
Thailand's Growth Path: From Recovery to Prosperity

Abstract

Thailand is one of the most successful developing countries. After decades of rapid growth, the economy rebounded quickly from the 1997–98 Asian crisis and is set to continue its expansion into the future. Nevertheless, there are doubts about the resilience of the Thai economy. The country appears to be on a lower growth projectory now than before the crisis. What growth can Thailand realistically expect? And what can the government do to sustain such growth into the future? Using a new methodology for identifying binding constraints to growth (Rodrik 2004 and Hausmann et al 2005), this paper argues that Thailand's challenge is to maintain growth levels of 4 to 5 percent over the medium term. To achieve this goal, Thailand needs to continue its efforts of improving business infrastructure, trade integration, and skills, as well as intensifying its governance reforms.

Kaspar Richter

krichter@worldbank.org

**East Asia Poverty Reduction and Economic Management
World Bank**

World Bank Policy Research Working Paper 3912, May 2006

The Policy Research Working Paper Series disseminates the findings of work in progress to encourage the exchange of ideas about development issues. An objective of the series is to get the findings out quickly, even if the presentations are less than fully polished. The papers carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the view of the World Bank, its Executive Directors, or the countries they represent. Policy Research Working Papers are available online at <http://econ.worldbank.org>.

Table of Contents

<i>Acknowledgements</i>	4
<i>Introduction</i>	5
<i>Structure</i>	6
<i>I. Growth Performance</i>	7
Overview	7
Stellar Growth	8
Export-Orientation	10
2005 Slowdown	12
Trade Integration	13
From Agriculture to Industry	15
Assembly-Based Manufacturing	17
Extensive Growth and Reallocation	19
<i>II. Cost of Finance</i>	21
Overview	21
Fixed Exchange Rates and Foreign Borrowing	22
Inflation Targeting and Current Account Surplus	24
<i>III. Appropriability</i>	26
Overview	26
Modern Constitution and Centralized Power	27
Worsening Governance Yet Moderate Regulation	28
<i>IV. Infrastructure</i>	30
Overview	30
East Asian Trademark	31
Past Strength and Future Weakness	33
Public Investment Drive	35
Reluctant Private Sector	36
<i>V. Geography</i>	38
Overview	38
Agglomeration	39

Regional Divergence	40
Urbanization and Development	42
A Dominant Primate City	44
Inability to Attract Manufacturing	46
Migration for Wage Jobs	48
<i>VI. Skills</i>	50
Overview	50
Catching Up on Enrollment	51
Quality Gap with the Best	53
Better Educated Labor Force	55
Flat Returns	57
Sluggish Demand	59
Recovery without Wage Growth	61
<i>VII. Conclusion</i>	62
Taking Stock	62
Policies	63
<i>References</i>	64

Table of Figures

<i>Figure 1: Growth Diagnostics</i>	6
<i>Figure 2: Economic Growth in Thailand, East Asia and the World, 1960 to 2003</i>	9
<i>Figure 3: GDP Expenditure Components, 1980 to 2003</i>	11
<i>Figure 4: Expenditure Composition of GDP by Quarter, Q1 2004 to Q2 2005</i>	12
<i>Figure 5: Thailand Trade by Country, 1980 to 2003</i>	14
<i>Figure 6: GDP Production Components, 1951 to 2004</i>	16
<i>Figure 7: Manufacturing Industries</i>	18
<i>Figure 8: Growth Accounting and Labor Productivity</i>	20
<i>Figure 9: Capital Flows, Monetary Aggregates and Exchange Rates</i>	23
<i>Figure 10: Current Account, Reserves, and Credit</i>	25
<i>Figure 11: Investment Climate</i>	29
<i>Figure 12: Infrastructure Indicators</i>	32
<i>Figure 13: Investment Indicators</i>	34
<i>Figure 14: Mega-Infrastructure Projects and Public and Private Infrastructure Spending, 2003</i>	37
<i>Figure 15: Thailand's Region</i>	39
<i>Figure 16: Regional Composition of Gross Domestic Product, 1970 to 2004</i>	41
<i>Figure 17: Urbanization Indicators</i>	43
<i>Figure 18: Primacy Indices</i>	45
<i>Figure 19: Spatial Distribution of Manufacturing</i>	47
<i>Figure 20: Employment Composition</i>	49
<i>Figure 21: Education Indicators</i>	52
<i>Figure 22: The 1999 Trends in International Mathematics and Science Study and National Income Levels</i>	54
<i>Figure 23: Labor Market Indicators</i>	56
<i>Figure 24: Returns to Education</i>	58
<i>Figure 25: Relative Wages, Labor Demand and Labor Supply</i>	60
<i>Figure 26: Annual Real Growth in Wages of Monthly Wage Earners, 1991 to 2004</i>	61

Acknowledgements

I am grateful to Indermit S. Gill, Kazi Mahbub-Al Matin and Roberto N. Zaghera for suggesting this work and providing advice throughout. Comments on an early draft from Barry Eichengreen, Ricardo Hausmann, Dani Rodrik and Andrés Velasco helped greatly to improve the paper. Norbert Schady and Carolina Sanchez-Paramo were very generous in providing me with Stata codes to calculate relative labor demand and supply. Numkrit Jeraputtiruk patiently explained to me how to analyze the Thailand Labor Force data.

Introduction

Thailand is one of the most successful developing countries. After decades of rapid growth, the economy rebounded quickly from the 1997–98 Asian crisis and is set to continue its expansion into the future. Nevertheless, there are doubts about the resilience of the Thai economy. The country appears to be on a lower growth projectory now than before the crisis and growth in 2005 may well fall short of expectations. What growth can Thailand realistically expect? And what can the government do to sustain such growth into the future?

Looking at the evidence up to end 2005, this paper attempts to answer these questions. It is part of a series of country studies which apply a new methodology for identifying binding constraints to growth (Rodrik 2004 and Hausmann et al 2005). In the spirit of their approach, this study is built around five principles. First, this study is about economic growth. It looks at human, physical and social resources and asks whether they contribute to or hinder growth. Of course, gains from, say, improvements in education and health 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.

Second, the analysis is pitched at the big picture, applying a stylized typology of constraints to growth with the intention of prioritizing qualitatively the main issues over the short to medium term. While international experience suggests that growth ultimately depends on a broad range of reforms supporting sound institutions and effective use of resources, only some of them matter for releasing checks on growth at a given point in a country's development stage.

Third, since countries differ in history, resources and institutions, country-specificity in the diagnostic is important. One tool for identifying binding constraints is to exploit differences in a country's recent growth episodes. For Thailand, this suggests contrasting the economic recovery process since the Asian crisis with the growth period prior to the Asian crisis. The idea is to find changes in the current growth episode relative to the previous one and then assess its implications for growth. Another tool is to look at actual or shadow prices. This study analyses trends in, among others, exchange rates, interest rates, and returns to education to evaluate candidate hypotheses for what might be constraining growth.

Fourth, since Thailand's growth has been satisfactory up to end 2004, these assessments have to be forward-looking in order to anticipate likely future growth constraints. In the words of Indermit Gill, the microscope should be used together with a telescope.

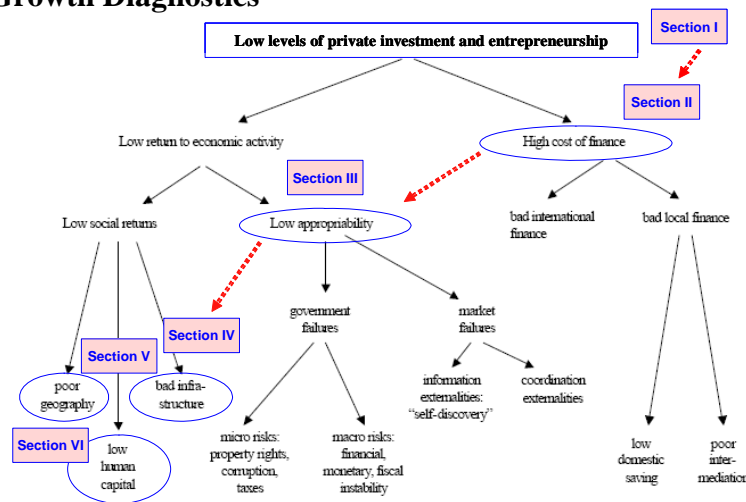
Finally, while certain reforms may be urgent economic priorities, they may not be politically feasible. This study conducts the economic evaluation without venturing into a political cost-benefit analysis.

Structure

The paper is organized around the typology on binding constraints to private investment and entrepreneurship are proposed in Hausmann et al (2005). At the most aggregated level, two reasons for low private investments are distinguished: the cost of finance for the investment is high, or the returns to the investment are low. Within low return, appropriability deals with the question whether a given return to an investment accrues to the investor, while social returns looks at the issue whether the return (whether private or social) to an investment is low. In line with the methodology as well as to keep the task manageable, the analysis proceeds from the Northeast to the Southwest (Figure 1). The discussion begins at the top of the decision tree with a fairly general analysis on cost of finance. It continues with lower branches on low returns to economic activity, and provides the most detailed discussion on social returns. This emphasis reflects a judgment on immediate priorities for the growth agenda, as cost of finance is deemed favorable, but it also reflects the better data on social returns rather than appropriability.

The paper is organized as follows. The first section lays out Thailand's record on growth over the last four and a half decades, separating out five major growth episodes. It argues that Thailand's principal challenge is to maintain current real growth rates of about 5 percent into the future. Sections II and III discuss and exclude costs of finance and appropriability as factors threatening growth in the medium term. Sections IV to VI take a closer look at low social returns as explanation, discussing separately infrastructure, geography and human capital. The final part pulls the findings together and attempts to prioritize policies.

Figure 1: Growth Diagnostics



I. Growth Performance

Overview

By any standards, Thailand's record on growth is impressive. Since 1960, the economy expanded 15-fold, increasing from under \$9 billion to over \$140 billion in constant 2000 prices. Gross national income per capita rose almost six-fold, jumping from \$332 in 1960 to \$2276 in 2003. Out of the 96 countries with available data, this was worldwide the seventh best performance, which lifted Thailand in the per capita income ranking from 72nd to 48th place. Setting aside city states and islands (Singapore, Malta and Hongkong) and mining economies (Botswana), only the Republic of Korea and China have grown faster than Thailand over the last four and a half decades.

