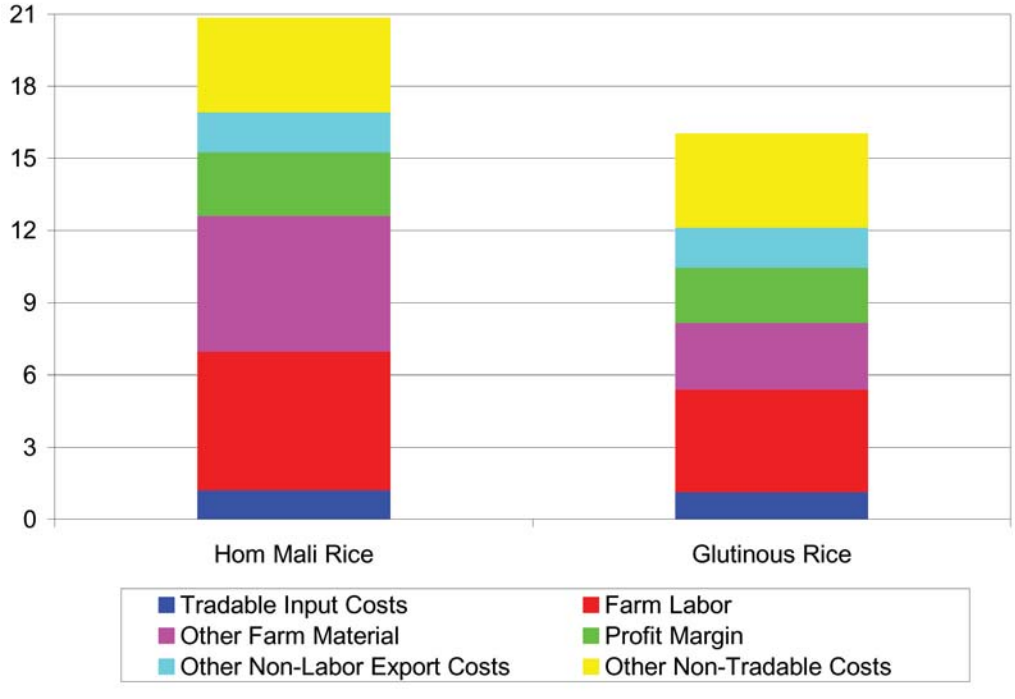
B. Domestic Glutinous and Non-Glutinous Rice



Cost Reduction

What is the scope for cost reduction? About two thirds of the costs in the Hom Mali rice production come from just three sources: farm labor and other non-tradable farm materials, each accounting for just over one quarter, and profit margins. Profit margins are reasonably healthy, indicating some scope for a reduction in margins without affecting the competitiveness of the industry. Other farm materials, covering non-tradable inputs such as machinery, packaging, fees and charges as well as fixed costs such as depreciation and land rental, are difficult to reduce. Labor costs could only be reduced through substitution by machinery, but such policies may well prove difficult to implement. Turning to glutinous rice production, about four fifths of the costs come from four sources: farm labor (29 percent), other non-tradable farm materials (19 percent), profit margins (16 percent) and other non-labor costs for exporters (11 percent). Other non-labor costs of exporters are non-tradable inputs such as logistics, packaging, depreciation, fees and charges, and interest payments. These are difficult to reduce given the large number of individual cost components. Concentrating on reducing those costs which do not form a large component of the value chain may not be worthwhile. For example, the cost of seed is only 3.64 percent of the total cost along the value chain for glutinous rice and 5.86 percent for jasmine rice. The upshot of these calculations is that the potential for cost reduction is limited. Rather than trying to reduce costs along the value chain, it may be far better to focus on increasing productivity and, even more so, value added returns.

Figure 89: Indicative Costs for Hom Mali and Glutinous Rice in the Northeast, Baht/KG



Competitiveness and Comparative Advantage

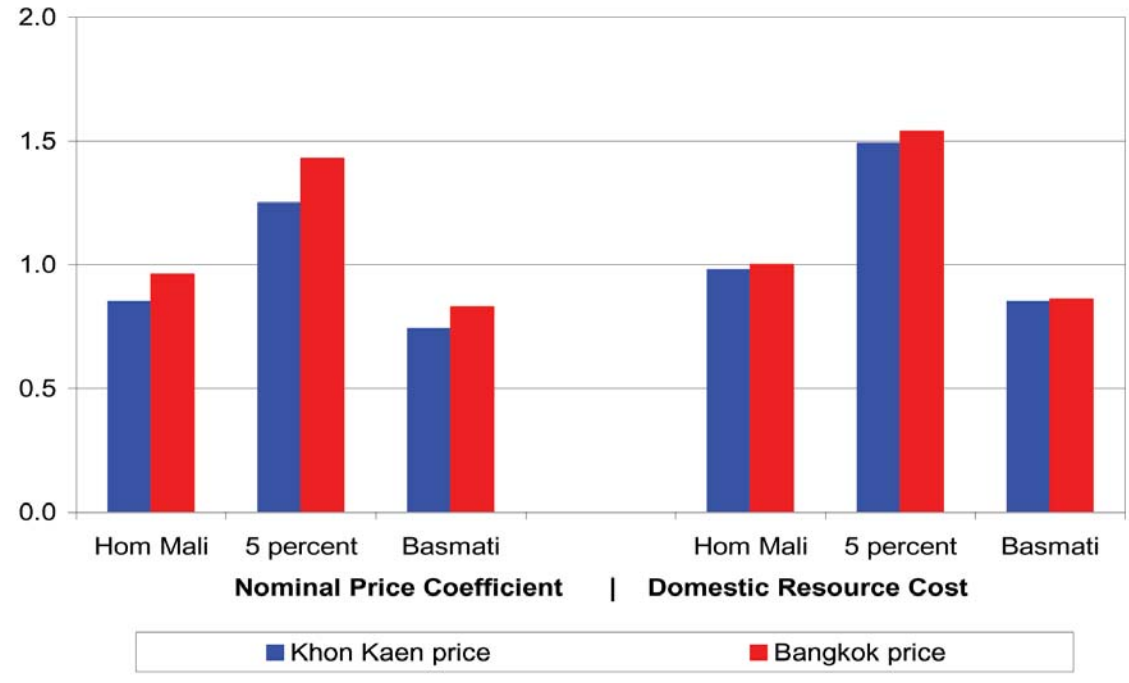
How competitive are Northeast farmers relative to other producers in Thailand and in other countries? Figure 4 looks at two measures. The nominal protection coefficient (NPC) measures competitiveness by relating the domestic price to a reference border or world market price. A NPC greater than unity means that producers are protected at the expense of consumers, while a NPC less than unity implies that producers are taxed at the expense of consumers. The domestic resource cost (DRC) is an indicator of comparative advantage, measuring the ratio of value added from domestic non-traded activities to the foreign exchange earned or saved from domestic production. A DRC with a value greater than unity implies that domestic production is inefficient and the product should be imported, while a DRC less than unity suggests comparative advantage and efficiency in production.

Hom Mali, Grade A is compared to Bangkok Basmati rice (cif) and Thai 5 percent broken white rice (fob) (Figure 90.A). The NPCs are less than unity relative to Basmati and greater than unity against the price of 5 percent broken rice. The DRC calculations indicate that Hom Mali rice is competitive against Basmati but not competitive against 5 percent broken white rice. Thai white glutinous rice (10 percent broken, fob) is compared to the Vietnamese glutinous rice (fob) and the Italian round grain 5-percent broken rice Vercelli (fob) (Figure 90.B). The NPCs are greater than unity compared to Vietnamese glutinous rice, and less than unity relative to Italian round grain rice. DRC calculations indicate that exports of glutinous rice are not competitive against exports of Vietnamese glutinous rice, but they are competitive against the Italian round grain rice. The prices are calculated both for Khon Kaen and Bangkok.

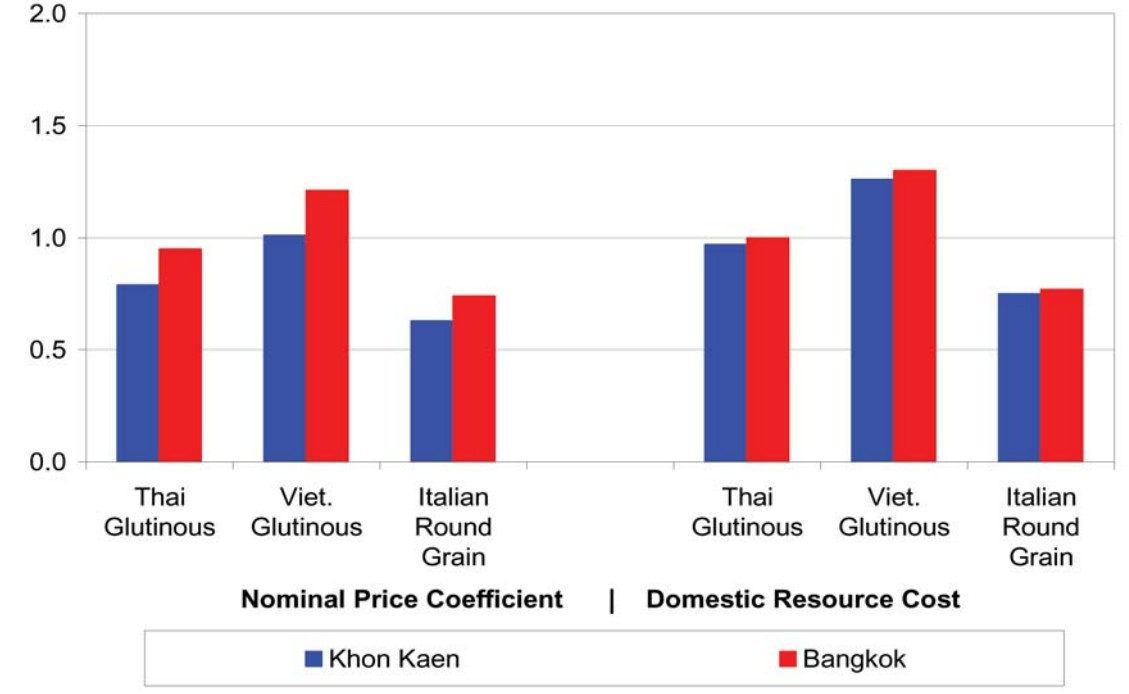
Overall, the results indicate that both jasmine and glutinous rice producers are not protected by government policies. Hom Mali rice is competitive relative to Basmati rice but not against 5 percent broken Thai rice; and glutinous rice is competitive relative to Italian round grain rice but not against Vietnamese glutinous rice exports.

Figure 90: Nominal Price Protection and Domestic Resource Cost

A. Hom Mali Rice



B. Glutinous Rice

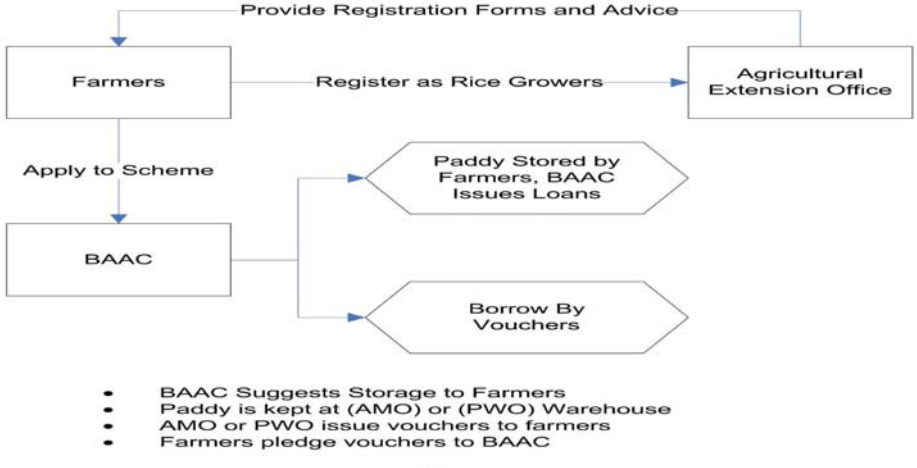


Rice Pledging Scheme

The RTG's Strategic Plan for Rice (2004 -2009) recognizes both the strength and the weaknesses of Thai rice. It is world-wide renowned as the best quality milled rice due to high levels of monsoon rains in the major production areas, the availability of high quality seed and advanced milling technology. At the same time, lack of irrigation, the reduction in soil fertility due to low levels of organic inputs, salinity and acidity, small land holdings, and limited research and development prevent many rice farmers to escape poverty. The plan aims to lift producer incomes through yield increases of 20 percent and to raise production from 26 million tones to 33 million.

The RTG's principal intervention in the rice sector is the paddy pledging scheme. This program alone accounts for around two fifth of the Bt90 billion budget for the Strategic Plan. It is operated by BAAC in collaboration with the Public Warehouse Organization and the Marketing Organization for Farmers (Figure 91). By imposing a price floor for paddy rice, the scheme increases the costs to millers, traders and exporters at the benefit of medium to large-scale farmers. The scheme's record is at best mixed. First, millers delay the timing of their purchase in response to the scheme. The paddy price increases at beginning of the season but drops off when the loan is due. Second, as a result of the paddy pledging scheme, two to three tonnes of milled rice have to be managed each year by the government in public warehouses and in millers' storage silos. The use of old storage warehouses to store paddy is a potential cause of losses in grain quality, requiring the government to sell its storage ever so often. In 2004, the RTG sold all the rice stock at once to one exporter; inducing significant volatility into the market. Third, the inflated price of pledged paddy can encourage overproduction of lower quality rice, especially in the Central plain where farmers can grow irrigated rice throughout the year. At the same time, Hom Mali rice has a higher market price than the pledge price, so very little Hom Mali rice enters into the pledge system. Since Hom Mali rice is mainly grown in the Northeast, the pledge program has little impact on these rice farmers. Fourth, only medium and large scale farmers can participate in this scheme due to volume requirements, again excluding most of the Northeast farmers.

Figure 91: Paddy Pledging Scheme Procedure



Rice Issues

First, a large group of subsistence rice farmers exist alongside a small group of commercial farmers. The first group tends to produce glutinous rice for own consumption through rain fed main season cropping, while the second group applies irrigation to produce non-glutinous varieties destined for urban and export markets. Boosting the value adding potential of glutinous rice is essential to improving the lives of poor farmers. Second, even with the better cultivars and methods of cultivation, net profit from rice will not exceed US$300 per hectare. Policies to increase rice production have to be complemented by crop diversification and off-farm employment.

Third, while farmers produce paddy, consumers eat rice. Village mills provide milling services for the subsistence farmers and have little incentive to upgrade technology, as they make their income by selling by-products that result from poor milling technology. The commercial milling operations earn money by selling milled rice, have more advanced technology but suffer from excess milling capacity. Fourth, the increasing role of supermarket chains will lead to more formalized contract based production and processing systems. The consolidation in the marketing and distribution systems will reduce the role of collectors and wholesalers, making standards, certification and quality control more important.

Fifth, while efficiency gains through reforming production, processing and trade systems are still possible, the focus should be on increasing revenues. The task is to identify highly processed and transformed rice products that fetch a high value. For the vast majority of people rice is consumed as a staple food without any further processing apart from milling and polishing. However, changing consumer preferences in Thailand and abroad provide a growing market for highly processed differentiated rice products. The most common value added products are rice flour, rice noodles, rice crackers, and rice wrapping. Under the One-Tambon-One-Product program, some local delicacies include rice soap, rice wine, sticky rice confectionary products and nutritive drinks. Sixth, branding and labeling are an integral part of value chain upgrading. They help to retain value in the face of increasing competition and ensure that rents from innovations are captured. Brands must be protected as otherwise other producers will attempt to capitalize on the quality reputation of a particular brand. There is a real danger that the Thai Hom Mali brand will be co-opted by other countries, as the example of Basmati rice demonstrates. The private sector, such as milling and farmer associations, should work jointly with the public sector to develop brand and certification schemes. Seventh, improved breeding of rice in Thailand has the potential for increasing yields and introducing new varieties. However, the emphasis on yields should not come at the expense of eating quality, especially for Hom Mali. Increasing yields through modern farm methods could well affect aromatic qualities and lower prices. The aims should be to increase returns of the rice industry as a whole. The emphasis should be on value adding, identifying best practice facilitating the movement of producers towards best practice.

Rice Investment Options

The identified issues suggest a set of priority actions. Table 1 presents back-of-the-envelope cost estimates for specific programs to provide an order of magnitude of the required investments. They amount to around $47,000,000, which is no more than about 5 percent of the annual budget spending on agriculture, or around 2 percent of the budget for the Strategic Plan for Rice.

Improving efficiency of production and processing. First, the availability of water in the Northeast is probably insufficient for widespread irrigation. Instead, the use of small-scale pond systems has been successful in stabilizing rice yields of glutinous rice farmers and in extending their cropping season into the dry season. Second, localizing best-practice management systems, such as the Rice Integrated Crop Management System (RICM), can enable farmers to benchmark their production systems against clear and objective criteria for yield and quality improvements. Third, improved access of millers to credit services can help to improve milling technologies among commercial millers.

Strengthening linkages among stakeholders. Value chain management protocols for the rice industry need to be developed to promote the creation of value chains. Development of contract-based production and distribution systems will enable significant economies of scale in coordinating supply and demand. Training and facilitation of supply chain and value chain management is required.

Development of value added products. This requires significant investment in post-harvest and food processing research. This will involve collaboration between industry, government, and the research community. Product development should be responsive to consumer preferences and market demand.

Support to quality control and standardization. First, an effective enforcement of farm to consumer quality standards should be developed. Second, standards should be developed to distinguish Hom Mali from other Jasmine varieties such as Pathum Thani 1. Third, overlaying the development of quality standards is the promotion of independent certification companies who provide inspection and certification services. Government agencies should enforce regulations and monitor certification agencies, but not provide the certifications themselves.

Support to business development services. They should comprise advanced marketing support services, export assistance services and clearing house services for linking exporters and importers. In addition, the Northeast export capability should be improved by facilitating cross-border trade through improving the GMS transportation network and streamlining regulations.

Table 4: Indicative Cost Estimates for Investment Options

Investment Options	Amount ($)
A. Costs of Small-scale Irrigation and Farm Pond System	
Farm Pond Construction (100,000 ponds, $225 per pond), 50% matching grant	11,250,000
Associated Irrigation Equipment ($125 of pumps and PVC pipes), 50% matching grant	6,250,000
Management of Programme (1% of costs)	175,000
Total	17,675,000
B. Costs of RICM System	
RICM Research and Development	250,000
Development and Annual Update of Ricecheck Manuals	100,000
Printing of Ricecheck Manuals (@10,000 copies, 5 years)	100,000
Training of Trainers and Extension Officers (200 Extension Officers @$2500 each)	500,000
Extension of RICM to Farmers (25,000 farmers over 5 years @ $25/farmer)	625,000
Total	1,575,000
C. Credit Guarantee Scheme	
Training and establishment	100,000
Credit Guarantee Fund	1,000,000
Total	1,100,000
D. Linkages among Stakeholders	
Farmer Groups	3,000,000
SME	6,000,000
Large Enterprises	4,000,000
Total	13,000,000
E. Value Added Product Development	
R&D Investment Fund (10 years)	5,000,000
Monitoring and Evaluation	50,000
Administration	50,000
Total	5,100,000
F. Quality Control and Standardization	
Development of quality standards for different market segments	50,000
Assistance to stakeholders to meet those standards	5,000,000
Promotion of Independent Certification Companies	50,000
Monitoring, Testing and Enforcement Regime	1,000,000
Total	6,100,000
G. Business Development Services	
Matching Grant	1,920,000
Training and Capacity Building	64,000
Total	1,984,000
OVERALL	46,534,000

Silk

Global Commodity

Just as rice, silk is an Asian specialty. Production is concentrated in South Asia, Southeast Asia and China. Out of a global production of raw silk of around 132,000 tonnes in 2002, this macro-region supplies around 90 percent. China produces over 70 percent of global supplies, followed by India with about 15,000 tonnes and Vietnam with about 12,000 tonnes. Silk represents a tiny percentage of the world's textile fiber market. Globally, silk accounts for only 0.2 percent of fiber consumption, compared to 40 percent for cotton and 2.5 percent for wool. Yet, the actual trading value of silk and silk products is much higher than what these volumes suggest. Silk is a premium agricultural commodity. The unit price for raw silk is roughly twenty times that of raw cotton. While the exact value is unknown, global silk trade is a multi-billions dollar business.

Clothing is Thailand's third largest source of export revenue after electronics and electrical appliances. In 2001, clothing and textile exports constituted 5.5 percent and 2.9 percent, respectively, of total merchandise exports, while clothing and textile imports constituted only 0.2 percent and 2.5 percent, respectively, of total merchandise imports. Yet, under-utilization of quotas for textiles and clothing exports suggests weaknesses in the sector's competitiveness. Thailand is a small player in a highly concentrated international market of raw silk yarn. Thailand, the fifth largest producer of silk yarn in 2002, produced between 1,000 and 1,500 tonnes over the last decade, equal to about one percent of world production. The Thai share in world exports is even smaller. The top 5 export markets for Thai textiles (USA, EU, ASEAN, Japan and China) account for three quarters of total exports. For silk fabric and garment, the top 10 countries (USA, UK, France, Japan, Hong Kong, Singapore, Spain, Australia, Germany and Italy) account for close to 90 percent of Thailand's exports.

Textile and clothing import prices in the US, Europe, Japan and many other markets have fallen continuously since the mid-1990s. Due to oversupply, this trend is likely to continue into the future, potentially bringing about deterioration in developing countries' terms of trade. However, the price of raw silk is only a fraction of the price of the "over the counter" end product. In retail consumer markets, silk fabric has maintained a stable price in periods of expansion and recession. While producers of raw silk yarn in developing countries have been adversely affected by deteriorating terms of trade against synthetic products and other fibers, the producers and retailers of valued added textiles and final retail products have maintained prices and captured a higher marketing margin.

While retail silk prices have remained stable, retail consumption has declined since the 1990s across all regional markets due to the end of the sand-washed silk boom and competition from other fibers. However, demand in Asia, especially Japan, the largest consumer of silk and silk products, is increasing. For example, local silk producers in China have experienced increased demand for silk products in the low price range.

Trade Liberalization

Changes in the international trade regime will pose an enormous challenge for suppliers to terms of competitiveness and market shares. The potential impact of the ASEAN Free Trade Area on Thailand's economy is likely to be small due to the similarity in the economic trade patterns. Since 1992, Thailand's import value of textiles from the ASEAN countries has gradually increased while the import value of textile from countries outside of ASEAN has been more or less constant.

More important is the increase in the competition of global silk trade due to the end of the Agreement on Textiles and Clothing (ATC) on January 1, 2005. Along with agriculture, the textile sector used to be the most protected sector in international trade. The quota phase-out implies that many smaller countries could lose guaranteed markets at the expense of large-scale producers, such as China, Indonesia and Vietnam. This leaves import tariffs as the main instrument for market protection. The WTO aims at textile tariff reductions under the Doha Development Agenda.

Despite trade liberalization, the textile trade will remain complex and conditioned by a variety of specific agreements. In response to the ATC, major buying countries had granted specific concessions that provide selected countries with market access. This complex patchwork of international trade agreements resulted in a regionalization of trade in textiles and clothing. With the phase-out of quotas, there may be more concessions granted than before, rendering trade even more complicated. This makes it difficult for clothing-exporting small-and-median sized enterprises from developing countries to determine their competitiveness vis-à-vis that of major competitors.

However, the abolishment of quotas and the lowering of textile tariffs have also opened up new opportunities by providing Thai exporters access to new markets. Domestic producers have to improve their competitiveness to maintain their domestic market share as well as to expand to the regional market. The major challenges to the Thai silk sector are to improve its position in the world silk trade and increase returns to stakeholders along the marketing chain. Even more so than for rice, the emphasis should not primarily be on reducing costs or increasing productivity, but rather to increase the returns to the products being sold through value added.

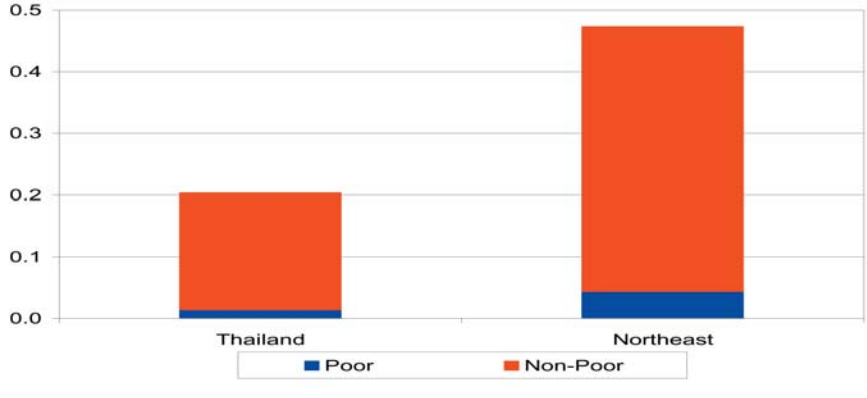
Silk in the Northeast

As we have already seen, the number of farm households involved in sericulture is relatively small (Figure 84.D). Over the last part of the 1990s and the early part of the 2000s, the number of mulberry and silk yarn producing farmers declined as a consequence of declining prices of silk yarn. There were around 150,000 sericultural farmers in 2003 in the Northeast, compared to 300,000 in the early 1990s. The overall decline in sericultural households hides differences among the two main types of sericultural farmers. Although there are no official figures, the households who dropped out tended to be marginal "hobby" producers for whom sericulture was a secondary agricultural activity, while the decrease in the number of cocoon rearer is not unusual in a growing economy. Silk production helps households to increase and diversify their income. The bulk of sericultural farmers have incomes above the poverty line in Thailand overall as well as in the Northeast (Figure 92).

Silk production is complex and involves very diverse stages of production. The main production stages are rearing (cocoon production), reeling, weaving, fabric retailing and manufacturing, and marketing. These stages are combined in various ways along the value chain, with agents who are carrying out one or more of these production functions. Some farmers raise silkworms and sell cocoons for processing in factories; other raise silkworms, reel the cocoons and sell silk yarn, either to other villagers or to weaving factories; another group buys yarn and concentrates on dyeing and weaving; and some farmers complete the whole process from planting and maintaining their mulberry plots in order to produce and sell woven and dyed fabric.

Even though 48 provinces record some silk production, sericulture farming is highly concentrated in a few provinces in the Northeast. While all 19 provinces in the Northeast produce silk to some extent, Maha Sarakham (23 percent), Surin (13 percent), Khon Kaen (12 percent), and Buri Ram (12 percent) alone account for about three fifths of the Thai sericultural households. The main provinces growing mulberry trees are Surin, Khon Kaen and Maha Sarakham, while households in Loei, Mukdahan and Chaiyaphum produce the most cocoons, and households in Maha Sarakham, Buri Ram and Si Sa Ket produce the most yarn. A clustering of silk production is common also in other countries.

Figure 92: Share of Sericultural Farmers by Poverty Status (Percent of All Households)



Silk Yarn

The silkworm variety is the main determinant of the characteristics of the value chain. There are three major varieties of silkworm used in the Thai sericulture sector; polyvoltine, poly-bivoltine, and bivoltine.

1. Native varieties (polyvoltine, yellow cocoon). The polyvoltine silkworms are the traditionally produced varieties, based on egg stocks maintained by the farmers. Native silkworms produce small, yellow cocoons.
2. Thai hybrids (poly-bivoltine, yellow silk and white silk). These varieties are bred from native polyvoltine and foreign bivoltine parents. They produce yellow cocoons of medium size that are usually reeled by the farmers but can be reeled in factories.
3. Foreign hybrids (bivoltine, white silk). 'Foreign hybrid' varieties are bred from foreign bivoltine parents. They produce large, white cocoons that are suitable for factory reeling. Recently, farmers have produced yellow silk from this variety as well.

Farmers commonly produce combinations of two or three types of silkworms during the year. Native varieties are highly disease resistant but suffer from low productivity. Thai hybrids are higher yielding varieties which are usually produced along with improved mulberry varieties. Yellow cocoon bivoltine varieties are the most valuable for silk production in Thailand. Yarn from polyvoltine and poly-bivoltine silkworms is classified as yellow yarn and bivoltine yarn is classified as white yarn. Silk yarn can also be categorized according to weaving use. Warp yarn represents the yarn lying lengthwise in the weaving loom. It needs to be of uniform thickness and exhibit some flexibility. Weft is the yarn used crosswise in the weaving process. There are two types of yarn: hand reeled and machine reeled. These two production technologies correspond to the variety of cocoon used, as polyvoltine varieties cannot be machined reeled. Most of the yarn produced is weft, as hand reeled yarn with variable thickness is common and bivoltine machine reeled yarn relatively rare. Warp yarn is imported or even smuggled from mainly Chain and Vietnam. The few reeling factories are concentrated in the Northeast, in addition to one large factory located in the lower part of the North.

Thailand has a capacity for 1,400 tonnes of silk yarn per year. About 1,080 tonnes are handicraft production from polyvoltine and poly-bivoltine cocoons, while 320 tonnes are industrial production from bivoltine cocoons. Thai sericultural households produced about 1,400 tonnes of weft yarn and about 225 tonnes of warp yarn in 2003, compared to a domestic demand is estimate to be at least 2,000 tonnes, one third of which for industrial production. In 2003, Thailand imported 325 tonnes of silk yarn (valued at 230.7 million Baht) and 68 tonnes of silk fabric (111.9 million Baht); most of which from China. This compares to imports of 335 tonnes in 1996. The main countries importing silk products to Thailand are India and Italy; together comprising 62 percent of total imports on a value basis. The value of silk yarn exports declined from Bt16 million in 1999 to Bt2 million in 2003, and from 18 tonnes to 2.2 tonnes. Export of silk fabric increased slightly from Bt507 million to Bt513 million over the same period.

Table 5: Advantages and Disadvantages of Silk Races in Thailand

Silk Race	Advantages	Disadvantages
1. Native races (Polyvoltine)	Farmers can produce Silkworms eggs by themselves. Very low cost Tolerate to disease.	Low yield (average 15 kg. of cocoons can produce 1 kg. of cocoons.) Cause of disease infestation.
2. Thai Hybrid (Official Seeds)	DOAE - free of charge (extension) DOA -sell at low price but having limited supply (for research) DOA has many certified and recommended parent races for DOAE extension DOAE-free inputs to farmers (rearing houses, chemicals, silkworm eggs, mulberry seedlings, etc.)	DOAE use poly-bivoltine, yellow silk, as the options for capable farmers because of the high farm yield and high income. However, this will be success only if the farmer strictly follows every academic recommendation. DOAE use only a few DOA's parent race to conduct breeding silk worm egg for farmer need. Mostly, DOAE use other source of parent race to conduct breeding silk worm in which DOAE have a joint-trail with the farmers in order to get silk worm products which match market need. Silkworm egg has justified quality. Farmers suffer from low-price silk and some farmers give up this occupation and transfer to other raise other crops which have higher price. In order to get support from DOAE for basic production factors (silk eggs, chemical, rearing house, etc.), farmer have to invest part of it. However, most of them are small farmers with low cash investment, as a result, the expansion of silk worm farmers is very slow.
3. Foreign Hybrid (Private Sector)	High yield Disease free eggs Being developed for a long time for best quality races Can be hatched at anytime Quick return/high income	High prices of silkworm eggs. High investment High inputs used Must be intensively trained before rearing silkworm.

Sericulturist Farmers

Most polyvoltine production systems are small scale, and farmers only grow a small plot of mulberry. Costs of production are low since inputs are limited and the opportunity cost of labor is usually not considered. Hygiene standards are low, and the output of cocoons is correspondingly low; although polyvoltine varieties are relatively resistant to diseases. Most farmers only rear one sheet of silkworm eggs per cycle and can produce only 1kg of silk yarn per cycle. Polyvoltine producers consider sericulture as a sideline activity for additional income in slack times. The main labor use is feeding the silkworms with mulberry leaves 3 times per day. Family labor is used to grow and harvest mulberry leaves and the rearers are mainly the elderly women in the family. Occasionally, labor is hired to weed the mulberry plot or to harvest cocoons etc. The silk yarn can be kept for weaving or sold at some stage afterwards; providing a ready cash source when needed.

Substantially fewer farmers produce Thai Hybrid (poly-bivoltine) varieties of silkworm. This is related to the limited supplies of breeding stock, the improved technologies needed to rear them, and the reduced disease resistance. Rearers of poly-bivoltine varieties are more commercially oriented than those who rear polyvoltine varieties. Farm families involved in bivoltine production are almost 100 percent contract farmers. The producers have to sell their cocoons to the factories that provided the silkworm eggs. The factory may provide inputs such as fertilizers, herbicides, and rearing inputs to their contract farmers.

Silk for industrial use is produced from white or yellow cocoon bivoltine silk varieties. Yellow cocoon bivoltine silk varieties are the most valuable silk varieties in Thailand and are in great demand by the market. The silk yarn is considered a top grade product which is manufactured for the high end market. Farmers can rear white bivoltine silk varieties on a commercial basis for up to 8-12 cycles per year. The silk rearers under this category earn approximately 50,000-120,000 Baht per household per year.

All types of cocoon production are profitable at the given prices of cocoons (cocoon prices are about 70, 80 and 100 Baht/kg for polyvoltine, poly-bivoltine and bivoltine varieties respectively). Bivoltine and poly-bivoltine varieties have the most profitable production system (30 and 28 percent profit margin respectively). Profit margins for polyvoltine varieties are 21 percent. Revenue from cocoon production varies between different silkworm production systems. It is about Bt72 per kg for polyvoltine rearers, Bt80 per kg for poly-bivoltine rearers and Bt102 per kg for bivoltine rearers. As a consequence, net returns to cocoon farmers are around Bt15.3 per kg for polyvoltine rearers, Bt26.7 per kg for poly-bivoltine rearers and Bt32.2 per kg for bivoltine rearers.

Silk Yarn Reelers And Traders

Polyvoltine cocoon rearing is a family enterprise, with women and elderly members of the household involved in most of the rearing tasks. Often farmers do not market the yarn they produce; processing it by themselves. Reeling by hand usually produces around 200g of yarn per day, while wooden reelers can produce up to 500-1000g of yarn per day, depending on the size of the reels. Sericultural farmers that use polyvoltine and poly-bivoltine varieties are normally engaged in yarn reeling as well. There are around 120,000 polyvoltine reelers in the Northeast. Average production estimates indicate that polyvoltine silk rearers produce around 5.3 kg of yarn per household per year. Poly-bivoltine silk rearers produce around 18.3 kg of yarn per household per year, while bivoltine rearers produce around 45.7 kg of yarn per household per year. Average reelers polyvoltine varieties can earn 3,000-4,000 Baht per household per year. Since traditional methods of reeling are used to create yarn, the reeling process requires high levels of skill and attention by the person reeling. The cocoon filament being spun must have a constant supply of cocoons in the boiling pan and a constant rate of reeling otherwise the filament will break or the denier will be uneven.

There are only around 17 reeling factory groups currently in Thailand, of which 13 are in the Northeast. Profitability of community reeling factories is relatively low at around 4.8 percent. The main cause of this is low capacity utilization due to limited supplies of cocoons. Factories that upgrade to new technology have to switch to bivoltine cocoons because the newer technology is not suitable for poly-bivoltine yarn. Reeling factories are marketing most of their production directly to weavers, and few are selling onto the open market (around 5 percent of total yarn produced). Most of the yarn being sold onto the open market is sold to small scale weavers as warp yarn. Commercial reeling factories are almost exclusively using bivoltine cocoons purchased from contract farmers. The cocoons are reeled by power machines to produce both weft and warp yarn for sale to weaving factories. Costs and margins for two different type of reelers (hand and machine reeling) combined with the three varieties of silkworms were estimated. All three budgets present positive profits margins of about 10 percent.

Yarn traders operate at the village, district and provincial level. Yarn traders at the village level buy and sell mainly polyvoltine yarn to individual households within and between villages, as well as trading in poly-bivoltine yarn with community level reeling factories and district and provincial level reeling factories. Most of the yarn is traded as raw yarn. Yarn traders at the village level also sell yarn (mainly poly-bivoltine) to district level traders who aggregate the yarn before selling to provincial level traders or direct to reeling factories at the district or provincial level. Both district and provincial level traders sell yarn under contract (both formal and semi-informal) to weaving factories within the province and to other provinces. Several traders have regular customers like Jim Thompson and ship yarn to Bangkok via regular courier services. The profit margins vary from about 2 percent to around 11 percent, depending on the cost of the raw silk material and the quality of the silk yarn.