While Thailand's growth was strong in general, it was higher in some periods than in others. There are five major episodes since the early 1960s. First, the decades of the 1960s and 1970s was a high-growth period (4.8 percent) of import-substitution policies, implemented primarily through trade tariffs and investment incentives. Second, after the oil price shock in the late 1970s, Thailand changed course and adopted export orientation. In line with a sluggish global economy, growth dropped to 3.4 percent. Third, due to a combined export- and investment boom, it sharply recovered from 1987 to 1996 to 8.1 percent– the worldwide the second highest growth rate after China. Fourth, the 1997/98 Asian crisis proved some of the expansion as unsustainable. For the first time since the early 1960s, growth turned negative at -6.6 percent in 1997 and 1998. Fifth, supportive macroeconomic policy and external demand fostered an economic recovery since 1999, averaging 4.2 percent since 1999.

Clearly, Thailand is on a lower growth trajectory post-crisis than prior to the crisis. What is behind this difference? Looking at the growth episodes since 1980s from the perspectives of GDP expenditures, GDP sectoral shares, and total factor productivity (TFP) suggests the following. First, growth became more and more dependent on trade, while the importance of consumption declined since the mid-1980s. The key difference of the recovery since 1999 and the pre-crisis boom from 1987 to 1996 is the role of private investment. The pre-crisis boom was supported by both growing exports and growing investments, while the post-crisis recovery relies only on strong exports.

Second, from a sectoral perspective, growth was driven by industrialization through an expansion of manufacturing. The boom period from 1987 to 1996 saw double-digit industrial growth rates. The recovery since 1999 is also led by industry with growth rates twice as high as in the other two sectors. As a result, industry is now the largest sector, contributing 46 percent of GDP. However, Thailand remained in 2004 as much focused on raw material intensive and labor-intensive industries as it was before the Asian crisis.

Third, growth accounting shows that growth is mostly due to increases in capital and labor as a result of heavy investment in physical and human capital rather than TFP. Whatever gains in TFP are observed, they come to a large extent from a reallocation of factors from agriculture to industry and services while within-sector TFP growth is low.

Stellar Growth

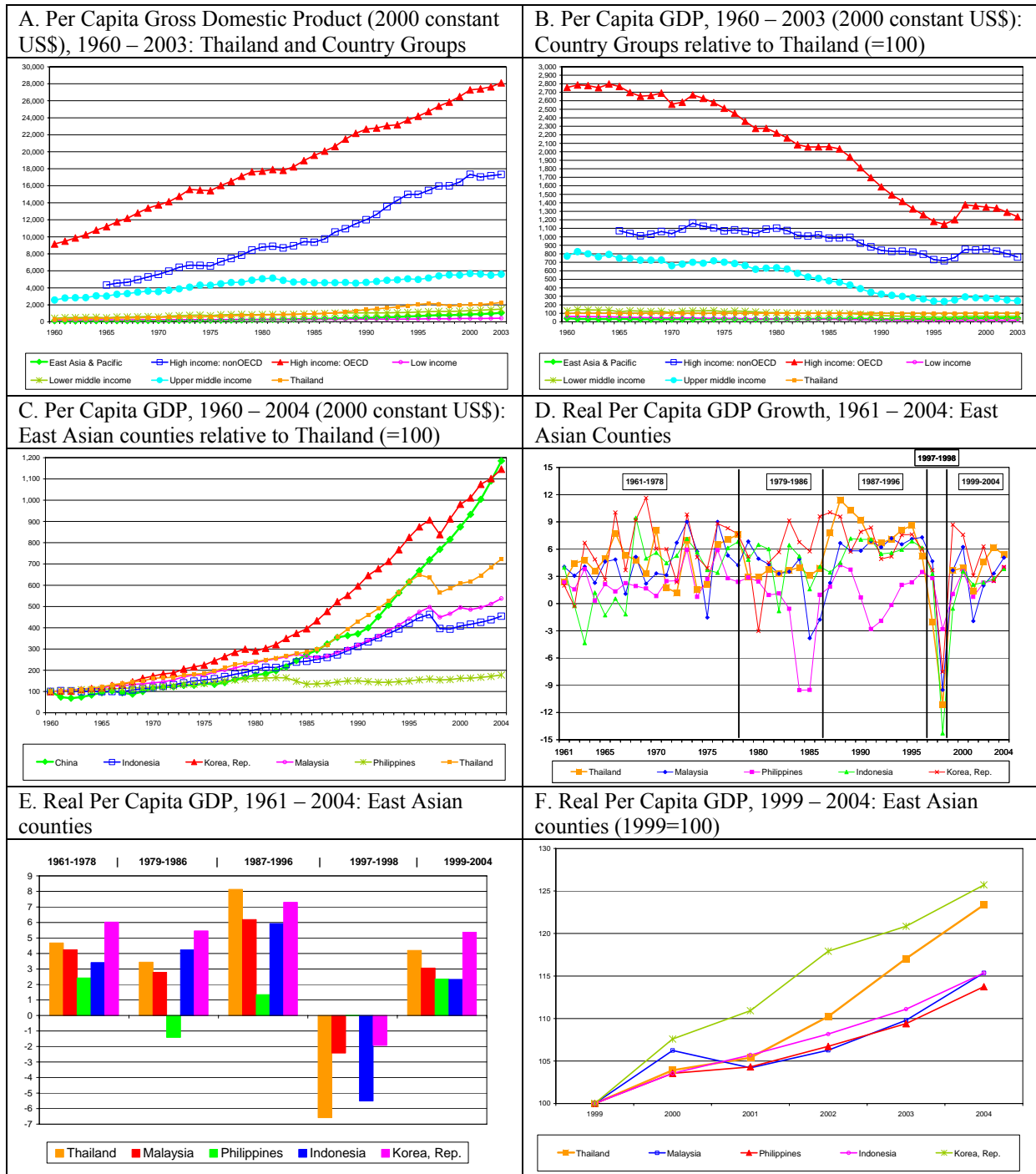
Thailand's economic record is impressive by any standards. Since 1960, the economy expanded in constant 2000 prices from under \$9 billion to over \$140 billion. Gross national income per capita rose almost six fold, increasing from \$332 in 1960 to \$2276 in 2003 (Figure 2.A). Thailand's average annual per capita growth rate of 4.6 percent was at least 0.9 percent higher than any of the averages of income country groups (Figure 2.B).¹ Out of the 96 countries with available data, this was worldwide the seventh best performance, which lifted Thailand in the per capita income ranking from 72nd to 48th place. Setting aside city states and islands (Singapore, Malta and Hongkong) and mining economies (Botswana), only Korea and China have grown faster than Thailand over the last four and a half decades. Among the group of ASEAN countries, Thailand's long term per capita growth rate exceeds Malaysia's by 0.7 percent, Indonesia's by 1.1 percent, and the Philippines' by 3.3 percent (Figure 2.C). Thailand's record stands out also for another reason: per capita growth rates were consistently positive from 1961 until 1997 (Figure 2.D). By comparison, Korea, Malaysia, Indonesia and the Philippines experienced between one to five years of negative growth over this period.

While Thailand's growth was generally high, it is possible to separate five major episodes since the early 1960s (Figure 2.E). The decades of the 1960s and 1970s was the period of import-substitution policies, implemented primarily through trade tariffs and investment incentives. Real per capita GDP growth averaged 4.8 percent, lower than growth in Korea, Singapore and Taiwan, but higher than growth in Malaysia, Indonesia and the Philippines. The second oil price shock triggered a devaluation in the peg against the US dollar and led Thailand to change course and adopt export orientation. In line with a sluggish global economy, the growth rate dropped to around 3.4 percent (Figure 2.E). Due to a combined export- and investment boom, it sharply recovered to 8.1 percent from 1987 to 1996 – this was worldwide the second highest growth rate after China.

Thailand was hit by the 1997/98 Asian crisis earlier and harder than neighboring countries. Real per capita growth turned negative at -6.6 percent in 1997 and 1998. Supportive macroeconomic policy and external demand fostered an economic recovery since 1999, although the rebound was initially weaker than in Korea and Malaysia (Figure 2.F). Growth increased from 3.9 percent in 2000 to 5.4 percent in 2004, averaging 4.2 percent since 1999, supported by higher investment due to rising capacity utilization and lower interest rates, favorable crop prices and, most of all, expanding exports.

¹ The World Bank classifies economies according to 2004 GNI per capita, using the Atlas method. The groups are: low income, \$825 or less; lower middle income, \$826 - \$3,255; upper middle income, \$3,256 - \$10,065; and high income, \$10,066 or more. Thailand's GNI per capita in 2004 was \$2,440. For example, relative to OECD high-income countries, Thailand's per capita income level increased from 3.6 percent in 1960 to 8.1 percent in 2003. In terms of purchasing power parity, it rose from \$1,990 in 1975 to \$7,175 in 2003, or from 13 percent to 27 percent relative to the income level of OECD high-income countries.

Figure 2: Economic Growth in Thailand, East Asia and the World, 1960 to 2003



Export-Orientation

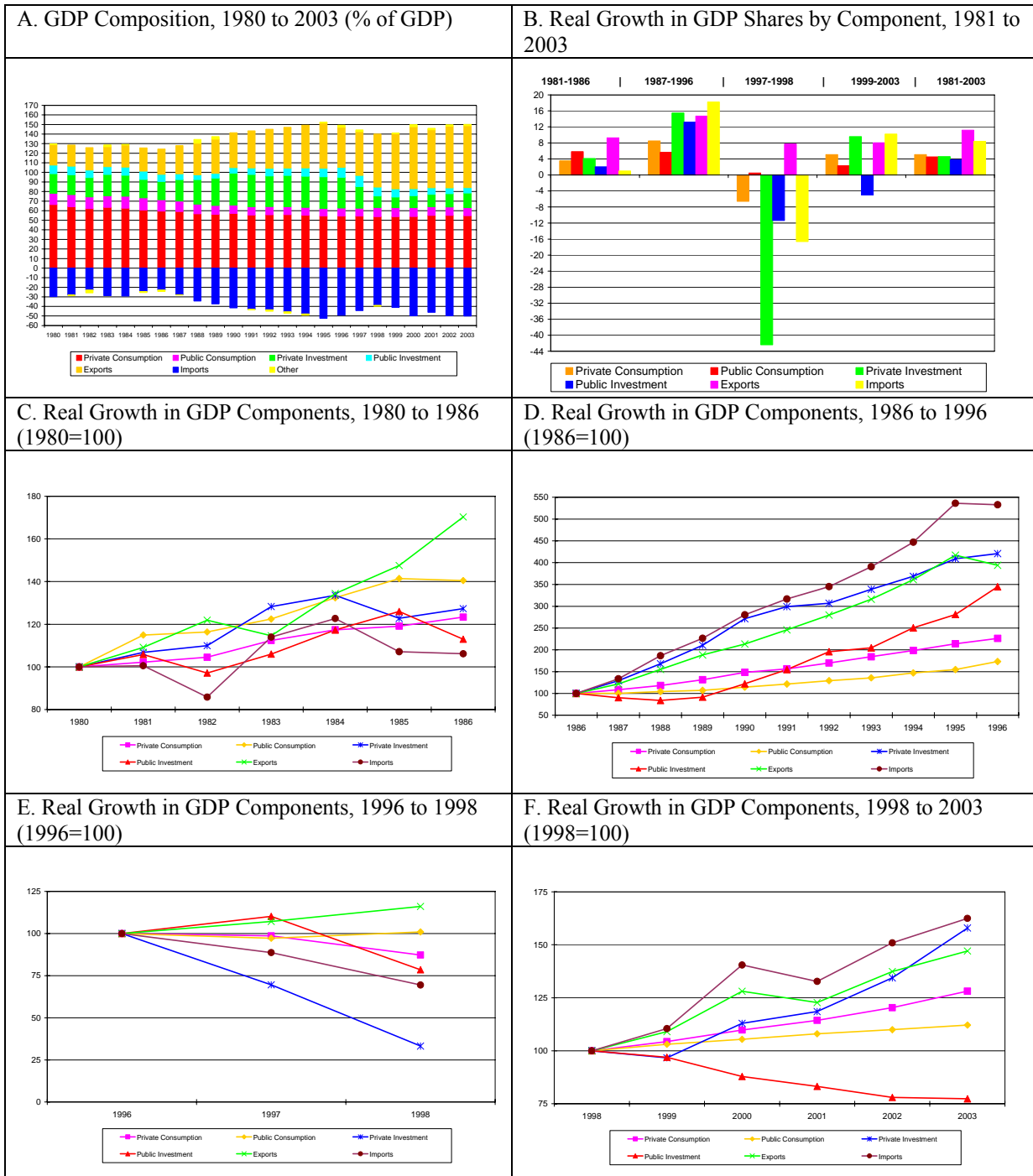
What underlines the differences in the performances of Thailand's growth episodes? The following sections look more closely at the time since 1980, covering the four most recent periods identified in Figure 2.D. Figure 3.A breaks down GDP along the expenditure side, measured in 1988 constant Baht prices, separating private and public consumption, private and public investment, and exports and imports. Figure 3.B displays the growth averages by episode as well as overall, and Figure 3.C to Figure 3.F show the trends of each component for each episode.

The low-growth period of the eighties (1980-1986) relied on exports, in addition to consumption and private investment for economic expansion (Figure 3.C). The high-growth period of the late eighties and nineties (1986-1996) saw a sharp increase in exports and imports, with imports outgrowing exports, and a strong rise in both public and private investment (Figure 3.D). The literature emphasizes especially the role of capital investment. For example, Griffiths (2000) highlights the investment boom in the non-tradable sectors as key driver.

Economic growth became negative during 1997 and 1998, mostly due to the slump in private investment (Figure 3.E) which in turned pulled down imports. Exports expanded, helped by the Baht devaluation. While public consumption remained stable, partly boosted by anti-crisis social spending, public investment contracted in 1998. The recovery from 1999 onwards shares some characteristics with the high-growth period of the late 1980s/90s: imports grow fastest, followed by exports and private investments. But there are also important differences. Public investment is contracting rather than expanding, and growth rates average only just over half the levels during the boom period (Figure 3.F).

Overall, three features stand out. First, exports increased dramatically, reflecting their role as key growth driver. They accounted for 20 percent of GDP in 1980, rose to around 45 percent before the Asian Crisis, and now contribute close to 65 percent of GDP. Second, private and public consumption trended downwards between 1980 and the mid-1990s and have remained fairly stable since. The contrast in the trends of consumption and exports is striking: consumption accounted for just under two-thirds of GDP in 2003, compared to close to four-fifths in 1980; exports of goods and services reached the same GDP share as consumption in 2003, compared to only one-fifth of GDP in 1980 (Figure 3.B). Third, private investment surged during the first half of the 1990s but has become less important since.

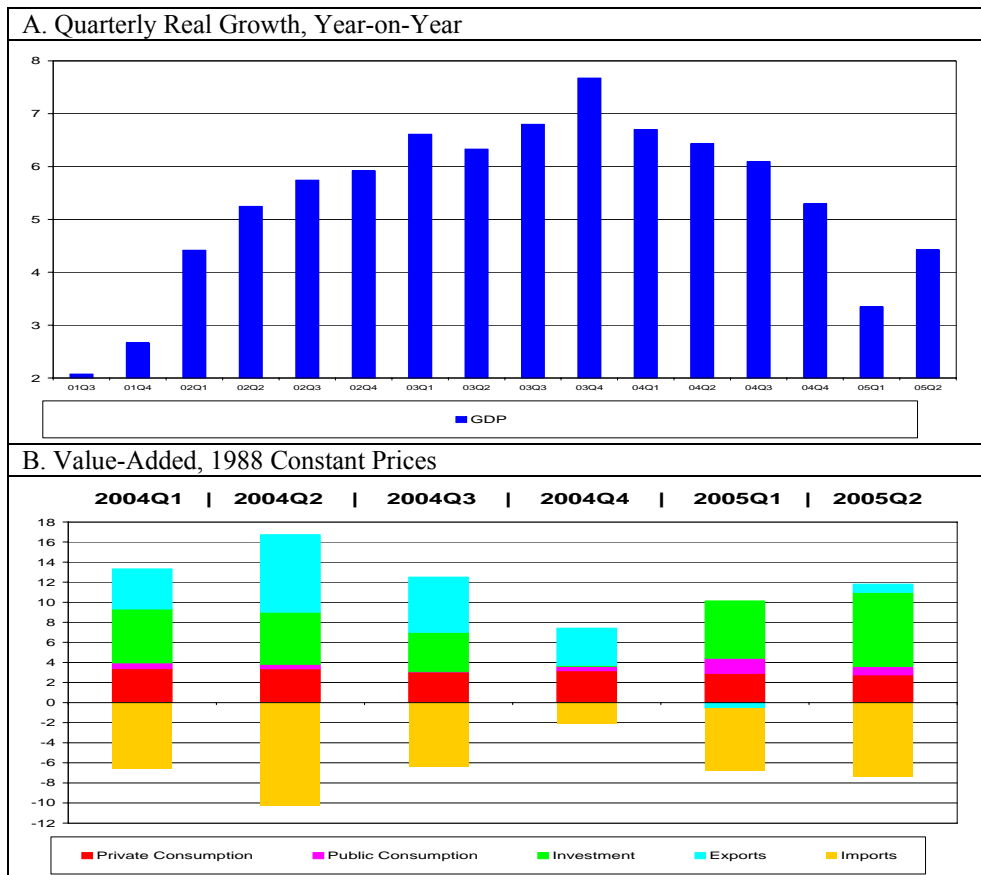
Figure 3: GDP Expenditure Components, 1980 to 2003



2005 Slowdown

GDP growth in 2005 was projected to be in the range of 6 to 7 percent, although the data for the first half of the year suggest growth of now more than around 4 percent. Year-on-year quarterly growth fell consecutively from 7.7 percent in the last quarter of 2003 to 3.3 percent in the first quarter of 2005, before recovering to 4.4 percent in the second quarter of 2005 (Figure 4.A). A number of idiosyncratic factors play a minor role in this reduction: the tsunami in early 2005, its impact on tourism, and a severe drought which counterbalances the buoyancy of agricultural prices. More important is the rise in oil prices that have fueled the costs of imports. But the key change is the performance of exports whose year-on-year growth dropped close to zero in the first six months, compared to expanding by 8 percent in the first half of 2004. The combination of higher import and lower export growth has contributed to turning the current account negative. This slowdown is linked to lower import growth in China and underlines the three principal risks to Thailand's growth: rising costs of oil and capital import, a "hard landing" in China and a "disorderly unwinding" of global current account imbalances.

Figure 4: Expenditure Composition of GDP by Quarter, Q1 2004 to Q2 2005



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 5.A, the trend towards higher East Asian trade accelerated during the growth spurts 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 5.B). In 2003, three fifths of all imports came from East Asia, while just over one half of all exports went to East Asia.

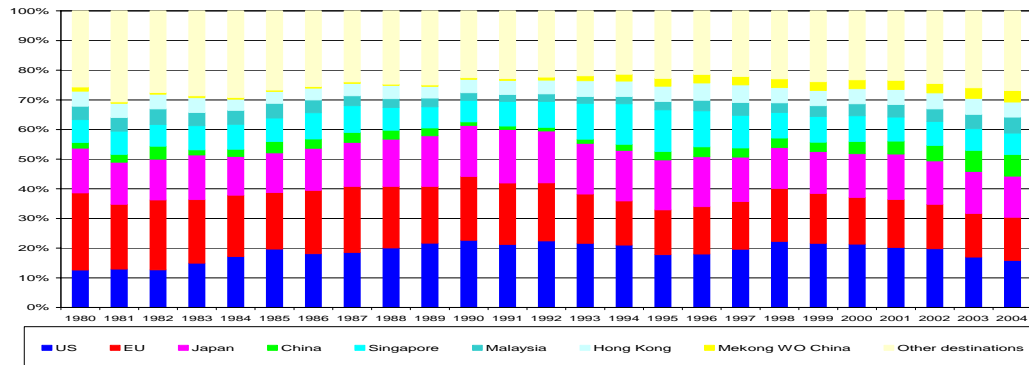
Closer trade integration came partly as a result of trade liberalization. Thailand reduced and rationalized tariffs and dismantled most of the non-tariff barriers in the second half of the 1980s, coinciding with the switch from import-substitution to export-orientation (Figure 5.C and Figure 5.D). It made additional commitments in 1995 as part of the newly formed World Trade Organization, and announced a program to reduce manufacturing tariffs within a four-year period in January 2004. These reforms have brought Thailand's tariff structure much in line with that of the major economies in East Asia (Athukorala et al 2004).