Weavers and Garment Producers

There are three major types of weavers: traditional weavers at the village level, small to medium scale weaving plants, and large weaving factories. Weaving factories prefer to use Thai silk. While there is little difference between silk fabric made with bivoltine yarn and imported silk yarn, the unique polyvoltine and poly-bivoltine silk fabric differentiates Thai silk from other silk fabrics in the world market. The fabric produced by traditional farmer-weavers is generally sold in the local market, to tourists and relatives, while perhaps 40 percent is kept for own use. Some weavers have established long term, sometimes exclusive, relationships with particular wholesalers and retailers, while others use mainly district and provincial level markets. Prices depend on the complexity of design and the labor input rather than the weaver as such. The total costs of production are around Bt494 per piece for traditional weavers, Bt462 for small scale commercial weavers, and Bt320 for medium scale commercial weavers. Revenue accruing to traditional weavers is Bt650 compared with Bt599 to small scale weavers and Bt434 to medium scale weavers, implying profits of around 25 percent.

Many garment factories are located in the vicinity of Bangkok as well as the North. There is a trade flow of silk fabric between the Northeast and the North. The 5 companies that take the lead in finished silk garments in Thailand are; Tip Thai Silk, Part. Ltd. (1991) (Khon Kaen), Thai Silk Agriculture Industries, Co. Ltd. (Nakorn Ratchasima), Thai Silk Industries, Co. Ltd. (Nakorn Ratchasima), Thai Silk Products, Co. Ltd. (Nakorn Ratchasima) and Muang Karn Silk Co. Ltd. (Karnjanaburi). Garment manufacturers source their fabrics from mainly medium and large scale commercial weaving factories, which they often owned themselves. Smaller scale garment and silk product cooperatives are present at the local level, as well as tailoring enterprises. Direct linkages between small-scale cocoon rearers and yarn producers and garment manufacturers are limited. The Office of Industrial Economics estimates that the gross profit margins of the Thai textile industry are around 15 percent.

The silk retail sector is highly heterogeneous. The domestic retail market primarily sells fabric products. Excluding the tourist sector, the domestic market for non-cloth use is still small; equal to no more than 20 percent of the domestic use of silk fabric. Marketing of silk products to end users occurs at all levels; from villages to provincial centers, from street stalls to fairs and retailers at major tourist destinations. Most silk retail shops in the Northeast have their own weaving units. This form is particularly common in the Chonnabot district area. Street vendors are the most flexible of the retailer groups. They are highly mobile and carry a limited range of stock. At the other end of the spectrum is the large outlet, such the Jim Thompson chain of stores. These types of stores are usually fully integrated supply chains. Design and manufacture of the products are done in-house. Retail costs and margins vary substantially by type of outlet. Estimates in percent profit vary from a low of 2 percent for village traders up to 17 percent for small retail shops. The markup between purchase price and retail price ranges from 2 percent to 20 percent.

Marketing Chain

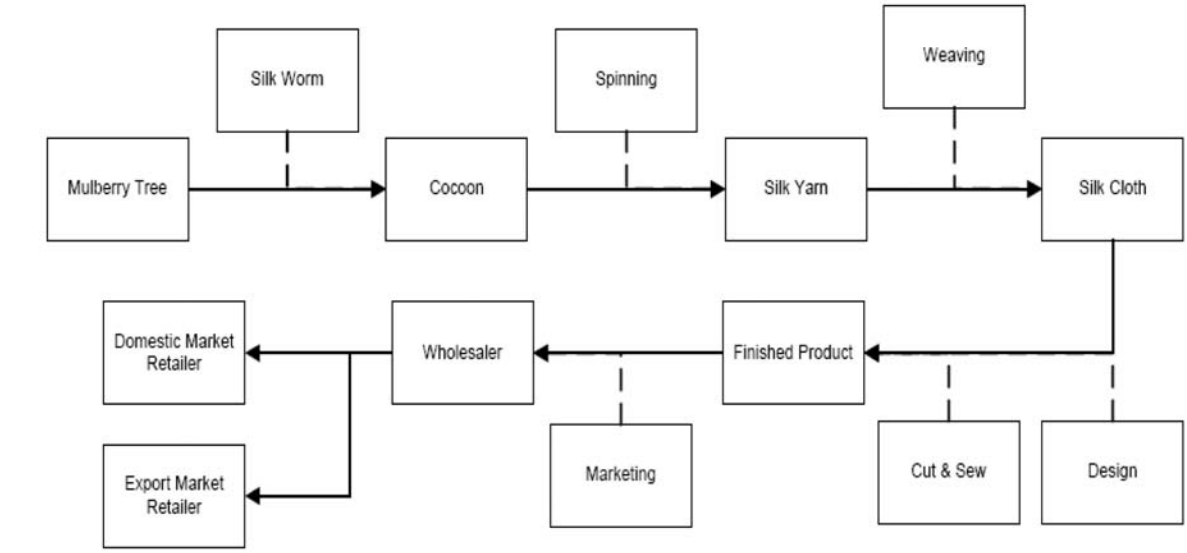
There are three main value chains. They correspond to some degree to the three main varieties of silk worms, but silk products are substitutable at various production stages and their processing and marketing channels are connected. Based on the field work, the silk value chain team estimated the quantity flow throughout these three marketing chains for 2003. The 152,000 sericultural farmers produced around 1,400 tonnes of yarn, and net exports add another 340 tonnes. The domestic fabric supply amounts to 7,060,000 yards and imports add another 475,000 yards. The final use of these fabrics are for domestic use (3,100,000 yards), exports (1,460,000 yards), manufacture of garments for domestic use (592,000 yards) and garment export (2,367,000 yards) (Figure 93).

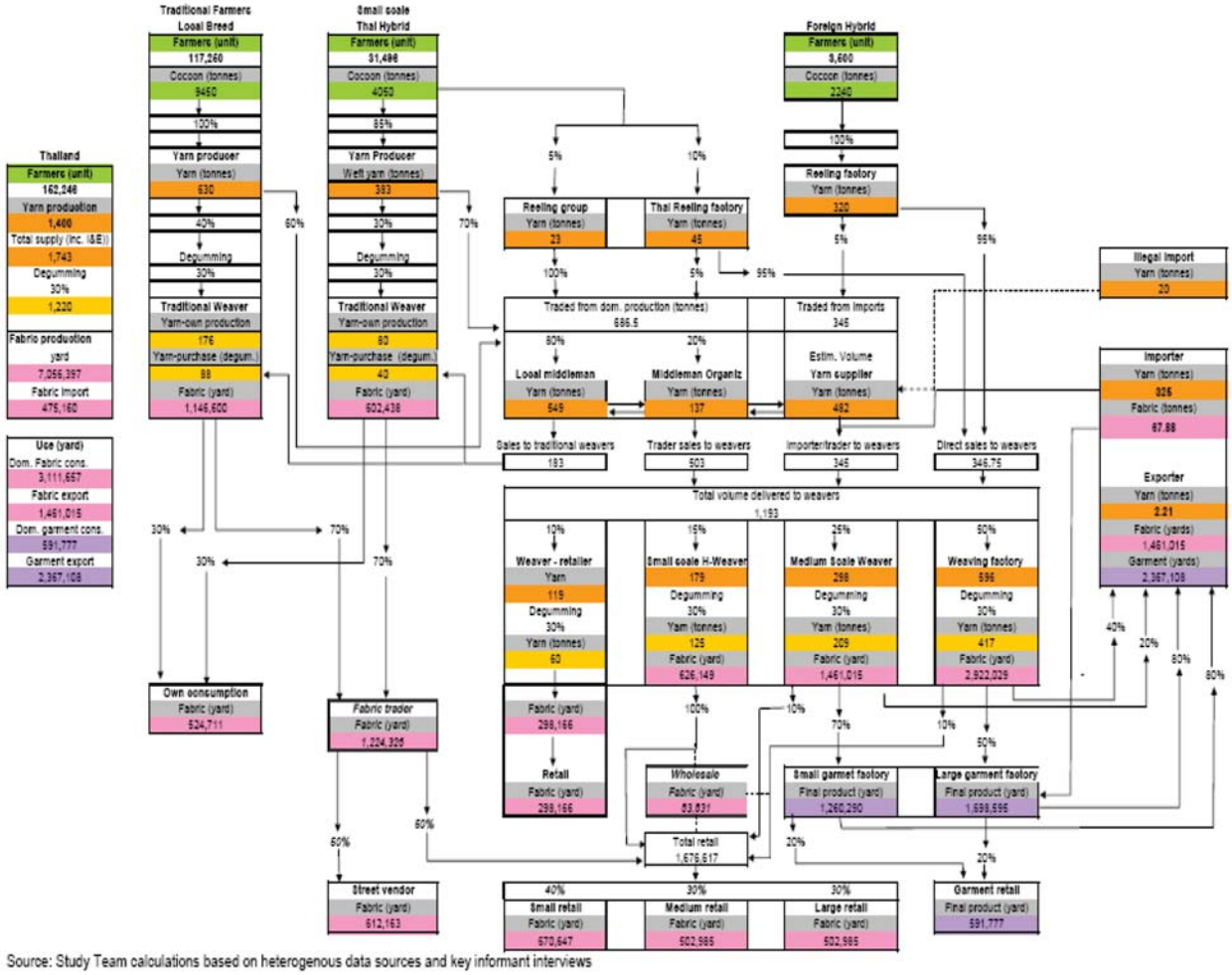
The polyvoltine silk value chain is simple, as the three main stages of production and processing (cocoon rearing, yarn reeling and weaving of textiles) are all performed by the household farm. Around 117,250 farmers produce about 9450 tonnes of cocoons. This translates to 630 tonnes of yarn, of which 60 percent is sold to traders and the remaining 40 percent is degummed and then woven into fabric. Total yarn available for weaving by farm households on traditional wooden looms is around 265 tonnes; which translates into around 1,147,000 yards of woven fabric. Some 30 percent are kept for own consumption, in the addition to 180,000 yards from the poly-bivoltine chain. The other 70 percent goes to small fabric traders who obtain around 1,224,000 yards of fabric from the polyvoltine (two thirds) and poly-bivoltine chains (one third). Around half is retailed through street vendors and the other half enters the formal retail trade.

The poly-bivoltine marketing chain involves more commercialized sericultural farmers. There were around 31,500 poly-bivoltine sericultural farmers, producing 4050 tonnes of cocoons. These farmers sold around 70 percent of their yarn. About 85 percent went for weft yarn production reeled by farmers, and the rest to reeling groups and factories. After degumming poly-bivoltine producers had around 80 tonnes of yarn to weave, in addition to around 40 tonnes of yarn purchased from local middlemen. The total fabric production was around 602,400 yards, which went into the same retail channels as for polyvoltine fabric. All of the yarn from reeling groups went to traders for further sale, while only 5 percent of the yarn from reeling factories went to traders. The remaining 95 percent went direct to weavers where it is combined with the bivoltine yarn.

There were 3,500 farmers involved in bivoltine production. Most of them were under contract arrangements with companies such as Jim Thompson and CTS. Some 2,240 tonnes of cocoon were produced and sold directly to company owned reeling factories who produced 320 tonnes of yarn. Around 5 percent of the yarn is sold on to traders, while the rest goes to company owned weavers. Approximately 1,200 tonnes of yarn went to weavers, and around 1,675,000 yards of fabric to the retail trade. Overall, small-scale garment factories produced around 1,260,000 yards of finished garments, while large scale garment factories produced around 1,700,000 yards. Some 80 percent of all garments are exported.

Figure 93: Silk Marketing Chain for the Northeast





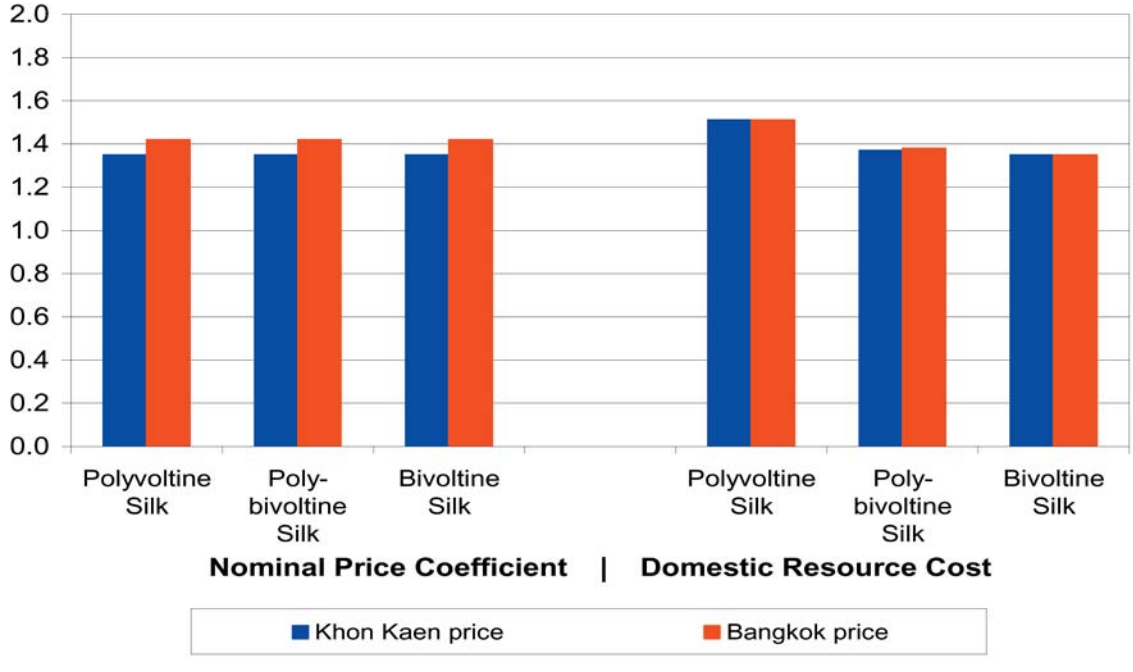
Source: Study Team calculations based on heterogenous data sources and key informant interviews

Competitiveness and Comparative Advantage

The indicators of competitiveness and comparative advantages of Thailand silk were computed against Chinese yarn imports. The polyvoltine industry is not competitive internationally, particularly against Chinese yarn imports. Labor costs form the majority of costs along the chain, and would need to be reduced by 60 percent before making polyvoltine yarn internationally competitive. Wages as such levels are likely to trigger large exits of sericultural producers and hence unsustainable. Productivity increases of 25 percent in the production of cocoon and the yield of yarn from cocoons are required to make the industry competitive. A change in production from polyvoltine to poly-bivoltine would go some way to achieving this goal. However, polyvoltine silk yarn is the basis for high quality hand woven traditional silk products that fetch a premium relative to mass-produced silk fabric. Rather than trying to compete on price, the polyvoltine industry should aim for high valued niche markets trading.

Similarly, the poly-bivoltine and bivoltine industries are not internationally competitive against imports of Chinese yarn. Labor costs, which form the majority of the costs along the chain, would have to reduce by over 60 percent, which is neither unachievable nor desirable. Equally, profit margins for the bivoltine chain would have to reduce by 80 percent. Similar to the polyvoltine industry, a productivity increase across the board of 20 percent would achieve competitiveness. Alternatively, rather than trying to reduce the prices of Thai silk to compete against imports, it may be better to increase quality and capture the high valued segment of the market.

Figure 94: Competitiveness and Comparative Advantage of Thai Silk



Goverment Policies

There are a number of different public, semi-public and private agencies that are involved to various degrees in the policies and programs for the sericulture sector. They range from the Ministry of Agriculture and Cooperatives to the Department of Industrial Promotion within the Ministry of Industry (post-cocoon activities, which include silk reeling, de-gumming, dyeing and weaving) and the NESDB (national and regional development plan). Due to the difficulties in coordinating activities between these ministries, the RTG created in March 2004 the National Sericulture Development Board (NSDB). Under the NSDB, the National Institute of Sericulture will be the coordinating agency for the development of the sericulture industry. The main direct support for sericultural farmers from the RTG has been the distribution of silkworm eggs through the Department of Agricultural Extension (DOAE). The DOAE provides up to 10 percent of total farmer's silkworm egg demand, while the rest has to be met by the private sector. The DOAE is also involved in the distribution of mulberry planting materials at no cost to the farmers; the construction of communal 'young silkworm' rearing houses and 'demonstration' rearing houses for individual farmers, to which the RTG contributes most of the materials and the farmers contribute labor; and the provision of training facilities and training courses designed to improve the farmers' sericulture productivity. The RTG also sets the price of cocoon.

The RTG's Sericulture Development Strategy 2004-2008 aims to increase the income of more than 50,000 farmer households from 12,000 Baht/year to 28,000 Baht/year by investing 600 million baht (US$15 million). The aim is to increase the production of domestic yarn from 1,500 tonnes in 2004 to 2,600 tonnes in 2008. Yellow silk yarn production (handcraft silk) is expected to reach 2,150 tonnes in 2008 (about 17 percent growth rate per year), and white silk yarn production (industrial silk) about 450 tonnes in 2008 (equivalent to 10 percent growth rate per year). The export value is targeted to increase from 900 million Baht in 2004 to 1,800 million Baht in 2008. A second major objective outlined in the Sericulture Development Strategy is the promotion on high quality yarn at the village level. The target is to increase the production of high quality yarn from 15 percent to 30 percent by 2008.

Box 9: One-Tambon-One-Product (OTOP)

The RTG initiated the OTOP project as a way to enhance community revenues. Coordinated by the Prime Minister's Office, OTOP aims to promote the production of local goods by communities and assist communities in the marketing of these products. More than 10,000 items are now produced under the OTOP project of which approximately 460 items have been initially selected as outstanding products with fine quality. The RTG sponsors training program for communities in administration, promotion of production and marketing, and quality product development. It has set guidelines to select the most outstanding product from each province based on strength of brand which has potential for export, regular production with standards of quality, quality standards which can create customer satisfaction and products which have a history. Selected goods are divided into six categories (food; beverages (tea, fruit juice, herbal drinks and powdered ginger); clothes and garments made at least partially of natural fiber; ornamental products (scarf, hats, bags and necklaces); decorative products, household furniture, and arts and souvenir articles; and natural herbal products (cosmetics, herbal shampoo, and aroma oil).

Value Added Potential

Traditional sericulture production involves the rearing of native polyvoltine silkworms, reeling of yarn and weaving the yarn to produce silk fabric for sale. These activities can be done at the household level and usually involve women and the elderly working in slack labor periods during the year. The development of a commercialized industry has devolved some of the responsibilities; from a simple marketing arrangement where yarn traders act as middlemen moving surplus yarn from one village to the next, to a fully integrated commercialized system.

In the traditional as well as the modern setting, fabric is woven to make sarongs and garments. The development of a tourist industry and the exposure of Thailand industry to western markets have broadened the scope of the "traditional" products into such items as tablecloths, pillowcases, handbags etc. However, the extent of design creativity is still in the early stages. Part of the issue has been differences in technology and quality which makes Thai silk suitable only for some types of products. Thai silk made from polyvoltine and poly-bivoltine yarn is rougher and thicker than machine woven bivoltine silk yarn, making it unsuitable for example for business suits. But more important for the lack of product differentiation are weaknesses in the design stage. While farmers produce silk yarn (or cocoons), consumers purchase silk fabric or silk derived products. Thus the role of weaving, design and tailoring in the value chain cannot be overstated. Importantly, approximately 90 percent of the value added remains within Thailand, as village weavers are able to produce sufficient quality silk cloth products for sale. The production and processing technology is labor intensive, providing employment opportunities at the local level; particularly for women.

The reason why products fetch a high price in a market is because of their relative scarcity. Goods that are produced in volume fetch a lower price, so the development of high valued products can only be done from a small amount of bulk raw commodity. In addition to the main products derived from the silk industry (silk yarn and silk fabric) there are a host of waste materials discarded during the manufacturing process which have substantial commercial value - often more than the silk yarn itself.

The extent of value adding non-silk products is unknown, but there are several examples of successful niche product businesses already operating within Thailand. These relate to value added products from cocoons, silk protein, mulberry leaves, and mulberry fruit. There are some common elements among these cases. First, almost all of the enterprises were established by farm groups. Second, initial training of group leaders and key members of the group played a significant role; without the efforts of a "champion" it is likely that the enterprise or activity would have failed. Third, there needs to be a market for the output. The market should be developed first or in conjunction with the production of the output - and not after the product has been produced in commercial quantities. There needs to be significant market research undertaken before product development to ensure that there is enough demand to sustain commercial production.

Silk Issues

First, sericultural production is important for employment in the Northeast, particularly for older women in the villages. There is a duality in the production of silk with coexistence of subsistence oriented farmers with more commercial farmers, differentiated by the type of sericulture practiced (polyvoltine, poly-bivoltine and bivoltine). There are three main marketing chains in the silk industry. The semi-subsistence cottage industry revolves around polyvoltine production, reeling and weaving at the village level, with farmers selling surplus yarn and fabric mainly to small scale traders and retailers in the district and provincial markets. Then, there is the small commercial industry revolving around poly-bivoltine production with farmers selling cocoons to community and small-scale reeling factories at the district and provincial level as well as cocoons and yarn to traders. These traders then sell to reeling and weaving factories as well as to weavers in other villages. Finally, there is the commercial industry revolving around poly-bivoltine and bivoltine production with farmers selling cocoons under formal and semi-informal contracts to reeling factories which are integrated with weaving factories and garment manufacturers. Some 117,000 farmers are involved in the first marketing chain, another 24,000 farmers in the second marketing chain, and some 7,000 farmers in the third marketing chain.

Second, the duality in production systems extends to the reeling, and weaving sector. At the village level, textile production is carried out on traditional wooden looms producing fabrics for own consumption and cash sale when needed. This results in lower levels of technology upgrading than would be the case with commercial weaving operations. The commercial weaving operations have relatively good technology, but suffer from lack of product design and value adding.

Third, traders face a highly competitive market in a difficult international environment. While there are relatively good levels of basic infrastructure including transportation networks, standards, certification and quality control are becoming more relevant as the value chain moves from being supplier driven to increasingly buyer-driven.

Fourth, there exists considerable potential for value-adding from silk processing, due to the multitude of products that are associated to or derived from silk: silk (cloth, finished products and proteins) and mulberry (fruit, paper, wine, tea and timber. The potential value added products derived from silk yarn and fabric processing are limited to only design and imagination. In addition to the potential for increased value adding from silk yarn and fabric through changes in design, there is a relatively unexploited potential for value adding in the processing of silk by-products and other related products.

Public Expenditures

Unitary Government

Regional economic development depends, among other factors, on how key sectors are funded with public resources. Channeling public resources to disadvantaged regions, if done well, can be a powerful way of promoting convergence in living standards. We will discuss two aspects of how government resources affect regional development. The first issue is horizontal fiscal balance. Do regions and provinces differ in the amount of resources that they have available per person, or poor person, in delivering public services? The second topic are the trade-offs in spending public resources across sectors. Is the regional allocation of public resources across sectors in line with regional development priorities? We will use comparisons with other regions as benchmark for judging whether public spending is too much, too little, or about right. Due to data constraints, the analysis focuses on actual spending of the central government, drawing on detailed budgetary data from the Comptroller's General Department (CGD).

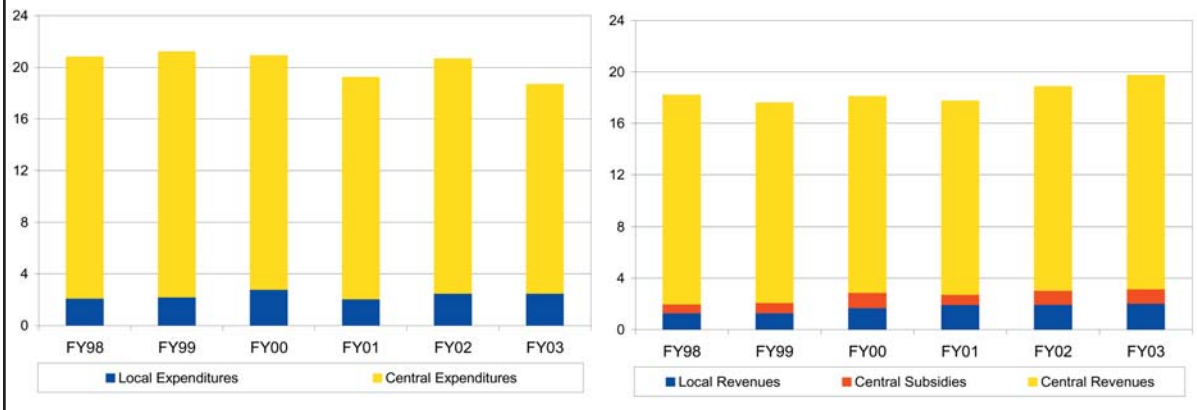
Thailand's highly centralized fiscal system grants only limited autonomy to lower government levels in terms of functions, area, staffing, funding and decision making:

- The central government spends about 85 percent of total general expenditures and collects 95 percent of general tax revenues (Figure 95.A). Only one quarter of municipal revenues are locally collected and retained, while about one third of local government spending comes from central government subsidies.
- Public spending programs administered in Bangkok increased over the last years. Some of these programs benefit Bangkok exclusively while others accrue to other regions as well. The share of such programs increased from 12 percent in Fiscal Year (FY) 1999 to 17 percent in FY 2003 (Figure 95.B), or by 42 percent in real terms. Assuming an even distribution of non-attributed expenditures across regions, non-attributed expenditures equaled 70 percent of Northeast government expenditures in FY 1999, but 108 percent of Northeast attributed expenditures in FY 2003.
- Few government spending agencies have a significant presence outside of Bangkok. Only the ministries of education, agriculture, interior, transport and communications and health, in addition to independent public agencies (IPAs), spent less than half of their total expenditures on Bangkok (Figure 95.C).

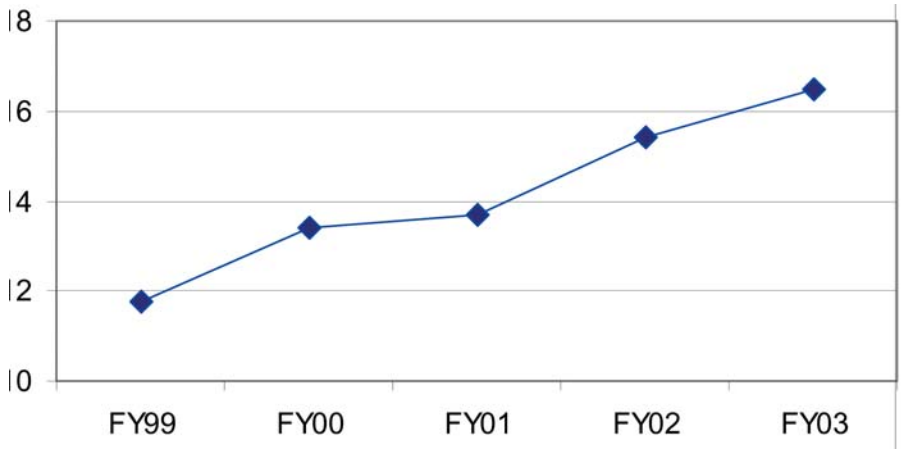
These regional imbalances are likely to underestimate actual imbalances. First, we exclude comparisons with Bangkok, as Bangkok spending is a mixture of nationwide spending administered in the capital and spending benefiting Bangkok exclusively. Expenditures are far higher than on any other region. Second, if intra-seasonal migration biases population estimates downwards for the Northeast compared to other regions, per capita expenditure figures would be overestimated for the Northeast. Finally, local public expenditures boost regional imbalances, as the Northeast has a lower tax base than other regions.

Figure 95: Public Expenditures

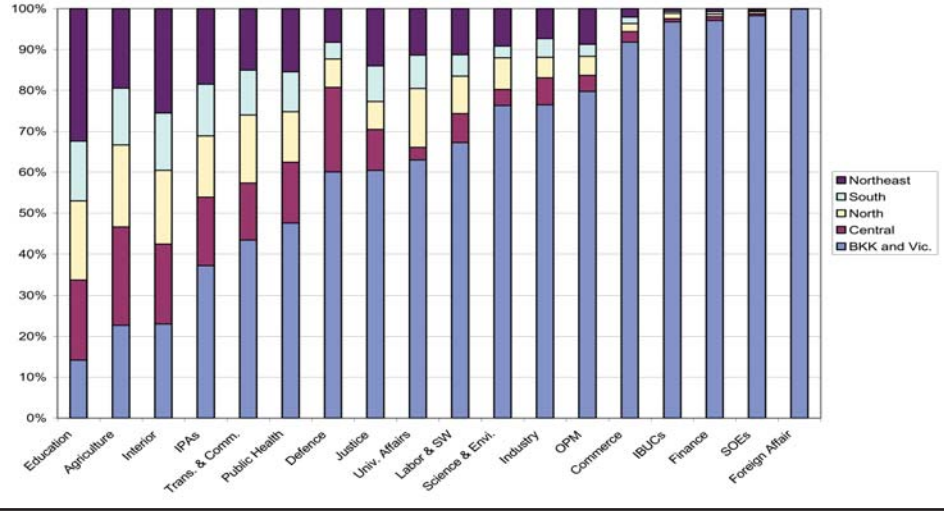
A. Consolidated Government Expenditures and Revenues, Percent of GDP, 1997/8 to 2002/3



B. Bangkok-administrated Government Spending to Overall Central Government Spending (Percent), 1997/8 to 2002/3



C. Regional Public Expenditures by Ministry (Percent), FY02



Spending Gap

Looking at government spending across all sectors, how does the Northeast fare compared to other regions? The Northeast receives fewer public resources than any other region and the expenditure gap with other region has remained fairly constant last five years (Figure 96.A). The Northeast received in FY 2003 Bt6,400 (in 1999 constant prices; US$160) per capita, which is one third less than the Center and 27 percent less than the North and the South. The Northeast spending shortfall compared to these three regions was close to around 30 percent in FY 1999 and FY 2003.

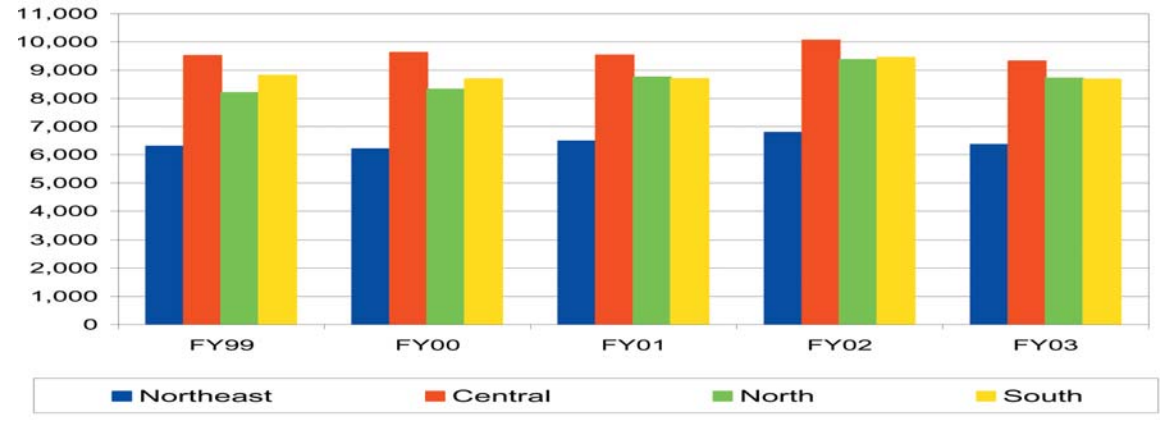
A look at public expenditure shares over the last 10 years suggests that this gap is a structural feature. In spite of various public sector management reforms, regional public expenditure patterns remained remarkably constant (Figure 96.B). The Northeast is disadvantaged especially with regard to capital spending. Relative to the non-Bangkok average in FY 2003, recurrent expenditures were 17 percent lower and capital expenditures 48 percent lower (Figure 96.C). While the shortfall in recurrent expenditures is fairly constant, the capital spending gap varies from year to year. The recurrent expenditure shortfall moved from 81 percent to 83 percent of the non-Bangkok average over the five years. The capital expenditure gap fluctuated from 46 percent in FY 2001 to 79 percent in FY 2002.[42]

This evidence is consistent with a systematic bias arising from a rigid budget allocation system that preserves existing differences in staffing and facilities by applying fixed budget norms with little regard towards performance and new spending priorities. Such norms have a larger bearing on recurrent spending, especially salaries, whereas capital spending is by its very nature more discretionary and affected by political bargaining. Politicians dispense patronage through sectoral allocations of capital expenditure, which in turn becomes more exposed to political bargaining. (Siamwalla 1997). The higher variability of capital expenditures is not unusual, as capital spending plays an important role in fiscal adjustment. Public investment traditionally expands more than public consumption during fiscal expansions and contracts during fiscal contraction (World Bank 2000).

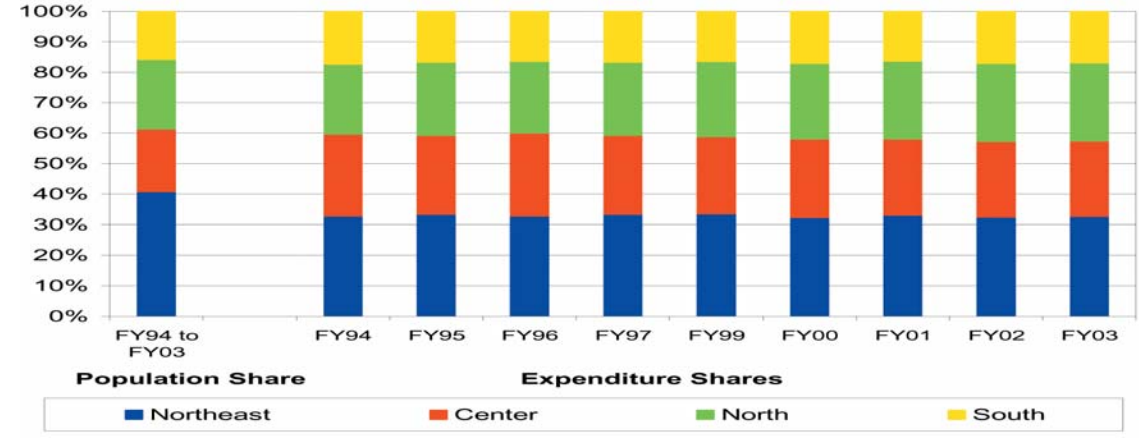
[42] Capital expenditures represent less than one quarter of government spending, so that

Figure 96: Regional Public Expenditures

A. Government Spending by Region, FY 1999 to FY 2003 (Baht Per Capital, 1999 Prices)



B. Regional Public Expenditure Shares, Outside Bangkok, FY 1994 to FY 2003



C. Northeast Spending on Salary, Non-Salary Recurrent, and Capital, Percent of Non-Bangkok Average, FY 1999 to FY 2003

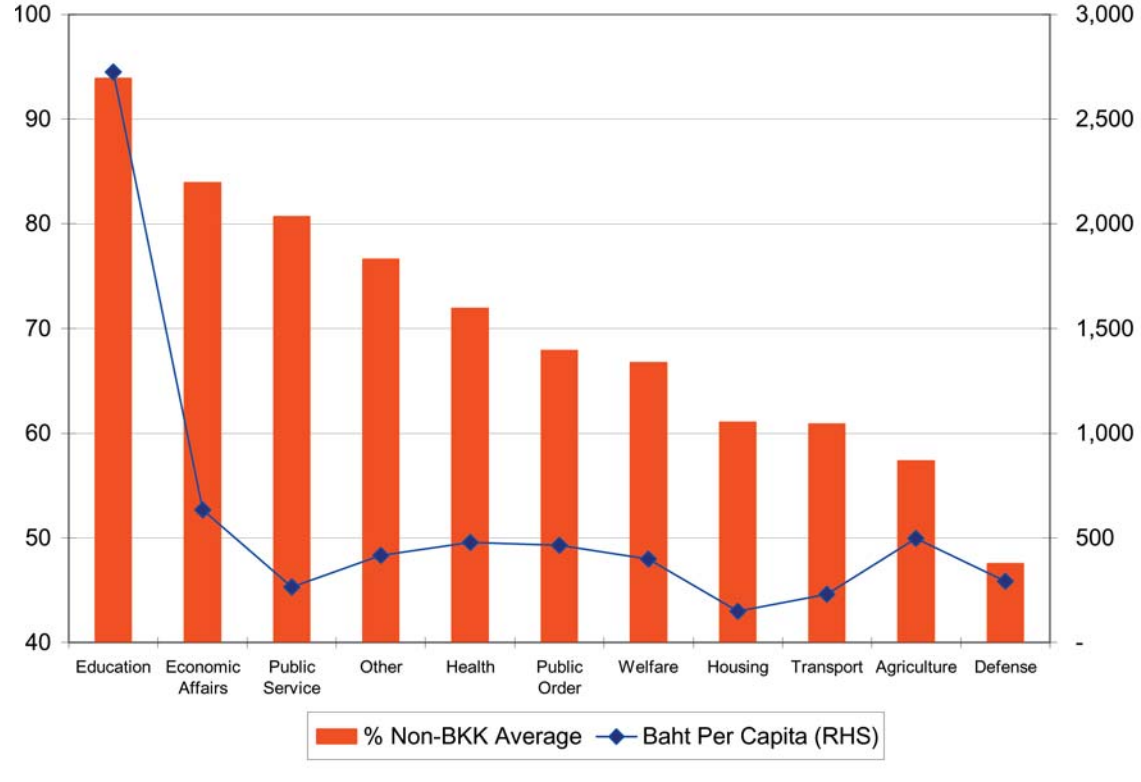
Sectoral Spending

Thailand's total public expenditure allocation among sectors broadly reflects its development priorities. By comparison with other middle-income countries in the region and elsewhere, it allocates a relatively large share of government expenditures to agriculture, transportation and communication, health and education, and spends less on defense, social security and welfare and general public services.