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.² 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.

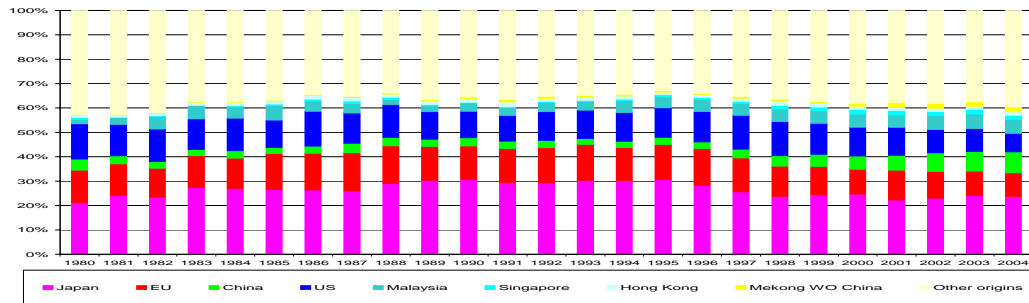
² Tzung-Ta Yen et al (2003) argue that more than half of Chinese imports and exports are accounted for by the reprocessing industries, most of which are enterprises in at least partly foreign ownership.

Figure 5: Thailand Trade by Country, 1980 to 2003

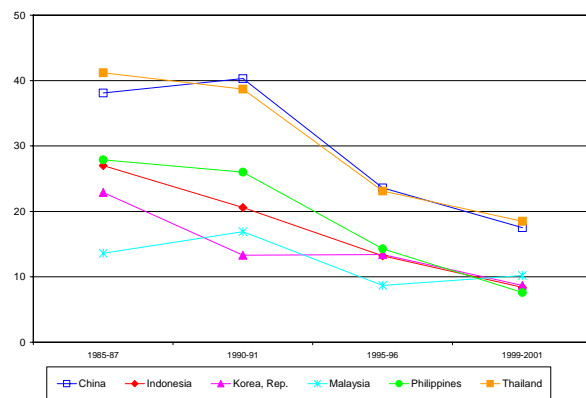
A. Exports by Country (Percent of Total Exports)



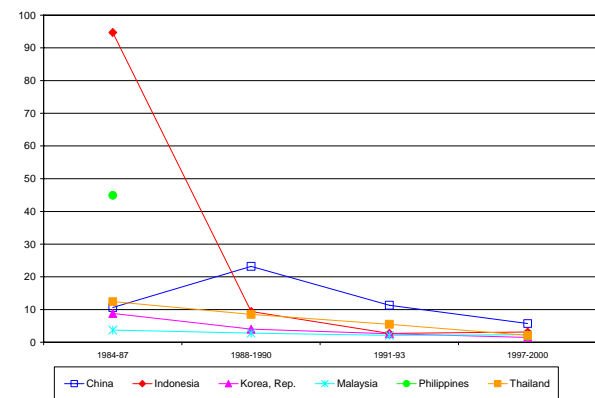
B. Imports by Country (Percent of Total Imports)



C. Average Tariff Rates in Selected Asian Countries (Unweighted)



D. Coverage Ratio of Non-tariff barriers in import trade



From Agriculture to Industry

Trade and economic growth typically bring about change in the sectoral composition 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). Figure 6.A traces the changes in Thailand's output composition at the three-sector level since 1951 and Figure 6.B presents the average real growth rates by sector and overall, separating once again the five growth episodes.

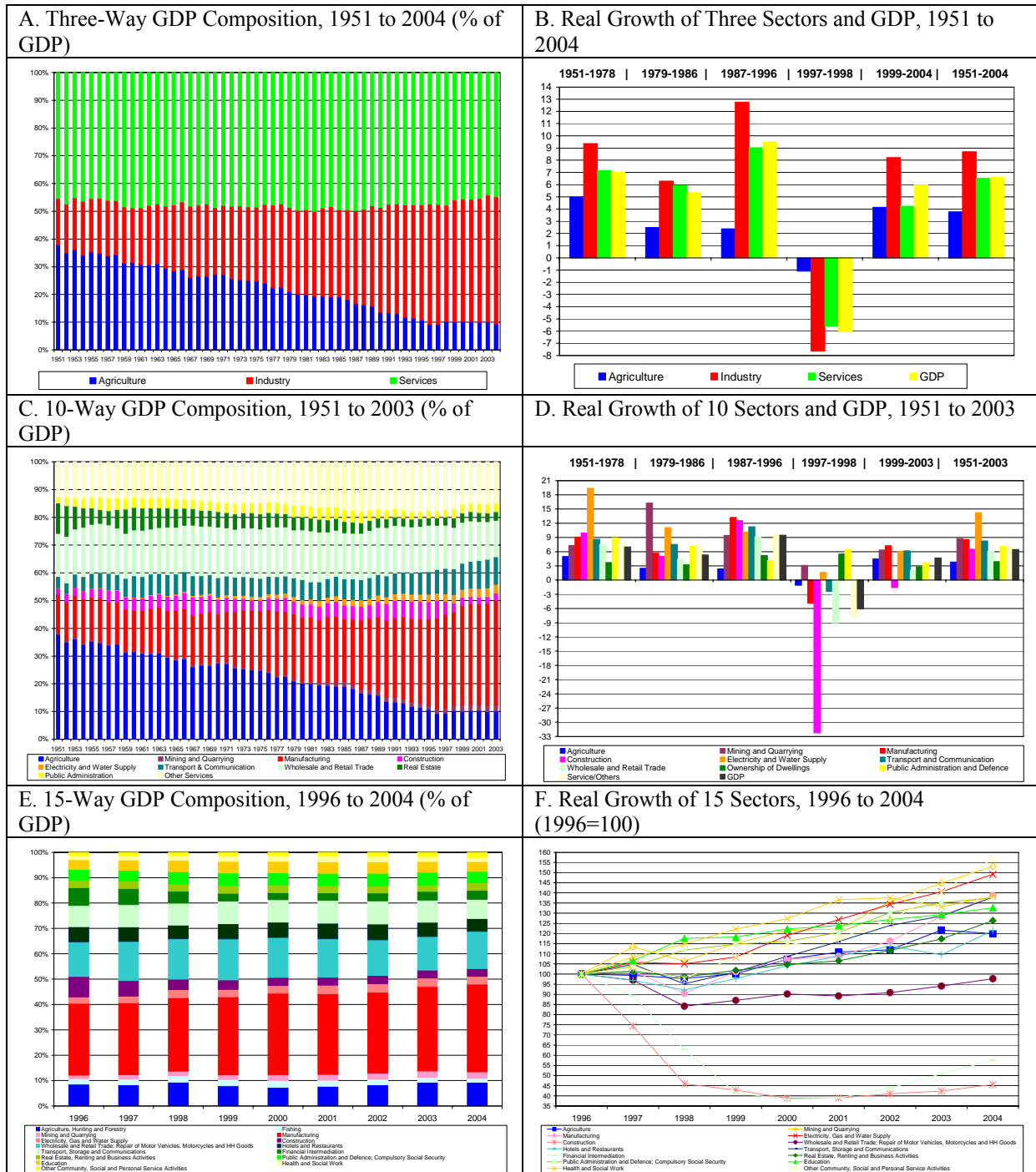
On the basis of comparative advantage, Thailand's leading sectors should be agriculture and related processing industries. Yet, the largest sector already in the 1950s was services, contributing around 45 percent of GDP. Since the service sector remained roughly constant as share of GDP over the last half a century, structural change came about as substitution from agriculture to manufacturing. 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, which declined from just under two-fifths of GDP in the early 1950s to just over one-fifth of GDP by the end of the 1970s. While these policies were abandoned during the 1980s, the shift away from agriculture continued, as industry remained the most dynamic sector. Agriculture fell below 10 percent of GDP for the first time in 1996. While agricultural growth picked up subsequently, so did the expansion of the other sectors, and agriculture contributed 9 percent of GDP in 2004.

While agriculture declined, industry increased. The expansion was initially fueled by import-substitution policies, and then from the 1980s onwards by growing industrial exports (Figure 6.B). The boom period from 1987 to 1996 saw double-digit industrial growth rates, while the contraction in 1997 and 1998 brought about a sharp fall in industry. The recovery since 1999 is also led by industry with growth rates twice as high as in the other two sectors. As a result, industry is since 2003 Thailand's largest sector, contributing 46 percent of GDP.

The expansion in industry is foremost due to manufacturing, while services center increasingly on transportation and communication. Manufacturing accounted just over four-fifths of industry's value-added in the early 1950s, declined to 70 percent by the mid-1980s, and increased again to four-fifths by 2003 (Figure 6.C and (Figure 6.D). Over the same period, transportation and communication as percent of the service value added increased from 9 percent to 15 percent and to 23 percent.

Focusing on the dynamics since 1996, Figure 6.E and Figure 6.F present a slightly different GDP breakdown reflecting a recent revision in Thailand's national account classification. Among these 15 subsectors, manufacturing, electricity and gas and transportation and communications have led the recovery, while construction, financial intermediation and wholesale and retail trade are still struggling with the aftermath of the Asian crisis.

Figure 6: GDP Production Components, 1951 to 2004



Assembly-Based Manufacturing

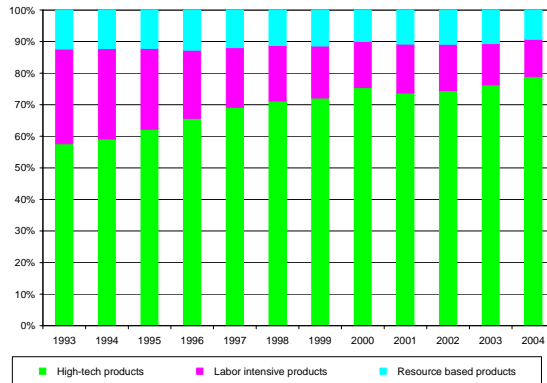
The previous sections highlighted the role of trade and manufacturing in Thailand's growth performance over the last two and a half decades. These trends are in fact two sides of the same coin. In spite of investment slump and Asian crisis, the manufacturing sector is now approaching two-fifths of GDP, compared to one third of GDP before the Asian crisis and just under one-fifth of GDP in the early 1980s (Figure 6.C). The expansion is closely linked to the boom in exports, which increased in value 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 (Figure 3.A). 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. Given the importance of this sector, it is worth inquiring which manufacturing industries are behind this rapid expansion. Figure 7.A shows a three-way breakdown of manufacturing exports, as classified by the Bank of Thailand (BOT). The share of high-tech products increased from 58 percent in 1993 to 78 percent in 2004, suggesting that much of Thailand's recent growth has come with an orientation towards high-value products.

However, export classification of high-tech products are controversial and hard to interpret. The same high-tech products exported can be the outcome of a different process. It could involve product innovation and development, or sophisticated design and fabrication, or simply a relatively low-skilled based assembly process. The first process is most, and the last process least, productivity-enhancing. By most accounts, Thailand should be considered as an "assembler" rather than a "designer" or even an "innovator" (World Bank 2005a). According to the World Bank's narrower definition of high-tech export products,³ Thailand's and Korea's levels are on par lagging far behind those of Malaysia and the Philippines (Figure 7.B). Yet, Korea is clearly the most technologically advanced country among this group. The World Bank series also suggest a different trend than the BOT data: Thailand's high tech export share more than doubled from 16 percent in 1988 to 34 percent in 1998, but subsequently declined to 30 percent in 2003. A similar trend is visible for the manufacturing sector overall rather than manufacturing exports only. Using BOT definitions, Figure 7.C groups the manufacturing sector into heavy industry, high-skill labor-intensive industries, traditional light industries, and food and related industries, and Figure 7.D shows the growth averages by period. The share of the first two industries was in 2003 at 58 percent still about 4 percent below the peak before the Asian crisis, even though the recovery since 1999 is driven by sectors such as motor vehicles, electronic and electrical apparatus and parts as well as chemical products (Figure 7.E). Comparison of manufacturing employment and enterprise numbers based on the 1996/7 and 2001/1 enterprise census data shows also a small decline in heavy and labor-intensive industries (Figure 7.F). These figures suggest that Thailand's manufacturing is still as much focused today on raw material intensive and labor-intensive industries as it was before the Asian crisis, in spite of a sharp rise in exports over this period.

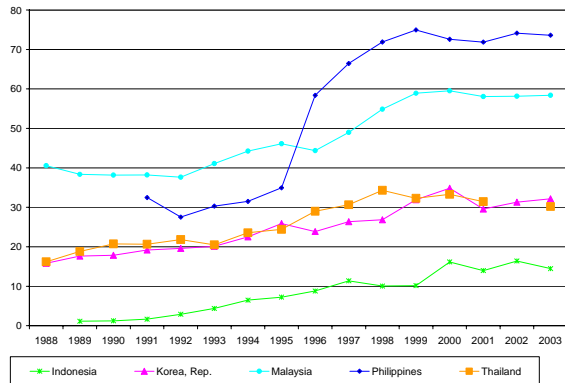
³ The World Bank classification defines high-technology exports as products with high R&D intensity, such as in aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery.

Figure 7: Manufacturing Industries

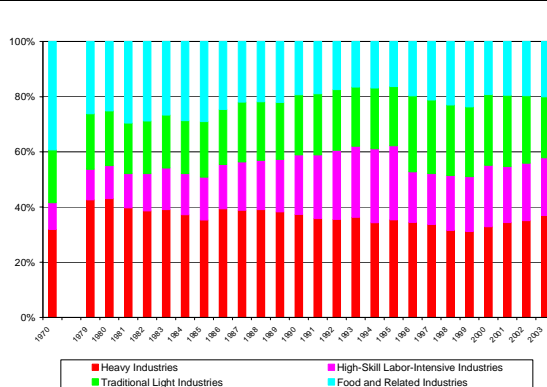
A. Manufacturing Exports by Product Type (% of Total Manufacturing Exports), BOT Classification, 1993 to 2004



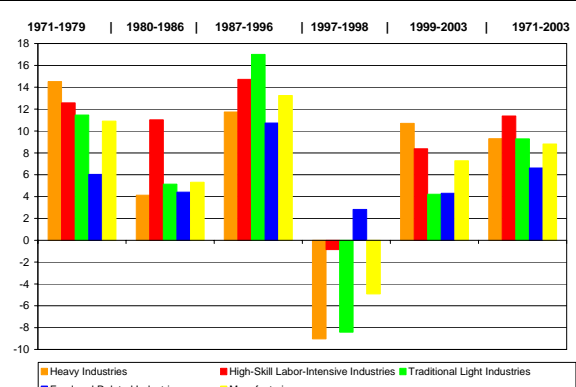
B. High-Tech Manufacturing Exports of East Asian Countries (% of Total Manufacturing Exports), WB Classification, 1988 to 2003



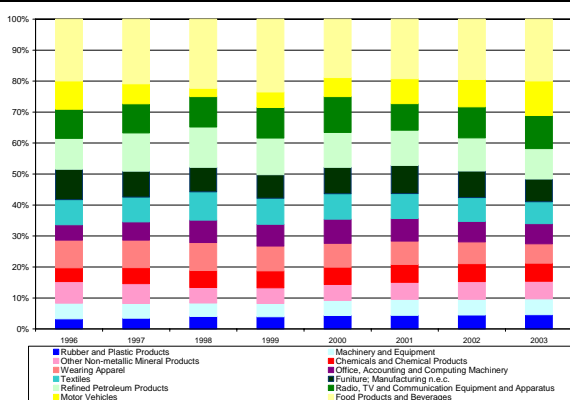
C. Four-Way Breakdown of Manufacturing (% of Manufacturing GDP), 1970 to 2003



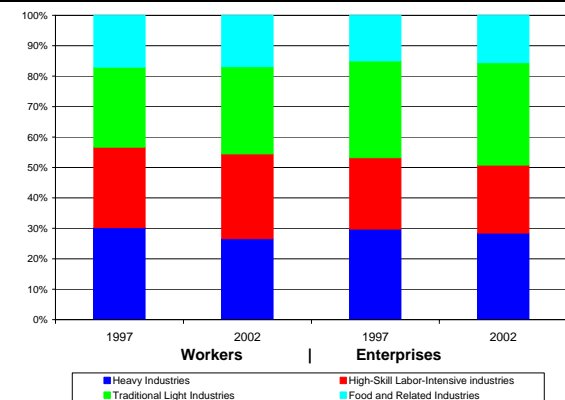
D. Real Growth of Four-Manufacturing Sectors and Overall, 1971 to 2003



E. 12 Largest Manufacturing Industries in 2003 as Percentage Shares in Manufacturing Value Added, 1970 to 2003



F. Four-Way Breakdown of Manufacturing as Shares in Employment and Enterprise Numbers, 1997 and 2002 (Establishment Census)



Extensive Growth and Reallocation

Growth accounting provides another perspective on the nature of Thailand's growth performance. To what extent did Thailand's growth rely on the accumulation of factor inputs rather than the more efficient usage of available factors? Extensive growth would support the notion that Thailand's competitiveness hinges foremost on the availability of natural resources and labor force, while intensive growth would indicate that technological progress through innovation and competition plays an important role. The main idea of this line of research is to decompose growth in output into the contributions of higher quantities of factor inputs and a residual which is interpreted as improvements in total factor productivity (TFP). While conceptually straightforward, growth accounting is difficult to implement. Since TFP is set equal to whatever is left unexplained by the identified factors, its measurement is highly sensitive to the precise method of constructing capital, labor and land. In a review of growth accounting studies on Thailand, Bosworth (2005) argues that most discrepancies in the findings link back to two sources: how labor inputs are adjusted to account for rising education standards; and how income of self-employed, roughly half of the Thai labor force, is attributed to labor and capital.⁴ In addition, lack of data typically restricts the analysis to a fairly aggregated level. Finally, the framework assumes that output is primarily supply-constraint, which makes it difficult to accommodate episodes such as the Asian crisis or the subsequent recovery process (where capacity utilization is increasing).