The lower budget envelop reduces expenditures for all functions, but for some more than others. Among the 11 main functions, the drop in FY 2003 was smallest for education (8 percent) and largest for defense (53 percent). The low per capita shortfall for education is related to the importance of spending on teachers' wages which are normalized across the country.

The Northeast spent only 57 percent of the non-Bangkok average on agriculture, 61 percent on transportation and housing, and 67 percent on social security in FY03, with similar shortfalls in FY02 (Figure 97). The Northeast allocated most to education, which alone accounts for two-fifths of all central spending and is the only function that accounts for more than one-tenth of central spending. Other large items are economic affairs, agriculture, health, public order and social security.

Figure 97: Northeast Public Spending as Percent of Non-Bangkok Average, Percent and Baht Per Capita, FY 2003

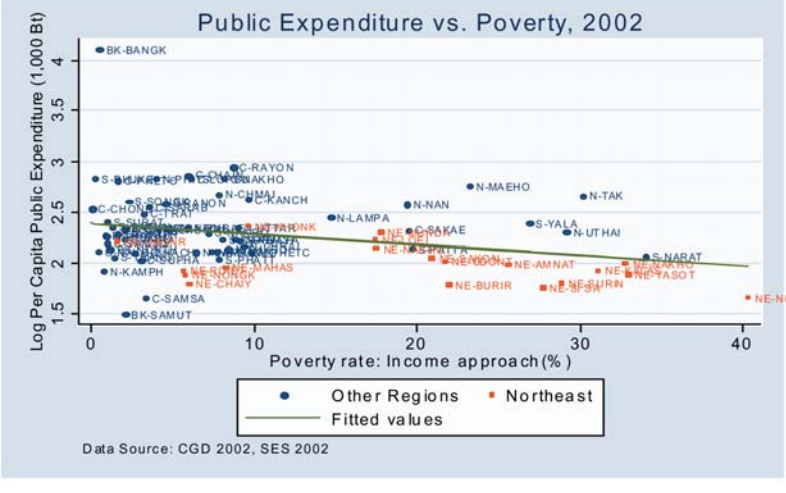


Provinces

The spending gap at the regional level reflects similar gaps among provinces. Out of the 19 Northeast provinces, 10 are in the bottom quintile for per capita public expenditures, and no province is in the top quintile. Khon Kaen, the administrative center of the Northeast, is the only province in the 4th quintile, followed by Loei, Mukdahan and Udon Rathchathani in the 3rd quintile. Out of the 19 provinces with the lowest per capita public expenditures, 14 belong to the Northeast. The combination of low income and low public resources in the Northeast suggests that per capita public spending should increase with gross provincial product across Thailand's provinces. Indeed, the elasticity of per capita spending with regard to per capita income is 0.18 percent in FY 2003: for each additional Baht of per capita income, per capita public expenditure increases by Bt1.18 (Figure 99).[43] The clustering of Northeast provinces, displayed in red, in the south-west corners of the graphs confirms the combination of low per capita income and low per capita public expenditures. The rigidity of the overall budget allocations from one year to the next is also present at the province level (left column of Figure 99). By contrast, there is more variability for capital expenditures, although the correlation is similar to the one for total public expenditures in FY 1999 and FY 2003.

The flipside of a positive correlation between income and public spending is a negative correlation between poverty and public spending. Poor provinces have lower contributions to total public expenditures than non-poor provinces. Indeed, the slope coefficient of a regression of log per capita public expenditures against the poverty headcount is negative (Figure 98).[44]

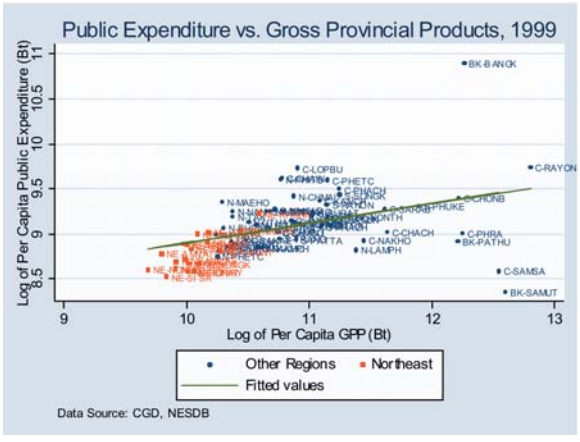
Figure 98: Per Capita Public Expenditure and Poverty

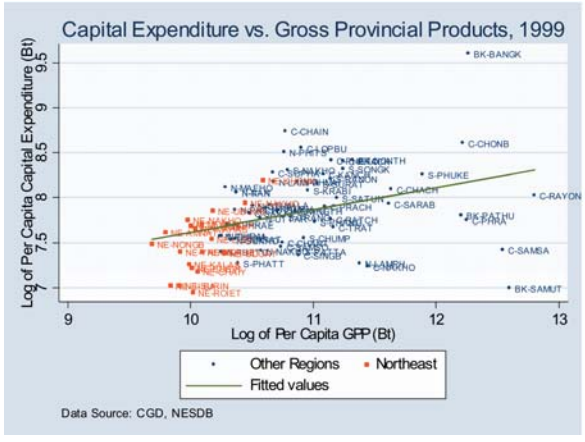


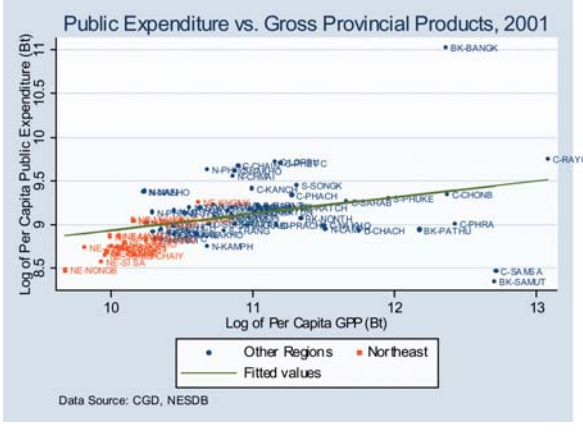
[43] Without Bangkok, the elasticity drops to 0.13, which remains highly significant. The t-statistics on the coefficient for gross province product are 4.8 with Bangkok and 3.9 without Bangkok.

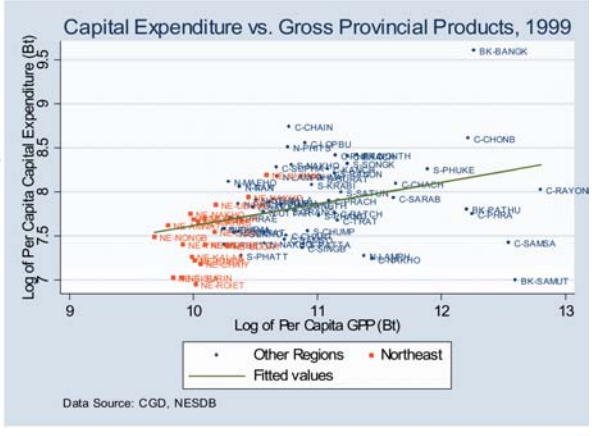
[44] The slope coefficients are is -.09 with Bangkok and -.05 without Bangkok. They are highly significant.

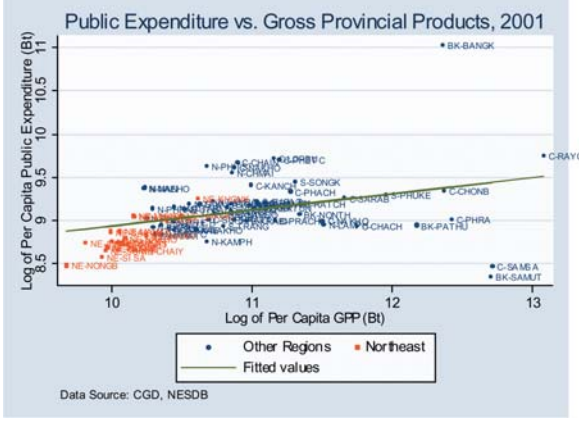
Figure 99: Overall Public and Capital Spending versus Gross Provincial Product, 1999 to 2003

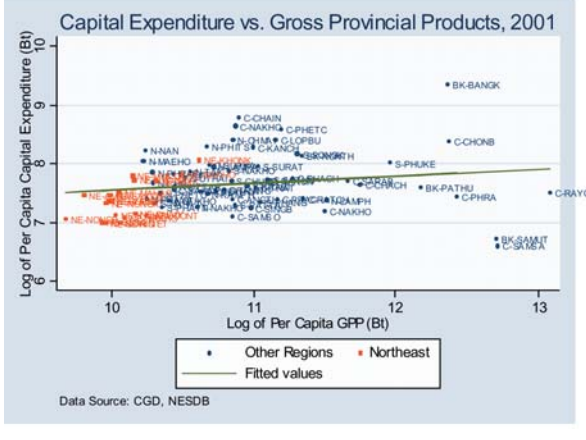












Wages

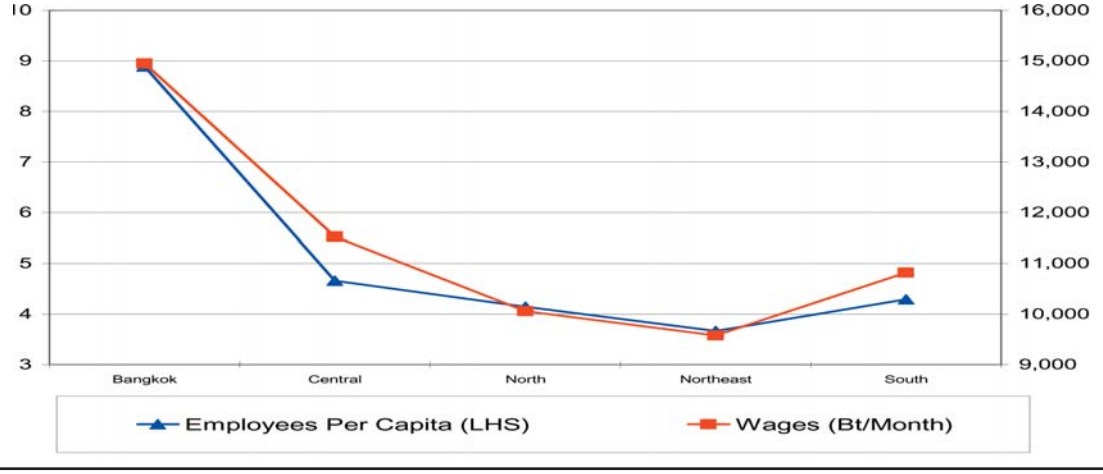
Thailand's wage bill as a share of total expenditures is relatively high by international standards (World Bank 2000). Among Thailand's regions, the share is highest for the Northeast, followed by the North. It increased from 43 percent in FY 1999 to 48 in FY 2003, while the capital share declined from 29 percent to 21 percent (Figure 100.A). Across the sectors, the salary share remained constant in education, while it increased from 47 percent to 83 percent in health, from 6 percent to 19 percent in housing, and from 10 percent to 16 percent in transportation.

While the Northeast employs the largest number of government staff, the ratio of government staff per person is the lowest in the country. Northeast public wages are from 5 percent to 56 percent lower than in other regions (Figure 100.B). This suggests that the high salary share is not a sign of a bloated public sector or high wages but of low public capital spending. As the bulk of public resources are absorbed by non-discretionary expenditure items, little is left for public investments.

Figure 100: Northeast Spending Composition and Regional Public Sector Workers and Wages

A. Northeast Spending Composition by Type, Percent, FY 1999 to FY 2003

B. Employees Per Capita (Per 100) and Monthly Wages in the Public Sector, 2001



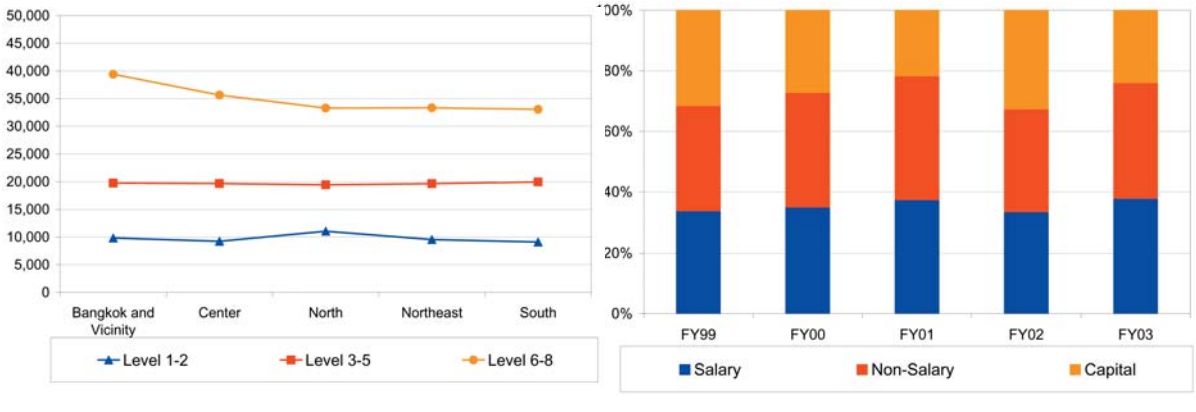
Capacity

It is obvious that local administrations have limited influence in Thailand's public sector. The central government appoints the chief local officials, determines local salaries, and approves local budgets. Even local utilization of the restricted funding is to a large part centrally mandated. For example, staffing levels and staff appointments of local governments are now centrally controlled. Local authorities are required to hire personnel and pay salaries, wages, and benefits in accordance with central regulations that often result in overstaffing and overspending. A second issue is local administrative capacity. Thailand is losing rural population (-0.22% annually) and core urban areas are stagnant, so that all population growth is occurring in peri-urban areas, so there is a mismatch between capacity and needs at the local level: "It is not unusual for a peri-urban Tambon Administration Organization (sub-district [TAO]), staffed by personnel in their twenties, with generalist educations, to be the site of an industrial park housing some of the world's leading Fortune 500 companies demanding world class infrastructure services" (Webster and Theeratham 2004, p.38).

Government staff is less qualified in the Northeast than in other regions. Figure 101.A shows the average monthly incomes of civil servants in 2001. They are remarkably similar across regions for a given category. This implies that the lower wage bill of the Northeast (Figure 100.B) is a reflection of lower qualifications of government staff. Indeed, the 2004 survey from the Office of the Civil Service Commission shows that the Northeast has the highest share of civil servants without bachelor degree (38.2 percent) and the lowest share with graduate degree (6 percent) (Figure 101.B).

Finally, the over 7,000 TAOs are too small to ensure effective coordination either vertically (center and local) or horizontally (with other TAOs). In response to these problems, the RTG has in effect shifted from a decentralization to a deconcentration process. While this may facilitate coordination and implementation, it raises the issue of overlapping responsibilities between centrally-appointed CEO-governors and the locally elected officials in TAO and PAO administrations, not to mention constitutional issues in respect to the mandated decentralization process.

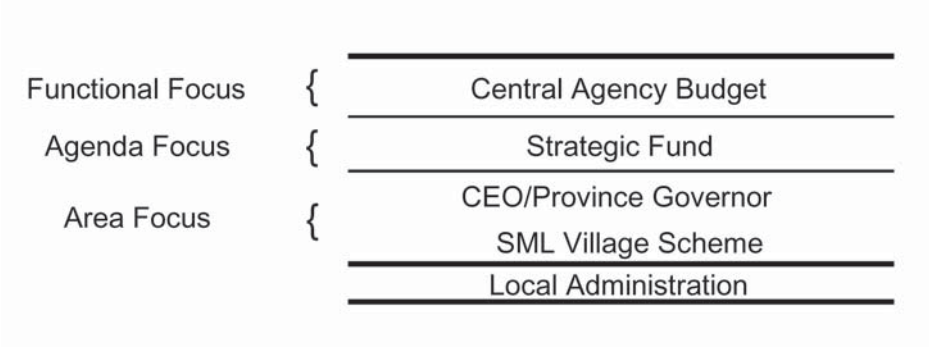
Figure 101: A. Monthly Income of Civil Servants' Family by Position (2001).
B. Civil Service Composition by Education Level (2004)



Past and Present Reforms

Over the last 25 years, the Thai public expenditure system has undergone several reforms. While mostly internally driven, their content reflects broad budgetary reform trends in OECD countries. Four phases can be identified. First, Thailand introduced in 1982 a Planning Programming Budgeting System to replace line-item budgeting and link the budget more coherently to the five-year national development plans. Coinciding with greater emphasis on balanced regional development, provincial governors were given more fiscal authority. Second, in the aftermath of the Asian financial crisis, the RTG launched comprehensive public sector management reforms designed to deliver high-quality services to the population efficiently. Major innovations included adoption of a hurdle approach, using an output-based budgeting system that makes financial devolution contingent on attainment of capacity-building programs in seven areas of financial management. While the bulk of these reforms were abandoned mid-course, similar concepts have re-emerged in new reform initiatives. Third, the new government created in 2002 a Public Sector Development Commission (PDC), which can be seen as the lead agency for the government's ambitious public sector reform program. Its secretariat, the Office of the Public Sector Development Commission (OPDC), is directly accountable to the Prime Minister. It drew up a new Strategic Plan for Thai Public Sector Development (2003-2007) that emphasized the objectives of improved public service, a "right-sized" government bureaucracy, increased competencies of public sector employees, and responsiveness to democratic governance. Finally, the re-elected government is committed to deepen the expenditure reform initiatives started in 2001 over the next years. The current reforms combine aspects of new public administration (such as accrual budgeting and accounting); modern budgetary tools (medium-term expenditure framework MTEF; service delivery agreement (SDA); public service agreement (PSA)); information technology (e.g., GFMIS) and new legislation (such as New Budget Procedure Act and New Budget Law). OPDC and the Bureau of Budget, the core agencies behind the reforms, have drawn up a strategic performance-based budgeting system (SPBBS) that goes well beyond the initial idea of a performance-based budgeting system. Stressing results orientation, comprehensiveness, MTEF, monitoring and evaluation, good governance and devolution of budget execution, the agenda has been re-focused on three dimensions: function (by ministry chain); area (by provinces and clusters); and agenda (to reduce poverty, build competitiveness and promote sustainable development.

Figure 102: Proposed Budget Breakdown



Agenda and Function

Will the current reforms address the structurally uneven regional resource allocation of central public expenditures, the lack of a clear pro-poor focus in the sectoral allocation, and the weakness of existing monitoring and evaluation structures? To answer this question, we will first take a closer look at the technical side of the reforms, and then turn to political economy aspects of the reforms.

Clearly, the reforms are top-down; they originate from the center, which added new structures and mechanisms to the current expenditure framework. In the new five-layer structure of the budget, the bulk of the resource will still reach provinces and regions through central agencies. The question then is how to ensure that regional equalization is considered in the ministry resource allocation process.

Two strategies here represent different degrees of reform. Officials at BOB propose a matrix structure for allocating resources in accordance with the four-year State Administrative Plan, supported by the new capacities of the GFIMS. The structure would combine data from the provinces/clusters with functional data from the ministries, making it possible to integrate function and area in the budget allocation process so that regional concerns would receive greater attention in the future. The Subcommittee on Finance and Budget at OPDC is taking an even more radical "area" approach, suggesting that over the next two to three most current line ministry functions should be transferred to the provincial level. Only about 20 percent of current assets, workforce, and financing would be retained at the line ministry level. Provinces would no longer have to seek funding from line ministries. Instead ministries and provinces would stand on equal footing. Both would have to send budget requests to the central government. Disbursements for essential services would be automatic; they would also seek (and to a certain extent compete for) "resources on demand" for project-bound strategic services they wish to provide. What would emerge is a threefold structure of central government agencies and the cabinet, ministerial line agencies, and the provinces. Each, in an adaptive process, would engage in formulating, executing, and monitoring strategy and would be responsible for formulating both fiscal targets and ceilings and broad strategic directions. While line agencies would coordinate, regulate and set standards in their sectors, provinces would have primary responsibility for formulating and implementing projects.

Whichever concept is ultimately adopted - the more modest approach of BOB or the more radical version of OPDC - it will leave ample new entry points for regions to have a greater voice in the budgetary allocation process and reinforce the drive for new institutional structures and mechanisms to better balance regional resource allocation. Pro-poor interventions are likely to come primarily from the strategic fund, managed by the Office of the Prime Minister. They could comprise about two percent of the total budget. Given the flexibility of these funds, it will be possible to target particular vulnerable population groups through special programs.

Area

The new focus on "area" could become an entry point for more balanced regional resource allocation. The current reforms envision a strengthened role for provincial governors by elevating them to CEO-governors. Within a decentralized government structure, they would command substantial financial, human, and physical assets to pursue their own provincial development strategies. In the FY 06 budget, the government plans to earmark approximately 3 percent of the governments budget for the 76 provincial governors. The resources would be distributed partly as lump sum and partly with reference to indicators such as population size, per capita income levels and provincial tax collection efforts. In exchange, the CEO-governor would be asked to set out a provincial development strategy. A public service agreement, signed by the governor and the Deputy Prime Minister, would ensure that the governor is held accountable for executing the strategy and using funds responsibly. If this model proves successful, the resource channeled to provinces via CEO governors could increase over time.[45]

The second entry point for more equitable regional resource allocation will come through what is set aside for the villages (the "people's budget"), envisioned to reach around Bt20 billion eventually. The SML village scheme provides direct funding to small, medium and large villages according to a per-capita formula. In the current pilot phase, around 1,000 villages receive funding ranging from Bt200,000 for small villages, Bt250,000 for medium sized villages and Bt300,000 for large villages. The SML Village Scheme complements the Village Fund project, which provided in 2002 one million Baht to each village to be used as a revolving fund for short-term household loans.

In sum, the current reforms are likely to address the three areas of concern highlighted in this report - uneven regional allocation; regressive, anti-poor resource distribution; and weak monitoring and evaluation of the allocation of central public expenditures. Yet today, many relevant programs remain at the conceptual level. The discussion must move to the implementation stage and to defining indicators and formulas to be applied. Although there has clearly been much progress in fact as well as in theory, the future of Thailand's budget reforms is still uncertain, for some obvious reasons: Resource allocations are ultimately political decisions - increasingly so when strategic allocation mechanisms become part of the budgeting process. Paradoxically, the Northeast, as the most populated region in Thailand the one with the largest group of MPs in parliament, has not so far been able to boost public spending in the Northeast, so there is a real question mark about whether this situation will change in the near future.

[45] An alternative proposal is to allocate resources to seven province clusters rather than the 76 provinces. However, the province clusters still lack the legal status to receive funds as budget units. This could change with the adoption of the new Budget Procedure Act. An interim solution could be to use a purchaser-provider framework in which the CEO-governors would purchase services from line ministries.

Reform Components

Many of the concrete reform components are still in flux. First, the current expenditure reform initiatives seem to emphasize effectiveness over equity. While this is not surprising, given the private-sector management concepts introduced into the new public administration paradigm, the opportunity for ensuring adequate emphasis on balanced regional allocations could be compromised. The PSAs for a single ministry or (more likely) several ministries can be an entry point for regular regional per capita allocation analysis as part of strategy development and target setting for each ministry.

Equally important, there needs to be a legal framework that clarifies the roles and responsibilities of the main budgetary actors. The new Budget Procedure Act will institutionalize new committee structures, clarify the legal status of the provinces, and help establish criteria for the use of PSAs, SDAs and key performance indicators. So far, the framework for the use of PSAs and SDAs is weak. Underlying performance indicators are largely challenged by OPDC alone and routes of accountability are often weak, particularly in respect to the CEO-governors. One important ingredient is better data so that reliable baselines can be established. Efforts to install a comprehensive PER process, at the national and provincial level, should therefore be accelerated.

The greater weight of the regions and provinces envisioned for the allocation process is an important step towards improved regional equalization. It is too early at this point to judge whether the BOB concept would succeed in bringing together provincial allocation demands and those of the functional ministries or if at the end a more radical devolution of functions might be the only solution for the persistent problem of integrating area and function in the Thai budgeting system. A stronger role of the provinces raises other issues. What will be the relationship between a provincial administration headed by the CEO-Governor and the independent local administration at the provincial level (PAO)? How can duplication of their functions be avoided? Finally, stronger mechanisms for transparency and accountability are desirable in the budget component that falls under OPM discretion: the Central Fund. It covers allocations to the CEO-governors, the SML scheme, and through its strategic fund subcategory allocations to may poverty-related projects. More attention to additional criteria may be desirable, such as expenditure needs and revenue capacity. Similar criteria are needed for the strategic fund, whose use seems to follow political rather than strategic considerations.

The current Thai public expenditure reforms are clearly progressing in a direction that is favorable from the perspective of regional development. Many of the challenges are likely to be addressed in current reform concepts. Given the preliminary status and broad nature of these reforms, it is critical to ensure that the proposed institutions, formulas and indicators will improve the way how central public expenditures are allocated to sectors and regions.

III. Strategies

Taking Stock

Hypotheses

We have not tried to pin the blame of the Northeast's lack of economic convergence on a single cause. Instead, the discussion of Part II has pulled together evidence on a range of potential constraints. The detailed findings are summarized in Box 14 to Box 25. Before turning to the factors that do matter, is useful to remember the issues that do not appear to be holding back Northeast economic convergence. First, Thailand's government is unitary, the rules and regulations tend to be uniform across the country. The costs of doing business in Khon Kaen are no different than in Bangkok (Figure 46). Second, financial and credit markets are integrated and formal interest rates are similar across Thailand. While the bulk of commercial banks locate in Bangkok, their branches are adequately represented in outlying regions (Figure 47). The RTG has also improved the availability of affordable credits through a range of grass-root initiatives, although they have primarily benefited non-poor households. Third, with the important exceptions of water supply and communication, infrastructure in the Northeast is sufficient to meet the available demand. Fourth, the labor market is flexible, with large adjustments in employment levels and wages across seasons and the economic cycle. Labor market institutions, such as minimum wages, unionization, or labor protection laws apply to only a subset of workers and/or are not enforced. Unemployment is not a concern with the exception of young workers for whom jobs have become harder to come by than before the Asian crisis.

Clearly, the Northeast faces an array of economic issues. What is the picture that emerges? Two factors are behind the lack of economic convergence. First, infertile land, water shortages, widespread small landholding, and unsustainable farming methods have resulted in the lowest labor productivity in agriculture of any region. Labor productivity in other sectors is also lower by a large margin. Second, geographic disadvantages (landlocked and bordering to even poorer neighbors), low urbanization and weak resources have prevented the Northeast to develop industrial or service sectors of cross-regional significance. Low yields in agriculture and absence of local employment in other sectors have resulted in widespread poverty.

Families have supplemented their meager incomes by sending young adults to Bangkok and other prosperous areas within and outside of Thailand in search of jobs. Parts of the wages find their way back into the Northeast through remittances, supporting a service sector that accounts for three fifths of Northeast value added.

Need for Change

There are three reasons to strive for change. First, the high concentration of resources in low-productivity activities amounts to a large waste of resources. Much of the Northeast population is stuck in low-yield subsistence farming that condemns them to abject or near poverty. With productivity on par with other regions, Northeast farmers should contribute about half of Thailand's agricultural value added, instead they produce only one fifth. Unsustainable farming methods lead to declining forest coverage and soil erosion that make it increasingly difficult to increase yields. Since the early 1990s, growth in agricultural labor productivity lagged by 25 percent behind the North and by 50 percent behind the Center and the South. Northeast industry workers produced 2.5 as much than Northeast farm workers, and Northeast service workers contributed 5 times as much than Northeast farm workers. The Northeast is Thailand's most rural region, and agricultural households are systematically poorer than non-agricultural households. The rural sector is also more subsistence oriented than in other regions, and subsistence farmers are systematically poorer than non-subsistence farmers.

Faced with such adversity, about one in two Northeast families rely on migration as a coping mechanism. This makes Northeast households dependent on labor demand in Bangkok and the Center - as painfully demonstrated during the Asian crisis. While migrants' remittances help to reduce poverty and support the local economy, communities feel that migration is also their main social problem. Migrants are exposed to many risks. While many get help from friends or family members who previously migrated, others, who do not have such a social network, may fall into the hands of illegal recruiters and end up in inhumane working conditions. What starts as the search for better opportunities to improve one's living conditions can end up in a situation of human trafficking. Since migrants are typically less protected through official labor regulations, they are more likely to experience discrimination in terms of wage, working conditions, access to education or health services, the right to change job and reunify with their families (Fallavier et al 2005). Almost one in two Northeast villages report many problems with migration. Apart from dry season farming, this is their greatest concern, and compares to ratios of one in four to one in six in other regions.

Finally, the Northeast has to respond to and shape the changes taking place in Thailand and East Asia. Economic growth and trade integration are proceeding at a rapid pace. The forces are raising the stakes for becoming integrated with the growth poles in the Center as well as the neighboring countries of the GMS. To attract prosperous enterprises to the Northeast will require accommodating demands in terms of investment climate, business services, infrastructure, skill requirements and administrative capacity that are of greater complexity than in the past. Unless the Northeast meets these challenges, its growth will continue to fall behind and poverty will remain stubbornly high relative to other regions in Thailand. While much is at stake, the opportunities are even greater. By embracing the reform path, Thailand can transform the Northeast's economy into a new development paradigm for other lagging regions and spread prosperity to neighboring regions and countries alike.

Agenda

Growth

This report suggests a number of actions to push Thailand's uncompleted convergence agenda. Thailand has a very high degree of urban primacy. Bangkok, the capital city, is unusually large relative to the size of secondary cities, reflecting a highly centralized government system, its advantageous geographical location (major port for both ocean and freshwater shipping and traffic center) and strong resource endowments (fertile land with high groundwater availability). As a result, much of Thailand's industrialization and development of advanced service sector took place in and around Bangkok. While this growth pole has been a vital component to Thailand's successful economic development, it has also come with genuine social costs, including regional divergence as well as congestion and pollution. As a result of these disadvantages, the manufacturing sector has relocated over the last ten years towards areas that still remain in close proximity to the capital city and major export conduits. Thailand's own experience as well as those of other countries shows that policies to pull regional industries up in remote areas rarely work well. They are either too marginal to have a significant effect on location decisions by enterprises or impose too large a cost in terms of lost efficiency, which ultimately also harms growth in lagging regions. Thailand's recent economic recovery suggests that policies to sustain the growth dynamics in Thailand's urban service sectors and peri-urban manufacturing centers will generate economic growth in the Northeast as well. Compared to large-scale infrastructure investments in the Northeast, investments in both physical and "soft" infrastructure across the border in GMS neighbors is likely to yield a higher payoff. This will help the GMS to become a more prosperous as well as ensure that the Northeast captures a greater share of the expanding trade among GMS countries.

Thailand has made large strides in building up human capital. Nevertheless, the education and training level of the workforce remains an obstacle to investment and innovation and improving Northeast living standards. This report highlights upper secondary and vocational education as the next challenge. Upper secondary education fails to earn a wage premium in excess of lower secondary education, a clear indication that employers do not believe that these additional three years of schooling lead to any more skills. By contrast, vocational education fetches a premium almost on par with university education, and labor demand for vocational education has increased over the years. The most appealing option for the Northeast is to focus its efforts on ensuring that the quality of upper secondary education improves and more students acquire access to the kind of vocational training that is well rewarded in the labor market. Supporting university education with public resources is likely to be of lesser importance for both efficiency and equity reasons. The wage analysis provides little evidence that lack of workers with university education is a constraint on growth. Moreover, improving upper-secondary and vocational education is less elitist than promoting university education. Finally, the RTG should build on its deconcentration and decentralization reform program to ensure that public services are provided more evenly across the country. Multinational companies require one-stop service access to well-trained government officials. Local offices should acquire more responsibilities as well as the financial resources to respond effectively to local demands for public services.

Box 10: Summary of Growth Recommendations

Policy Area	Evidence	Policy Recommendation
National Growth	Northeast growth depends on Thailand's prosperity. Manufacturing exports are the main factor behind the economic recovery and they are increasingly produced in East and Central.	Improve investment climate in new manufacturing centers in East and Central by addressing constraints in infrastructure and business services. Ensure that mega-infrastructure projects strike adequate balance between easing congestion in Bangkok, improving facilities in the Center and upgrading transport, communication and water systems in outlying areas.
BOI Zoning and Industrial Estates	Zoning policies and industrial estates have failed to promote investment in outlying regions due to off-setting incentive and lack of market demand.	Improve alignment of regional investment incentives provided through BOI, IEAT and other agencies to raise investment in rural and peri-urban areas outside of major growth centers.
Greater Mekong Subregion	Over the last decade or so, the GMS has become the latest frontier of economic growth and integration in East Asia. Benefits for the Northeast economy still limited due to the small share of cross-border trade.	Support and expand GMS agenda, which includes integrating markets through overcoming inadequate transport and communication linkages; easing of processes and building capacity through harmonization of legal and regulatory frameworks, facilitation of cross-border flows, and training initiatives; and managing GMS common resources.
Skills	Northeast lacks behind in vocational and university education. Households pay a large fraction of their incomes for vocational training. Vocational training fetches high, and upper secondary education low wage premium.	Expand access to university and especially vocational education in the Northeast by (a) increasing supply of vocational training courses; and (b) expanding access to educational loans program for students from poor households. Build on educational reform program to ensure that education provided meets skills demanded by enterprises.
Public Administration	Local administrations have limited influence in Thailand's public sector. The central government appoints chief local officials, determines local salaries, and approves local budgets whose utilization is to a large part centrally mandated.	Provide local governments with resources and power to fulfill responsibilities and with incentives to improve their performance. Build human resource capacity at the subnational level. Clarify rules for functions and finances between CEO governors and TAOs and PAOs. Create mechanism for implementing joint projects by the tambons and municipalities.

Poverty Reduction

The RTG embraced the objective of eradicating mass poverty by the end of this decade. Geographical targeting can be a powerful tool to reach this goal. The close overlap of poor areas and areas with large populations is an exceptional feature of Thailand's poverty, contrasting to the more common pattern from other countries with high poverty in sparsely populated areas. Targeting of public resources to a small number of provinces, tambons and villages will allow Thailand to go a long way in meeting the goal of eradicating poverty. Such an approach would allow the RTG to target their limited resources to the most needy. The design of efficient programs that are tailored to Thailand's specific conditions present a challenge that government agencies must confront. For too many projects and programs, a careful design of the general structure of the project and a meticulous evaluation of its total costs and benefits are still followed by much less scrupulous attention when it comes to the decision on where – that is, in which specific province, district, or village to implement the project.

Ownership and participation make development function more effectively. The 1997 Constitution places great emphasis on the participation of people in the process of development. At the national level, the 9th National Economic and Social Development Plan emphasizes that exclusion from the benefits of overall growth is associated with lack of participation of poor people in development and decision-making processes. Empowerment requires that people have access to information, and effectively participate in local organizations. For example, schools function better if the community is involved; and irrigation systems, designed with the active involvement of farmers, are more likely to make the beneficiaries more productive. This is why the support for community plans by NESDB and four other government agencies is so important. The RTG has endorsed the target of developing participatory plans in all 7,255 tambons by end 2005. Local leaders and communities integrate local projects into a unified plan for poverty reduction. This bottom-up approach, accompanied with local capacity building, can make a real contribution to empowering people.