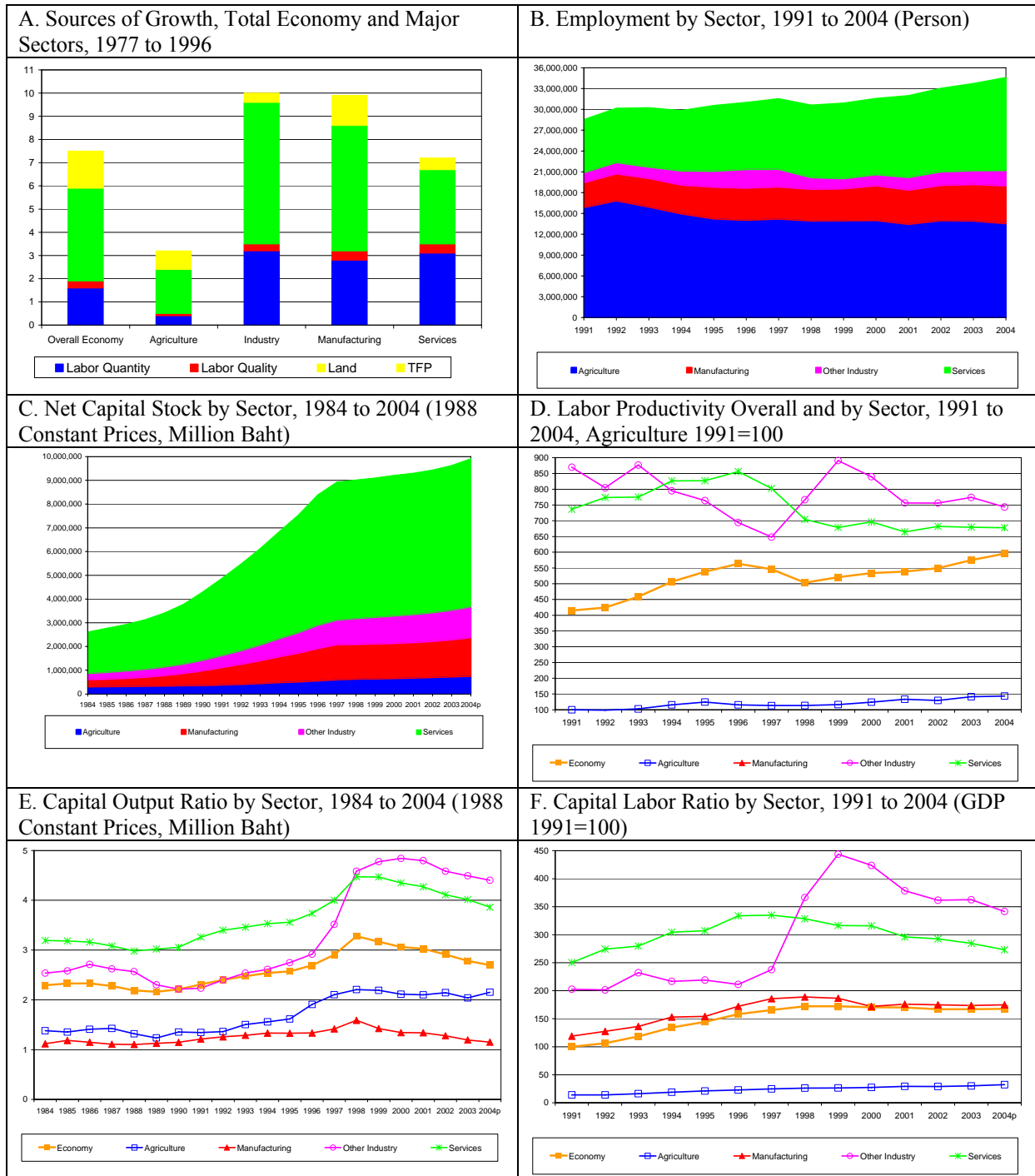
While point estimates vary across studies, the results tend to point to two main drivers of Thailand's growth miracle. First, economic growth is foremost due to increases in capital and labor rather than TFP as a result of heavy investment in physical and human capital (Figure 8.B and Figure 8.C). For example, the growth in the net capital stock slowed from 9.9 percent during 1984 to 1997 to 1.5 percent during 1998 to 2004 (Figure 8.C). Bosworth (2005) calculates that only 1.6 percent of the real output growth of 7.7 percent during 1977 to 1996 is due to TFP increases (Figure 8.A).⁵ Second, whatever gains in TFP are observed, they come to a large extent from a reallocation of factors from agriculture to industry and services whereas within-sector TFP contributions are low. As workers leave farms and enter peri-urban and urban areas, industrial and service-sector participation rates increase (Figure 8.B). Since labor productivity is about 10 times higher in manufacturing and close to five times higher in services than in agriculture, such transformation boosts TFP and economic growth (Figure 8.D).

This analysis suggests that Thailand's economic future will depend on three issues: whether investment rates will recover from the slump after the Asian crisis (in light of falling capital-output and capital-labor ratios outside of agriculture (Figure 8.E and Figure 8.F); whether labor force participation in services and especially industry will continue to increase; and whether the rate of innovation and technological advancement at home will improve to make up for any shortfall in factor accumulation.

⁴ As capital grows faster than labor, attributing self-employed income to capital lowers the TFP estimate.

⁵ Similarly, using a growth accounting framework, Jonsson (2001) finds that capital accumulation, more than total factor productivity growth, accounted for the high pre-crisis growth rates.

Figure 8: Growth Accounting and Labor Productivity



II. Cost of Finance

Overview

Section I argued that Thailand's growth is now lower than before 1997 as it is driven almost exclusively by exports, instead of both exports and private investments. While subsequent sections will elaborate potential constraints to continuing growth at the current speed of around 4 to 5 percent, perhaps the most immediate issue is whether Thailand's current expansion could be threatened by a repeat of the Asian crisis. This section first looks at the origins of the 1997 crisis, and then argues that the main lessons from the Asian crisis have been learned. The adjustments in exchange rate and monetary policies, in addition to a more cautious private investment behavior, make a repetition unlikely. At the same time, these changes suggest that cost of finance does not impose a binding constraint to growth today.

One crucial pillar of the pre-crisis boom was foreign savings which funded the rise in private investments. Export orientation, capital market liberalization, and high growth triggered a large inflow of private capital, much of it short-term. The government sterilized some of the foreign capital inflows by running budget surpluses during nine consecutive years from 1988 to 1996 of the order of 1 to 4 percent of GDP. Finally, a key factor to encourage capital inflows was the exchange rate policy. After a 20 percent depreciation in the mid 1980s, the exchange rate was pegged against a basket of major currencies, and the real exchange rate was kept low and stable.

The trigger for the Asian crisis was a sudden worsening in the trade balance. Given Thailand's needs for raw materials, oils, and capital goods to support rapid growth, the current account recorded increasing deficits from 1987 to 1996. As export growth came to a halt in 1996 due to rising wage costs, lower demand in Japan and emerging competition from China, portfolio investments began flowing out. The Bank of Thailand (BOT) reserves could not match the amount of short-term foreign owned capital. On July 2, 1997, the BOT announced the float of the Thai Baht, which dropped by 100 percent in value over the next 6 months. The private sector became unable to service the foreign debt, which reached around 70 percent of GDP in 1997.

Due to the depreciation, the current account turned positive in 1998 and remained in surplus up to 2004. In May 2000, the BOT switched to a floating exchange rate in order to avoid any new risks of major over- or under-valuations. Thailand's real effective exchange rate in 2003 was close to 20 percent lower than in the mid-1990s, suggesting a longer-term improvement in trade competitiveness. Thailand's external debt has fallen sharply since 1997, pointing to a robust improvement of central bank reserves and low inflation. Banks as well as corporates gradually consolidated and became more cautious in managing funds. Non-performing loans have fallen as the debt servicing capacity of borrowers improved and bank profitability has improved. Real lending rates have declined due to lower nominal interest rates and higher inflation. In spite of the recovery of the economy, credit growth continues to languish due to ongoing structural problems in financial and corporate sectors. At the same time, household and consumer credit has increased by annually 15 percent over the last three years.

Fixed Exchange Rates and Foreign Borrowing

A key difference of the recovery period since 1999 compared to the boom period up to the mid-1990s is the trend in the capital stock. But how was this accumulation of physical assets financed? Figure 9.A looks at three sources of funds for net domestic investment: private, public and foreign savings. While during the early 1980s, private savings funded from 60 percent to 85 percent of the investments, public and foreign savings became increasingly important after the mid-1990s. Foreign savings contributed over one quarter of all investment finance in 1996, compared to only 3 percent in 1987. The government sterilized some of these inflows by running budget surpluses during nine consecutive years from 1988 to 1996 of the order of 1 to 4 percent of GDP. The procyclical fiscal policy resulted from both systematic underestimation of public revenues and under-execution of planned spending.⁶ The receipts allowed the government to almost fully eliminate the domestic debt accumulated in the early 1980s.

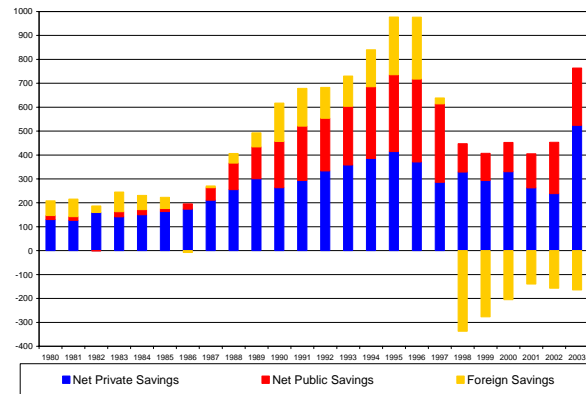
While government finances improved continuously, the private sector became more and more indebted to foreign lenders. Thailand's financial system was judged to be well developed, based upon a strong commercial banking network with strong ties to the largest Thai firms (Christensen 1993). Broad money (M2) was about four-fifths of GDP in the early 1990s, a ratio typical of a developed country and far higher than the norm for a country at Thailand's income level (Figure 9.B). Private inflows increased from less than \$2 billion in 1987 to more than \$20 billion in 1995 (Figure 9.C), about 10 percent of which was due to foreign direct investment (Figure 9.D). Private total debt reached \$65 billion by the end of 1996, equal to about 50 percent of the national GDP. About half of this debt was lent through the Bangkok International Banking Facilities (BIBFs), created in March 1983 by the Bank of Thailand with the intention of making Bangkok an international financial center. Whereas about half of the private debt was short-term, the bulk of the projects for which the funds were used, especially in the booming property sector, were long-term.

Apart from high growth and sound government finances, a key factor to encourage capital inflows was the exchange rate policy: for over three-and-a-half decades, Thailand pegged its exchange rate to foreign currencies, keeping the exchange rate low and stable (Figure 9.E). This helped Thai business to become export-oriented and to attract foreign direct investment, as investors had confidence that profits could be repatriated at a known exchange rate. Throughout the 1960s and 1970s, the Thai Baht was tied to the US dollar. In response to the strong appreciation of the US dollar, the Bank of Thailand switched in the mid-1980s to a peg against a basket of major currencies. This led to a 20 percent depreciation in the real effective exchange rate (Figure 9.F) and the current account became positive in 1986. Given Thailand's needs for raw materials, oils, and capital goods to support rapid growth, the current account deficit returned the following year and increased up to 1996, while the real effective exchange rate remained broadly constant.