One important factor behind the high vulnerability of Northeast farmers is the region's exposure to weather shocks. A low asset base and little access to well developed insurance and credit markets leaves farming communities ill-equipped to deal with weather shocks. Their weather risk management is inefficient with negative implications for economic and social development. New instruments provide a viable alternative to traditional insurance instruments. Indexed-based weather insurance has a number of advantages. It is inexpensive to administer, as it allows for standardization, avoiding the need to draw up and monitor individual contracts. It can be supplied by the private sector with little or no government subsidies, as it avoids the incentive problems of crop insurance programs related to asymmetrical information. It is affordable for poor and rich farmers alike, and accessible to agribusiness and other sectors. Furthermore, by eliminating the systematic production risk component linked to the weather index, it improves the risk profile of farmers and companies. As a result, insurance companies can offer "wrap-up" contracts for the remaining independent risk.

Box 11: Summary of Poverty Reduction Recommendations

Policy Area	Evidence	Policy Recommendation
Geographic Targeting	The 12 poorest provinces account for three fifth of all poor, and 11 of them belong to the Northeast. Over 70 percent of the Northeast tambons and over half of all Northeast villages and urban blocks have a poverty incidence at least 50 percent in excess of the national average.	Recalculate the regional and province distribution of poverty once the new poverty line has been adopted. Update the 2000 poverty map to 2002 and 2004 and recalculate the tambon and village level distribution of poverty for the new poverty line. Propose mechanism to combine both sets of indicators for allocating public resources, in particular as part of public service agreements and service delivery agreements. Review allocation rules for key nation-wide anti-poverty programs building on public expenditure reform agenda (see Box 13).
Community Plans	Most communities lack coherent poverty reduction plans.	Fully implement development of bottom-up poverty reduction plan in all tambons. Create monitoring and evaluation system for the implementation of these plans.
Index-Based Weather Insurance	The Northeast suffers from relatively harsh climatic conditions which often result in floods and droughts. Traditional coping mechanisms are ineffective and government disaster relief costly.	Support pilot initiative for rainfall-indexed insurance, in cooperation with relevant government agencies such as BAAC.

Public Expenditures

On the back of a quick economic recovery, Thailand has overcome these fiscal challenges and has returned since FY2002/03 to fiscal surpluses. The crisis had also brought to the fore long-standing problems in fiscal planning and management which limited the efficiency and equity of public spending. For the last few years, Thailand has embraced wide-ranging fiscal reforms mandated by the new Constitution. These reforms emphasize accountability and transparency; changes in financial management and reporting, and service delivery, as well as the decentralization of government activities to local administrations. In particular, public expenditure management is set to become more performance-based and transparent. This report highlights one aspect of public expenditure management that has not received enough attention in the discussion of the public expenditure reform program. It concerns the regional allocation of central public expenditures. The low level of public expenditures is likely to have contributed to the lagging development of the Northeast relative to other region in Thailand (Box 12).

There is a window of opportunity to address this issue in the context of ongoing public expenditure initiatives. First, the government projects modest budget surpluses over the medium term. Second, after a retrenchment for the past 5 years, public investments grew by more than 7 percent in 2004. With the Cabinet approval of large infrastructure projects, public investment growth over then next 5 years will continue to be high. Third, the expenditure management reforms, including the move to performance-based budgeting, better service delivery and systematic monitoring and evaluation, have the potential to improve both the regional allocation of public expenditures as well as the efficiency of public spending. Fourth, the government is committed to eradicating poverty by the end of this decade.

The public expenditure reform agenda has reached a critical juncture. The current public expenditure reforms will make regional allocation more equitable in general, which should help the Northeast (Box 13). The more the public expenditure reforms progress, the more likely it is that regional equalization mechanisms will become integral to the allocation process. This also applies for pro-poor allocation criteria and stronger monitoring and evaluation components. Furthermore, the current political situation could play out positively for the Northeast. The RTG is well-positioned to implement the desired reforms without any further delay. Regional demands, including those from the Northeast, could also become more central to the government agenda over the medium term. The same holds true for poverty-related issues. Yet, while the outlook seems positive from the perspective of this regional study, some of the reform trends may come with a trade-off. The new "area" focus of the current government is likely to come at the expense of further decentralization and could risk diminishing efforts to boost the capacity and voice of local administrations. In addition, a more strategy-driven budget process becomes could sideline bureaucratic actors and increase risks for maintaining aggregate fiscal discipline.

Box 12: The Case for Northeast Public Resources

Budget allocations to the Northeast are lower than to other regions as the budget system is unit-cost oriented and backward-looking, rather than performance-oriented and forward-looking. The Northeast has less infrastructure, fewer and less qualified government staff, and less political influence. The general case for more public resources can be made on five grounds.

- *Equity:* overwhelming evidence shows that the Northeast receives less public funds per person than Bangkok, the Center, the North and the South.
- *Poverty:* since the share of the poor living in the Northeast exceeds the share of the population living in the Northeast, the Northeast receives even less public funds per poor person than the other regions.
- *Density:* the Northeast has the highest population density outside Bangkok and Vicinity. Reaching the poor in the Northeast means also reaching a large number of poor.
- *Crowding in:* the Northeast has the lowest regional income. Public sector engagement is unlikely to crowd out private provision and, if done in the right way, more likely to spur private sector investment.
- *Efficiency:* public expenditures appear on average to be more efficient than in other regions, at least as far as secondary education is concerned.

Box 13: Summary of Public Expenditure Recommendations

Policy Area	Evidence	Policy Recommendation
Spending Allocation	The Northeast receives less public resources than any other region, and that the expenditure gap has increased over the last five years. The spending gap is larger for capital than for recurrent expenditures, and larger for agriculture than for education.	Ensure population size enters adequately in funding formulae as specified in PSAs and SDAs for Central Agencies. Improve alignment of spending allocations with regional priorities. Expand area focus in five-layer budget structure.
Efficiency	Some public spending programs and projects lack economic rationale which justifies why other modes of delivery are not appropriate.	Implement the *Strategic Plan for Thai Public Sector Development (2003-2007)* with an emphasis on results-orientation, comprehensiveness, good governance and devolution. Ensure central agency budgets reflect well competitiveness agenda through PSAs, SDAs and key performance indicators.
Poverty	The distribution of public resources at the regional, province and village level is regressive. The poor receive less public resources than the non-poor.	Ensure the number of poor enters adequately in funding formulae as specified in PSAs and SDAs for Central Agencies. Incorporate poverty map into central budget planning. Ensure strategic fund reflect well anti-poverty agenda.
Monitoring and Evaluation	Few systematic evaluation of the impact of public expenditures. Community participation plays little role in monitoring and evaluation.	Conduct regional Public Expenditure Reviews. Leverage surveys to evaluate impact of public expenditure programs. Deepen accountability by strengthening systems that allow expression of local voice and improve monitoring oversight from the top.

Value Chain

One of the principal drivers behind poverty reduction was economic growth. Yet, the impact was weaker in the Northeast than in the North or South. One explanation of this difference is the large farming subsistence sector in the Northeast. These households are not integrated into markets and respond little to price changes or new profit opportunities. Such duality between a large number of small-scale subsistence farmers and a small number of commercial farmers is present in both the rice and silk sectors.

The analysis of rice and silk value chains proposes a shift of emphasis in the policies to raise living standards among the large number of small-scale rice and sericultural farmers. The long-standing efforts on lowering costs and increasing yields, especially by improving water supply, as well as encouraging crop diversification and off-farm employment are important. For rice, illustrative cost calculations on some investment options were already discussed (Table 4). However, these established policies have to be complemented by a focus to leverage the uniqueness of Thai rice and silk varieties and increase their value added potential, and hence the price.

The rice analysis showed that the Northeast specializes in the production of low-yielding traditional and high-quality varieties. About two thirds of Northeast farmers produce glutinous rice and two-fifths cultivate both glutinous and non-glutinous varieties, compared to no more than 40 percent and 10 percent, respectively, in the North. The bulk of the non-glutinous rice produced in the Northeast is Jasmine (Hom Mali) rice. Hom Mali rice is not competitive against 5 percent broken Thai rice. About two thirds of the costs in the Hom Mali rice production come from just three sources (farm labor, other non-tradable farm materials, and profit margins), making cost reduction difficult to achieve. Hom Mali as well as glutinous rice should follow the example of Basmati rice and be established as an internationally-recognized brand names for high-quality aromatic rice.

The same applies to Thai silk. The three main silk value chains correspond to some degree to the three main varieties of silk worms (polyvoltine (120,000 farmers); poly-bivoltine (32,000); and bivoltine (3,500)). The duality in production systems also extends to the reeling, and weaving sector. Silk traders face a highly competitive market in a difficult international environment. All three silk yarns are not competitive internationally, particularly against Chinese yarn imports. Labor costs form the majority of costs along the chain, and would need to be reduced by 60 percent or more before making Thai yarn internationally competitive. However, the unique polyvoltine and poly-bivoltine silk fabric differentiates Thai silk from other silk fabrics in the world market. There exists considerable potential through value added through changes in design as well as the processing of silk by-products and other related products.

Value Chain – Policy Simulations

This section presents estimates of the impact of a set of broad policy options for rice and silk using a specially developed multi-market model of the agricultural sector. The findings support the main message from the value chain analysis: while further yield improvements are important, strengthening the value chain can reap high returns to the farmer. The Thailand Agriculture Spatial Equilibrium Model simulates market equilibrium conditions for six commodities (white non-glutinous rice, jasmine rice, glutinous rice, cassava, maize and silk) in the Northeast, North, Center, East and South. THAISEM is calibrated for 2003. Key parameters and results of the rice simulations for five policies are shown in Table 6. Increasing rice farm productivity and reducing marketing margins through strengthening of rice value chains have the greatest benefits in terms of total income and farm household income. The impact of infrastructure improvements on household income is minor. Trade policies that liberalize the cross-border trade in rice have significantly negative effects on total income and farm household income, particularly for those farmers in those regions directly competing against imports. However, THAISEM does not take into account the downstream industries. For example, millers and rice processors will gain from a reduction in the price of their main inputs such as paddy. The regional results show a significant divide between the Northeast and the Center (Table 7). Relaxing of the restrictions against mixing jasmine rice with non-glutinous rice will have negative effects in terms of total income as well as farm household income. Northeast farmers who grow the majority of Hom Mali rice will incur large income losses, while farmers in the Center, who grow mainly non-glutinous rice, will benefit from higher income. The main beneficiaries are domestic consumers and rice producers in the Center. Prices of non-glutinous rice will rise and prices of Hom Mali rice fall. Consumers substitute into the jasmine mixed rice.

The principal difference between rice and silk is the number of affected farmers. While over 90 percent of the farmers in the Northeast grow rice, only 0.5 percent engage in sericultural farming. This explains why the impacts shown in Table 3 and Table 4 tend to be small. Overall, silk productivity enhancement policies increase real income and farm income somewhat in the Northeast, while farm incomes in the North and the South decline slightly, as the increase in production is more than offset by a decrease in prices. Trade policies that lift import restrictions lead to a decline in the domestic price of silk yarn and a drop of domestic silk yarn production, while domestic industrial consumption increases. Regional income changes show once again the regional uniqueness of the Northeast, as almost the entire decline in farm income is concentrated in this region. Lifting trade restrictions for silk yarn imports reduces farm income, lowers domestic prices at the farm gate level and reduces domestic production. However, the income changes recorded by THAISEM do not explicitly account for the potential gains in the spinning, weaving and garment sectors. This is particularly evident for silk, where domestic industrial use increases about 15 percent. Finally, the effect of a reduction in marketing margins of 2 percent and 5 percent nationally and for the Northeast, respectively, are minimal. Given the cost involved in implementing these policies, they are unlikely to provide any benefits to sericultural farmers. Raising returns to farmers through increasing quality will benefit farmers more than simply reducing costs.

Table 6: Summary of THAISEM Rice Simulations

Policies	Indicator	Definition	Total income	Total real income	Real farm income	Import value	Export value	Intra-regional trade	Inter-regional trade
Base ($ million)			*139062*	*138980*	*2648*	*5.8*	*2956*	*2255*	*1275*
Farm Productivity	2% increase in all rice yields nationally	Change	-29.6	16.5	-27.0		33.4	-28.9	-11.3
		% change	0.0	0.0	-1.0		1.1	-1.3	-0.9
	5% increase in jasmine rice yields in Northeast	Change	-28.7	15.7	-26.3		29.3	-19.3	-8.7
		% change	0.0	0.0	-1.0		1.0	-0.9	-0.7
Infrastructure	5% reduction in transportation costs	Change	-0.2	3.0	-0.2		-0.6	-0.7	2.6
		% change		0.0	0.0		0.0	0.0	0.2
	10% reduction gap NE > Central & East	Change	0.0	3.2	0.0		-0.9	-0.9	0.9
		% change		0.0	0.0		0.0	0.0	0.1
Trade	Lifting jasmine trade restriction	Change	-107.5	-50.4	-104.3		36.3	-27.1	-115.0
		% change	-0.1	0.0	-4.0		1.2	-1.2	-9.0
Value Chain	2% reduction of marketing margin	Change	23.1	24.8	23.1		2.8	630.1	-583.7
		% change	0.0	0.0	0.9		0.1	27.9	-45.8
	5% reduction of NE marketing margin	Change	43.2	40.8	42.9		6.2	67.4	-58.0
		% change	0.0	0.0	1.6		0.2	3.0	-4.6
Standards and Quality	2% rice variety mixing	Change	-43.6	-18.2	-42.0		3.8	27.8	-35.2
		% change	0.0	0.0	-1.6		0.1	1.2	-2.8
	5% rice variety mixing	Change	-71.8	-23.2	-68.7		4.9	74.1	-87.2
		% change	-0.1	0.0	-2.6		0.2	3.3	-6.8

Table 7: Summary of THAISEM Rice Simulations by Regions (% Change)

Policies	Indicator	Total Real Income					Real Farm Income				
		Central	East	Northeast	North	South	Central	East	Northeast	North	South
Farm Productivity	2% increase in all rice yields nationally	0	0.01	0.03	0.03	0.03	-1.14	0.22	-1.5	-0.36	1.65
	5% increase in jasmine rice yields in NE	0.01	0.01	0.03	-0.03	0.02	-0.12	-0.22	-1.28	-1.24	0.67
Infrastructure	5% reduction in transportation costs	0	0	0	0	0.01	0.04	-0.17	0.06	-0.1	-0.87
	10% reduction gap NE > Central & East	0	0	0.01	-0.01	0	-0.02	-0.04	0.16	-0.27	-0.01
Trade	Lifting jasmine trade restriction	0.01	0.01	-0.39	-0.04	0.03	-0.14	-0.26	-7.06	-1.59	0.87
Value Chain	2% reduction of marketing margin	0.01	0	0.09	0.03	0	0.93	0.77	1.09	0.45	1.4
	5% reduction of NE marketing margin	0	0	0.27	0	0	-0.03	-0.52	3.37	-0.03	-0.05
Standards and Quality	2% rice variety mixing	0.01	0.02	-0.23	0.04	0.02	0.4	2.6	-4.05	0.6	7.38
	5% rice variety mixing	0.03	0.04	-0.43	0.08	0.03	2.8	4.85	-7.57	1.12	13.74

Table 8: Summary of THAISEM Silk Simulations

Policies	Indicator	Definition	Total income	Total real income	Real farm income	Import value	Export value	Intra-regional trade	Inter-regional trade
Base ($ million)			*139062*	*138980*	*2648*	*5.8*	*2956*	*2255*	*1275*
Silk Productivity	10% increase in silk yields in Northeast	Change	0.3	0.3	0.3		0.0	-0.1	0.5
		% change			0.0			0.0	0.0
	20% increase in silk yields in Northeast	Change	0.6	0.6	0.6		0.0	-0.2	0.9
		% change			0.0			0.0	0.1
Trade	Lifting silk trade restriction	Change	-3.5	-3.4	-3.5	6.3	0.0	-0.7	-4.9
		% change	0.0	0.0	-0.1	108.4	0.0	0.0	-0.4
Value Chain	2% reduction of marketing margin	Change	0.010	0.010	0.010				
		% change	0.000	0.000	0.000				
	5% reduction of NE marketing margin	Change	0.020	0.020	0.020				
		% change	0.000	0.000	0.000				

Table 9: Summary of THAISEM Silk Simulations by Regions (% Change)

Policies	Indicator	Total Real Income					Real Farm Income				
		Central	East	Northeast	North	South	Central	East	Northeast	North	South
Silk Productivity	10% increase in silk yields in Northeast	0					0	0	0.03	-0.01	-0.01
	20% increase in silk yields in Northeast	0			0		0	0	0.05	-0.01	-0.02
Trade	Lifting silk trade restriction	-0.02			0		0	0	-0.25	-0.02	-0.02
Value Chain	2% Reduction of marketing margin	0									
	5% Reduction of NE marketing margin	0									

Summary of the Findings

Box 14: Growth

Area	Evidence
Convergence	Average annual real per capital GDP growth of the Northeast 3.3 percent from 1970 to 2004, implying a tripling of per capita income within 35 years. This compares to 3.1 percent in the North, 3.7 percent in the South, 4.1 percent in Bangkok, and 5.3 percent in the Center. With population growth similar to the rest of Thailand, the Northeast GDP share fell from 16 percent in 1970 to 10 percent in 2004.
Before and after 1986	Relative to Thailand, the Northeast per capita growth gap equaled to 1.5 percent from 1986 to 2004, about double the shortfall from 1970 to 1986. However, the Northeast grew faster (3.3%) in the second period than in the first period (3.1%).
Thailand Growth	Real per capita growth rates of the Northeast tracks Thai growth rates closely, although growth is occasionally derailed by weather-related shocks on agriculture.
Provinces	The period from 1975 to 1986 was marked by provincial convergence both across Thailand within the Northeast and North. By contrast, since 1986 there is little evidence for convergence either within regions or nationwide.
Structural Change	Agriculture in the Northeast dropped from close to two fifths to just under one fifth of GDP. Industry increased only from the early 1990s onwards, rising from around 15 percent to 19 percent. The service sector expanded by more than 15 percent since 1970 and accounted in 2004 for over three fifths of GDP.
Regional Growth Paths	Thailand's regions took different development routes. The Northeast stands out for a growing service sector; the North for a growing industrial sector; the South for the resilience of agriculture; the Center represents the classic case of economic growth through industrialization; and Bangkok generates income foremost through services.
Services	The Northeast lacks a key driver for economic change. It is dominated by a retail sector that lacks any strategic or cross-regional importance and is largely supported through household remittances from other regions. The North and the Center are ahead of the Northeast in terms of manufacturing, the South in terms of agriculture, and Bangkok in terms of transport, communication and other services.