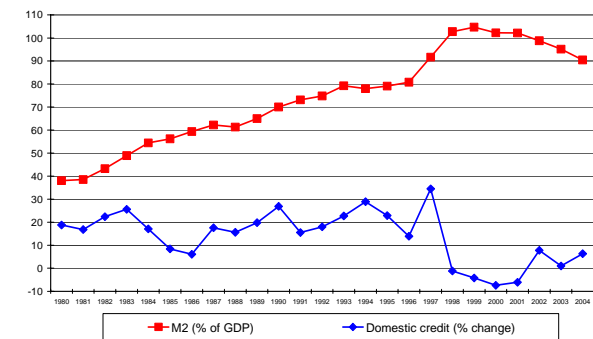
⁶ Thailand's tax burden is moderate. The RTG takes in about 16 percent of GDP in tax revenues. The overall tax incidence is roughly neutral with regard to household income.

Figure 9: Capital Flows, Monetary Aggregates and Exchange Rates

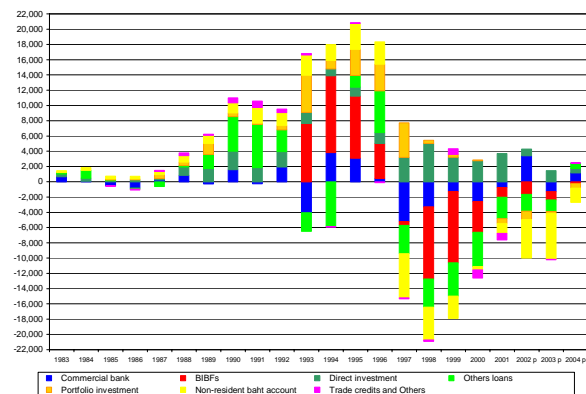
A. Source of Funding for Net Domestic Investment (Billion Baht, 1988 Constant Prices), 1980-2003



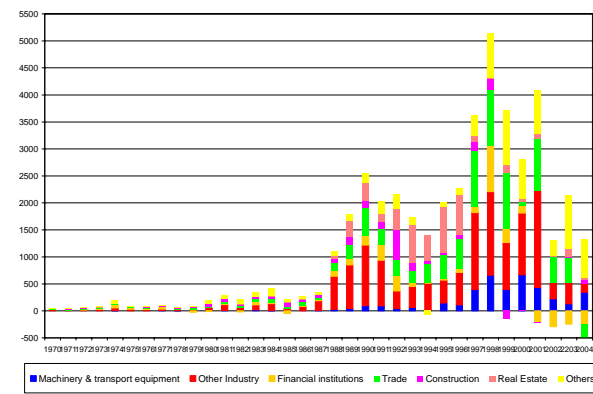
B. Money supply and domestic credit, 1980 - 2004



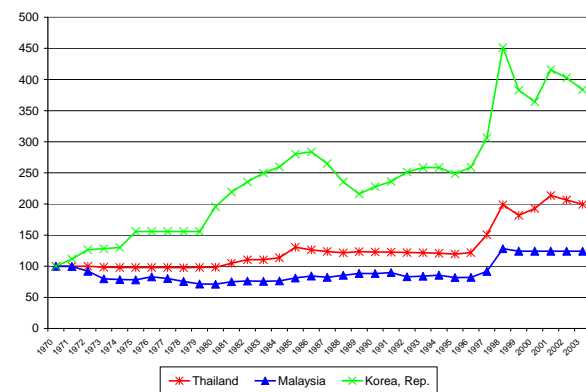
C. Net Flows of Private Financial Account (US\$ Million), 1983 to 2004



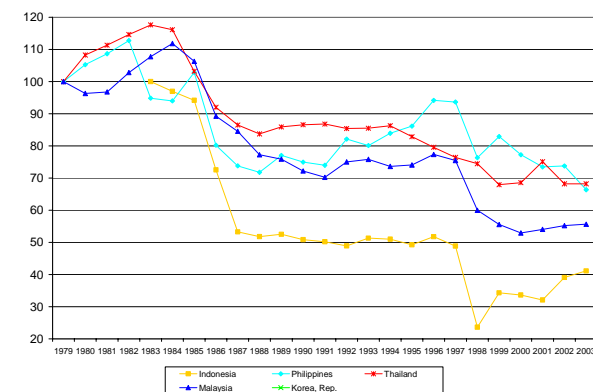
D. Net Flows of Foreign Direct Investment Classified by Sector (US\$ Million)



E. Official exchange rate of Thailand, Malaysia, and Korea (LCU per US\$, 1970=100)



F. Real effective exchange rates of selected countries, 1979 - 2003 (1979=100, Indonesia 1983=100)



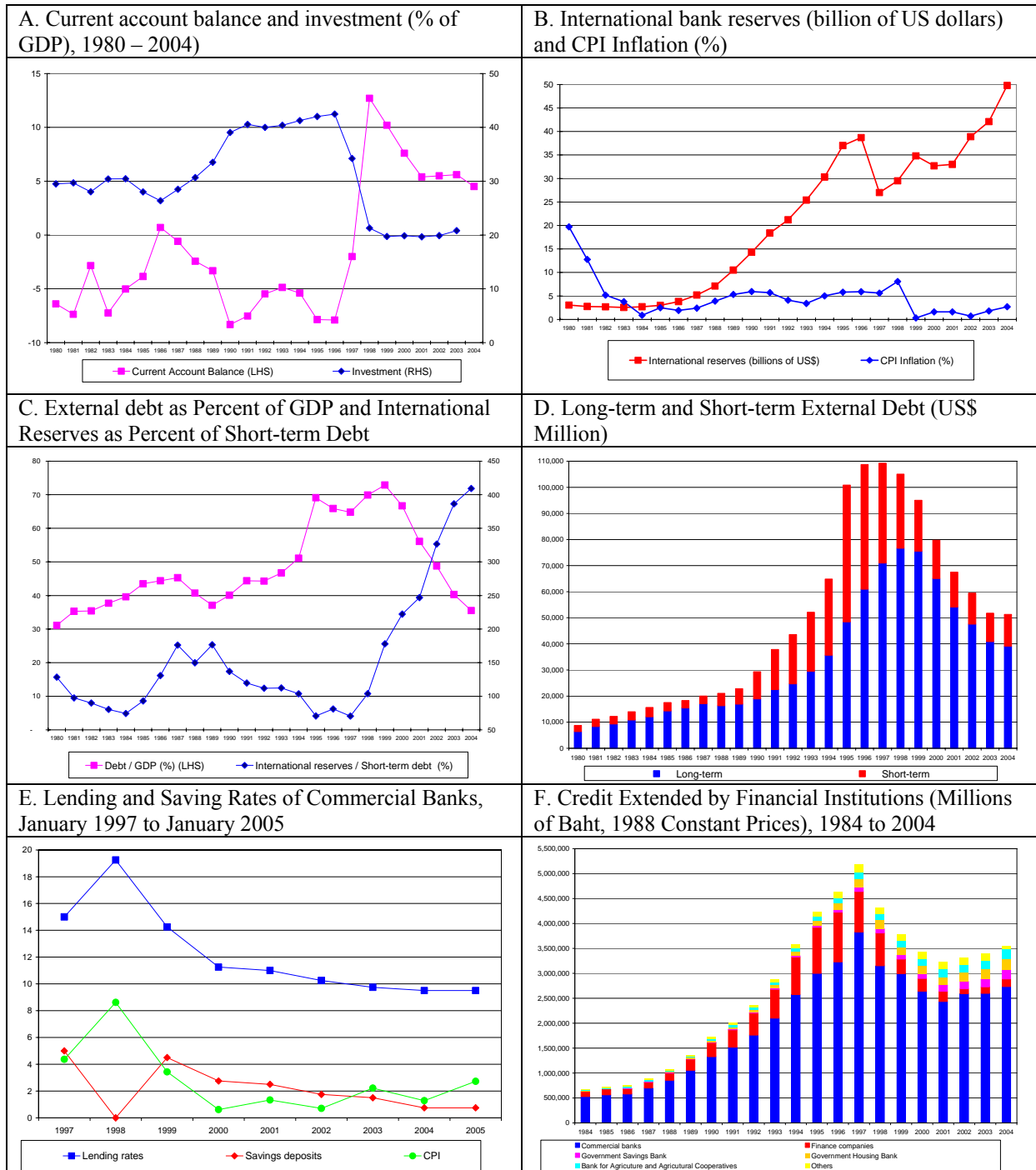
Inflation Targeting and Current Account Surplus

The trigger for the Asian crisis was a sudden worsening in the trade balance. Export growth unexpectedly slowed from over 20 percent in 1994 and 1995 to zero percent in 1996 due to rising wage costs, lower demand in Japan and emerging competition from China (Warr 2005 and Nabi and Shivakumar 2001). This produced expectations of an impending exchange rate depreciation. As portfolio investments began flowing out, the current account deficit of 8 percent of GDP loomed large (Figure 10.A), and the BOT reserves, which had increased since the late 1980s due to the sterilization (Figure 10.B), could not match the amount of short-term foreign owned capital (Figure 10.C). Between end-1996 and June 1997, the BOT's reserves dropped from close to US\$40 billion to under US\$30 billion. On July 2, 1997, the BOT announced the float of the Thai Baht, which dropped by 100 percent in value over the next 6 months (Figure 9.E). The private sector became unable to service the foreign debt, which totaled around 70 percent of GDP in 1997 (Figure 10.D), leading to the suspension and closure of 58 financial companies.

The depreciation led to an improvement in the current account, which turned positive in 1998 and remained in surplus up to 2004. In May 2000, the BOT successfully introduced a new monetary framework based on inflation targeting. This allows the exchange rate to partially absorb economic shocks and avoid the risk of major over- or under-valuations. Thailand's real effective exchange rate in 2003 was close to 20 percent lower than in the mid-1990s, suggesting a longer-term improvement in trade competitiveness. Current account surpluses and low public investments allowed continued official and private debt repayments. Thailand's external debt has fallen sharply since 1997, pointing to a robust improvement of central bank reserves and low inflation (Figure 10.B). In combination with the floating exchange rate regime, and the mature policy making at the Bank of Thailand, this suggests that a repeat of the Asian crisis is unlikely for the foreseeable future.