Box 15: Poverty

Area	Evidence
Incidence and Number	The Northeast reduced poverty from 48% in 1988 to 18% in 2002. With poverty falling faster in other regions, poverty becomes more and more concentrated in the Northeast. One in two poor persons lived in the Northeast in 1988, compared to one in three of the total population. The Northeast still accounted for roughly one third of the total population in 2002, but the share of poor had increased to 60 percent. About 3.8 million poor live in the Northeast and 2.3 million in other regions.
Province, Districts and Villages	A high concentration of poor people is found in the Northeast, the provinces with the highest incidence of poverty. For example, 11 of the poorest 12 provinces, which accounted for close to three-fifths of all the poor in Thailand in 2002, come from the Northeast. Over two thirds (71 percent) of the tambons, and over half of all villages and urban blocks (53 percent), in the Northeast had a poverty incidence at least 50 percent (21 percent) in excess of the national average.
Geography	The area with the strongest cross-border concentration of poverty incidence in East Asia is the Greater Mekong sub-region. Geography plays an important role in determining poverty, which goes beyond the influence of national history, policies and institutions.
Elasticity	For the poverty gap, the Center's elasticity is lowest at 2.5, compared to 2.6 for the Northeast, 3.2 for the South, 3.3 for the North and 3.7 for Bangkok. Overall, the Northeast's low poverty elasticity can be accounted for by its high initial poverty and inequality, although its performance looks weak relative to the North and to a lesser extent the South.
Assets	While Northeast households closed the gap in asset ownership relative to other regions, in 2002 more than 30 percent of the them still had no refrigerator, more than 80 percent no washing machine and about 95 percent no car.

Box 16: Cities

Area	Evidence
Thailand's Urbanization	Even by East Asian standards, Thailand's urbanization level as well as urbanization rate are low. Compared to other countries, Thailand's urbanization was on par with its income level in 1963. Yet, urbanization lacked income growth, and by 2003, Thailand's urbanization level of 33 percent was about 20 percent below compared to the average urbanization degree of countries of its income level.
Primacy of Bangkok	In 2000, Bangkok had around 6.3 million people, which was about 17 times the number of inhabitants of Samut Prakan, the second largest city, where 380,000 people lived.
Growth in Peri-Urban Areas	The most rapid population growth in East Asia is taking place in peri-urban peripheries, as witnessed by the rise of Samut Prakan and Nonthanburi, the second and third largest cities and located in close proximity of Bangkok.
Regional Cities	The nine largest cities after Bangkok in 1983 fell in their rankings in 1990 and 2000, with the sole exception of Udon Thani.

Box 17: Enterprise

Area	Evidence
Manufacturing Value Added	The sector is approaching two fifths of GDP, compared to one third of GDP before the Asian crisis and just over one fifths of GDP in the early 1980s. Manufacturing accounts for close to 90 percent of exports, which increased from 45 percent of GDP before the Asian crisis to around 65 percent of GDP today.
Spatial Distribution of Manufacturing Value Added Manufacturing Employment in Enterprises with 10 Employees or More	The share of Bangkok & Vicinity declined from over two thirds in the 1980s to around 45 percent today; at the same time, East and Central have expanded. The Northeast and North shares remained unchanged, with around 4 percent each since early 1980s; and the South's share declined from 5 percent to 3 percent. Bangkok's employment share declined from 28 percent in 1996/7 to 23 percent in 2001/2 and the Center's share increased from 56 percent to 60 percent. The Northeast's employment share increased by 2 percent while the North's and South's contributions remained unchanged.
Manufacturing Employment Composition by Sector	The Northeast is most represented in wearing apparel, electronic parts, textiles, food processing and furniture, which account for three-fifths of total employment. The two sectors that experienced the largest increases at the national level were electronic parts, which almost tripled its share from 2.9 percent to 8.2 percent, and wearing apparel, which rose from 7.5 percent to 9.7 percent. The Northeast and the South stand out as the regions with the lowest shares of differentiated and science-based employment. While the South is dominated by resource-intensive industries, the Northeast largest sectors are labor-intensive industries.
Manufacturing Employment Concentration	While the Northeast is characterized by islands of employment, other regions are characterized by clusters of employment. This suggests that the Northeast is not benefiting from agglomeration economies.
BOI zoning	The BOI zoning policy has influenced the spatial pattern of industrialization, but it has failed to induce widespread industrialization beyond Bangkok and the Center. There has been a shift from Zone 1 to Zone 2, but the Northeast's share is only 3.8 percent, compared to a GDP of 11 percent. The North and the South, with GDP contributions of about 9 percent, received 3.2 percent and 6.4 percent on average, respectively. Even those firms investing in Zone 3 locate as close as possible to Zone 1 in order to limit transport costs while maximizing investment incentives. Typically one half to three quarters of Northeast investment promotions go to Nakhon Ratchasima, located in the Southwest corner of Zone 3 close to Bangkok.
Industrial Estates	Industrial estates have failed to promote investment diversification to remote areas. The principal reason is that supply driven infrastructure projects are unlikely to succeed without a clear market demand for the services provided. Industrial estates themselves are located primarily in Zone 1 and Zone 2. Since industrial estates offer similar incentives as those presented by Zone 2 or Zone 3, firms have little reason to relocate to Zone 3. There are only five industrial estates or parks in the Northeast, four in the North and two in the South.
2004/5 PICS	Firms in Bangkok and Vicinity tend to be older, more domestically owned and less export- or import-oriented. They have a smaller workforce, although more often hired from other regions, and draw more on raw materials from other regions. In spite of these worse characteristics, Bangkok/Vicinity firm tend to be more productive. The analysis suggests that improving infrastructure and institutional deficits in the regions outside of Bangkok is essential for the continued expansion and entry of exported oriented companies.
2005 Doing Business	Compared to Bangkok, the costs of doing business in Khon Kaen are no higher, and perhaps somewhat lower. If enterprises do not locate to Khon Kaen, government red tape does not appear to be the reason.
Banks	About 15 percent of commercial branches are located in the Northeast, compared to 5 percent of deposits.

Box 18: Workers

Area	Evidence
Labor Force	Between 1994 and 2004, the labor force has grown from around 32.5 million to around 36 million in Thailand, and from 10.5 million to around 12 million in the Northeast. The labor force participation of those 15 year-old or older was in August 2004 still some 7 percent below the 1994 level, partly due to less agricultural work and more education, but also because of a contraction in labor demand.
Unemployment	Northeast unemployment, including seasonal unemployment, is low. It affected no more than 3 percent of the adult population in August since the early 1990s.
Job Entry	Across all regions, entry to wage jobs has become more difficult for the 15 to 20 year-olds. Unemployment for the 15 year-old labor market entrants in the Northeast is still around 50 percent higher in 2004 than in 1996.
Wage Employment	Among workers aged 15 years or older, still two-thirds are in non-wage employment in Northeast. Only 15 percent earn a monthly wage, compared to 50 percent in Bangkok.
Monthly Wage Employment	Rising school enrollment has led to a better skilled labor force across the country. Workers with vocational education account for one third of all monthly salaried workers in the Northeast, compared to a quarter in the rest of the country. Almost three-quarters of all monthly salaried position in the Northeast are provided by wholesale, retail, social and other services.
Employment Structure	Overall, employment has become older, more educated and somewhat more wage across all regions since the Asian crisis.
Wages	Monthly wages are about 140 to 160 percent higher in the Northeast than daily wages. Northeast wages were between 60 to 90 percent lower in 1991 than in Bangkok but the gap dropped to around 50 percent by 2004. The Northeast wage gap declined also relative to the other regions.
Wage Premium	The wage premium for vocational education is 200 percent larger than upper secondary education and only 50 percent smaller than university education. The corresponding gaps in Bangkok are 60 percent and 180 percent, respectively.
Labor Demand	Northeast labor demand for vocational education has increased relative to upper secondary education, and remained constant relative to university education.
Minimum Wages	Minimum wages are much "tougher" in the Northeast and North, where the index is around 80 percent, compared to Bangkok, where the index is no higher than 60 percent. Defining non-compliance as a daily wage level less than 95 percent of the province-specific minimum wage, then non-compliance is as high as 60 percent in the Northeast, and no more than 16 percent in Bangkok.
Migration and Remittances	Migration affects primarily the young prime aged adult. More than one in two households benefited from such payments in 2002, compared to around 45 percent in 1996. Among receiving households, these remittances amount to around one third of household income in the Northeast, Center and North. The poverty headcount in households without remittances is about 5 percent higher than in households with remittances.

Box 19: Students

Area	Evidence
Enrollment Gap	The Northeast enrollment gap has been eliminated for all age groups up to upper-secondary education
Vocational and University Education	Among the 15 to 25 year-old, the share of Northeast students with at least lower secondary education increased from just over one half to more than 70 percent. The Northeast continues to lag behind in access to vocational and university education. The share of vocational and university students are only 1 and 7 percent in the Northeast, respectively, compared to 5 and 11 percent in other regions.
Public Schooling	In 2002, only 4 percent of Northeast pupils attended a private school, compared to between 12 percent and 28 percent in other region. In 2002, a Thai student paid on average 6 times as much for attending a private instead of a public lower secondary school, and 5 times as much for private instead of public vocational education.
Public Funding Per Pupil	Relative to the non-Bangkok average, the Northeast funding gap per pupil is 15 percent in primary, 29 percent in secondary, and 22 percent in tertiary education. The bulk of what is spent is allocated by salaries, leaving little to other, quality enhancing inputs.
Educational Programs	Coverage of educational programs, such as the Education Loan Program, is low and most beneficiaries come from non-poor households.

Box 20: Infrastructure

Area	Evidence
Transportation	The Northeast, an area of the size of the Netherlands (105 million rai or about 170,000 km2), is adequately endowed with transport infrastructure and has easy access to major urban growth centers.
Telephone	The rural fixed telephone line network in the Northeast has the lowest density, with 14 per 1,000 persons compared to 105 per 1,000 for Thailand. Yet, mobile phones are likely to make up for the low coverage.
Electricity	Almost all Northeast households had electricity connections in 2002, compared to only three in four in 1988. More than one third of Northeast households still use wood and charcoal fuel for cooking, which is more affordable than electricity or gas.
Piped Water	Only one in ten persons lived in households with piped drinking water access, compared to one in four nationwide.
ICT	Only 14 percent of Northeast establishments have access to computers, and just over one third of them have internet connections. These services are used predominately for information search and email rather than for website presence and sales or purchases via the internet. These figures are on par or slightly lower than those in the North and South.
Public Spending	The lower provision of infrastructure in the Northeast is related to less public spending. In FY 2002 and FY 2003, per capita expenditures on transportation and communication in the Northeast were about 40 to 50 percent below those in the North, South and Center.
Mega-Infrastructure Projects	The government has laid out plans to support investment spending of up to 5 percent of GDP every year in support of infrastructure projects over the next four years. They address infrastructure bottlenecks in urban areas in and around Bangkok with little direct impact on the Northeast, North or South.

Box 21: Mekong Region

Area	Evidence
Growth	Over the last decade or so, these previously impoverished, disintegrated, and remote areas have become the latest frontier of economic growth in the region and are changing rapidly through expansion, integration, diversification and openness.
Trade	The share of exports among Thailand's total exports going to Lao PDR, Cambodia, Vietnam and Myanmar increased by 2.5 percent from 1980 to 2004.
Cross-Border Trade	While the bulk of exports and imports with Lao PDR go through customs in the Northeast, trade with Vietnam, which accounts for the largest part of exports to the Mekong region, takes place mostly through the sea-route, by-passing the Northeast.

Box 22: Villages

Area	Evidence
Population	Over four in five families live in rural areas, accounting for about half of the country's village population.
Value Added	The share of agriculture in regional GDP is about twice the national average, but it dropped from 27 percent in the late 1980s to 19 percent in 2004, while industry expanded over the same period from 18 percent to 28 percent.
Labor Productivity	In 2004, agricultural value added per agricultural worker was 50 percent higher in the North, 230 percent higher in the Center and 340 percent higher in the South. The productivity gap increased over the last 14 years. Since 1991, labor productivity grew annually by 2.3 percent in the Northeast, compared to 3.1 percent in the North, 4.1 percent in the Center and 4.2 percent in the South. Labor productivity of Northeast workers in 2004 was 250 percent higher in industry, and 500 percent higher in services than in agriculture.
Land	Over one third of all crop land suffers from high saline content. Soil erosion is aggravated by a declining forest cover which acts as a natural barrier for soil conservation. The forest cover fell from around 6 million hectare in 1990 to only 2 million hectare in 2002. Farming households in the Northeast use little inputs, such as fertilizers and pesticides, to improve farm yields.
Subsistence	Northeast farmers consume about one quarter of their yield, which in turn contributes about 13 percent of their total consumption (Figure 78.B). The North's shares are about one half, and the Centers and the Souths about one quarter as large. Households who consume at least 20 percent of their produce have a poverty incidence of over 50 percent.
Rice and Livestock	Almost two in three farmers produce mainly rice, compared to one in two in the North, two in five in the Center, and one in seven in the South. More than 20% of the farmers specialize in livestock, at least twice as much as in the other regions.
Public Spending	In FY 2002, the Northeast spent Bt577 per capita on agriculture, only about half the amount of the North and the South, and two fifths of the amount of the Center.
Rural Programs	More than 90 percent of the beneficiaries of the Village Fund and Debt Moratorium programs are non-poor households.
Irrigation	While irrigation in the Northeast has lacked behind the rest of the country, only one third of irrigated lands are actually used during the dry season, as the bulk of the irrigation system is not suitable for non-rice crops.
Weather Risks	The Northeast has a long dry season and its red, porous (laterite) soils retain water poorly, limiting their agricultural potential. One third of the land suffers regularly from droughts, more than in other regions.
Value Added	Over 70 percent of agricultural value added comes from crops, and only 10 percent from agricultural services and processing.

Box 23: Rice

Area	Evidence
Global Commodity	Rice is the major agricultural crop in Thailand, grown by about three quarters of all farm households and providing almost half of the caloric requirement in the national diet.
Relevance to Northeast	The Northeast contributed approximately 9.5 million tonnes of Thailand's 26 million tonnes. In 2002, more than 90 percent of all rural households produced some rice, compared to 70 percent in the North, 45 percent in the Center and less than 30 percent in the South. In terms of yield per hectare in 2002, the Northeast reached less than half the level of Central for non-glutinous rice, and only 80 percent of the level of the North for glutinous rice.
Duality	Rice production in the Northeast is characterized by a dual production system, where small-scale subsistence farming exists alongside with commercial production systems.
Value Chain	The relatively stable returns to glutinous rice for farmers could explain the popularity of glutinous rice production in the Northeast.
Costs	About two thirds of the costs in the rice production come from just three sources: farm labor and other non-tradable farm materials, each accounting for just over one quarter, and profit margins.
Competitiveness and Comparative Advantage	Both jasmine and glutinous rice producers are not protected by government policies. Hom Mali rice is competitive relative to Basmati rice but not against 5 percent broken Thai rice; and glutinous rice is competitive relative to Italian round grain rice but not against Vietnamese glutinous rice exports.

Box 24: Rice

Area	Evidence
Global Commodity	Clothing is Thailand's third largest source of export revenue after electronics and electrical appliances. Thailand, the fifth largest producer of silk yarn in 2002.
Variety	The silkworm variety is the main determinant of the characteristics of the value chain. Most polyvoltine production systems are small scale, and farmers only grow a small plot of mulberry. Substantially fewer farmers produce Thai Hybrid (poly-bivoltine) varieties of silkworm. There are around 7,000 farm families involved in bivoltine production and almost 100 percent of them are contract farmers.
Capacity	Thailand has a capacity for 1,400 tonnes of silk yarn per year. About 1,080 tonnes are handicraft production from polyvoltine and poly-bivoltine cocoons, while 320 tonnes are industrial production from bivoltine cocoons. Thai sericultural households produced about 1,400 tonnes of weft yarn and about 225 tonnes of warp yarn in 2003, compared to a domestic demand is estimate to be at least 2,000 tonnes, one third of which for industrial production.
Comparative Advantage	The polyvoltine, poly-bivoltine and bivoltine industries are not competitive internationally, particularly against Chinese yarn imports.

Box 25: Public Expenditures

Area	Finding
Unitary Government	The central government spends about 85 percent of total general expenditures and collects 95 percent of general tax revenues.
Spending Gap	The Northeast received in FY03 Bt6,970 (US$170) per capita, which is one third less than the Center, 29 percent less than the North, and one quarter less than the South. The Northeast received 30 percent less than the non-Bangkok average of North, Central, and South in FY03, compared to 27 percent less in FY99. The Northeast public expenditure gap is a structural feature. It is evident from the public expenditure shares over the last ten year.
Recurrent and Capital Spending	The gap is wider for recurrent expenditures (17 percent in 2003) than for capital expenditures (48 percent in 2003). The share of salary expenditure out of total expenditure is highest in the Northeast (48 percent compared to 44 percent in the North in FY03); and the share went up from 43 percent in FY99 to 48 percent in FY03.
Sectors	Among the 11 main functions, the gap is smallest for education (8 percent) and largest for defense (53 percent). The Northeast spends most on education, which alone accounts for two fifth of all central spending and is the only function which accounts for more than one tenth of central spending.While education is the most important function in all four regions, the Northeast spends relatively more on education and relatively less on any of the other functions, including agriculture and transportation.The Northeast spends a higher share than other regions in terms of health (128 percent), pre-primary and primary (119 percent), water (113 percent) and economic projects (111 percent); and less than other regions on agriculture (72 percent), roads (80 percent), social security (83 percent) and tertiary education (83 percent).
Employment	The share of salary expenditure out of total expenditure is highest in the Northeast (48 percent compared to 44 percent in the North in FY03) (Table IV.3); and the share went up from 43 percent in FY99 to 48 percent in FY03. While the Northeast employs the largest number of government staff, the ratio of government staff per person is the lowest in the country and public wages are between 5 percent to 56 percent lower than in other regions.
Provinces	Out of the 19 provinces with the lowest per capita public expenditures, 14 belong to the Northeast. Per capita gross provincial product is positively correlated with central government public spending: for each additional Baht of per capita GPP, per capita public expenditure increases by Bt1.13 to 1.18.

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