Banks as well as corporates also benefited from external stability and the acceleration in economic activity since the late 1990s. They gradually consolidated and became more cautious in managing funds and providing credits. Non-performing loans have fallen as the debt servicing capacity of borrowers improved and bank profitability has improved. Real lending rates have declined due to lower nominal interest rates and higher inflation (Figure 10.E). However, in spite of the recovery of the economy, credit growth continues to languish due to ongoing structural problems in financial and corporate sectors (Figure 10.F, Baqir and Zanello 2003). Broad money which had increased to over 100 percent in the early 2000 declined again to 90 percent in 2004 (Figure 9.B). At the same time, household and consumer credit has increased by annually 15 percent over the last three years. Access to credits in rural areas expanded due to the government's grassroots policies such as the Village Fund, Farmers' debt moratorium and People's Bank. Overall, with the lessons learned from the crisis, public and private sectors are expected to be more cooperative in preventing the next crisis.

Figure 10: Current Account, Reserves, and Credit



III. Appropriability

Overview

Having ruled out cost of finance as a binding constraint, the discussion moves to low returns to economic activity (Figure 1). This section deals with appropriability, i.e. the ability of entrepreneurs to reap the profits on their investments. It looks at two issues specifically: governance and regulations.

Governance appears to have worsened recently, as established independent planning and administrative institutions have weakened and new institutions have failed to be empowered, leading to a greater politicization of the allocation of public resources and regulation of economic activity. It is unclear whether these change had a short-term impact on growth, but these trends could worsen economic policy making in the longer run. The emphasis on macroeconomic stability has strong institutional underpinnings. Traditionally the four agencies that formulate macroeconomic policies (the National Economic and Social Development Board, the Bureau of the Budget, the Central Bank and the Ministry of Finance) shared a deflationary bias and a strong financial conservatism. However, the Prime Minister's office gained influence in recent years at the expense of these institutions, leading to a greater politicization of the allocation of public resources and regulation of economic activity.

The political fallout of the Asian crisis created a window of opportunity for modernizing Thailand's constitution. The 1997 Constitution seeks to increase the efficiency and stability of the political process by creating a bicameral parliamentary system with a strengthened executive. New oversight agencies were established to enhance accountability and transparency. The 1997 Constitution also embraces principles of participation and decentralization, such as allowing voter petitions of draft bills to the National Assembly and requests of removing officials on charges of corruption to the President of the Senate. However, in spite of the strong constitutional mandate, these new institutions are generally viewed to be lacking both real authority and sufficient funding. The government dominates the bureaucratic actors as well as the legislative branch, after a landslide re-election victory in February 2005. The concentration of power weakened the new oversight agencies and stalled the process of institutional reform. In view of these developments, it is not surprising that Thailand's governance indicators, with the exception of corruption, declined between 1996 and 2004, although it is only significant for the rule of law index.

While information on trends of regulation is hard to come by, a recent World Bank investment climate assessment finds that Thailand investment climate is favorable by international standards. For example, Thai firms face the lowest average number of days to clear customs for exports and the second lowest for imports, and Thai managers spend the smallest percentage of working time dealing with bureaucracy and regulations, accounting for visits by inspectors from all types of government agencies. One possible area of concern is contract enforcement. Solving payment disputes in Thailand takes a long time, although the share of successful court settlements is as high as in wealthier Malaysia.

Modern Constitution and Centralized Power

Thailand's strong commitment to maintaining internal and external balances is clearly one feature of its development process. The emphasis on macroeconomic stability has strong institutional underpinnings (Christensen et al 1993). Of the four agencies that formulate macroeconomic policies, two (the National Economic and Social Development Board and the Bureau of the Budget) are controlled directly by the Prime Minister, and the other two (the Central Bank and the Ministry of Finance) are usually headed by technocrats. These agencies share a deflationary bias and a strong financial conservatism. Their relative independence has prevented the use of macroeconomic policy to promote distributional objectives. As a result, cabinet ministers rely on sectoral interventions to serve this end, but have generally remained ineffective due to weak coordination and patronage. There are laws which restrict the size of budget deficits and foreign debt service.

The 1997 Constitution is the most comprehensive attempt in modern Thai history to change both a political system and political culture through institutional means. It seeks to increase the efficiency and stability of the political process by creating a bicameral parliamentary system with a strengthened executive. Limits on the size of ministries, an extended legislative term, and disincentives for party-switching seek to increase the efficiency and stability of the political process. Changes to the electoral system seek further to decrease party fragmentation and, in combination with educational requirements for members of parliament, to increase parliamentary capacity. A senate, now directly elected, is intended to play the role of a neutral gatekeeper, enhancing checks and balances in a system previously characterized by fusion of power in the executive branch. New oversight agencies have been established to create enhance accountability and transparency, among them the National Counter Corruption Commission, the National Human Rights Commission, the National Election Commission, the Ombudsman's office, and the independent Office of the Auditor General. The Constitution also embraces principles of participation and decentralization, such as allowing voter petitions of draft bills to the National Assembly and requests of removing officials on charges of corruption to the President of the Senate.

However, in spite of the strong constitutional mandate, these new institutions are generally viewed to be lacking both real authority and sufficient funding. The government dominates the bureaucratic actors as well as the legislative branch, after a landslide re-election victory in February 2005. The concentration of power may have weakened the new oversight agencies and stalled the process of institutional reform (Siamwalla, *The Nation*, January 28, 2005, and *The Economist*, February 4, 2005).

Worsening Governance Yet Moderate Regulation

Indicators developed by Kaufmann, Kraay and Mastruzzi (2005) allow an international comparison of Thailand in terms of governance.⁷ Clearly, given the difficulties of quantifying this dimension, these measures have to be interpreted with care. Figure 11.A shows the changes over time in Thailand's governance indicators. With the exception of corruption, they suggest a general decline between 1996 and 2004, although it is only significant for the rule of law index. Possible explanations are the ineffective implementation of provisions of the new constitution, concerns about the violence in Thailand's southernmost provinces,⁸ and handling of the nationwide drug crackdown.

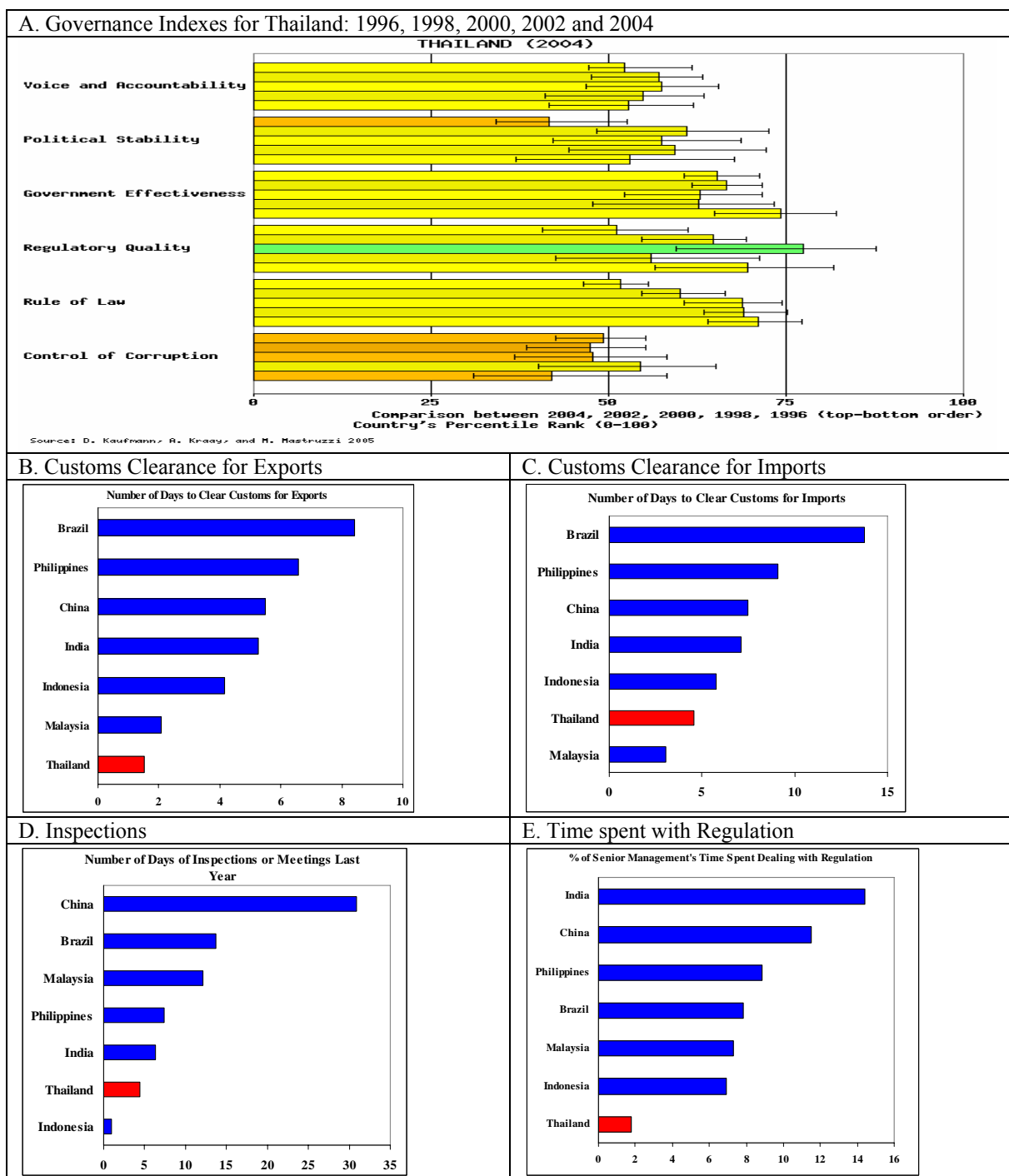
A good business climate provides firms with the incentives to invest, innovate, and grow, and individuals with incentives to invest in skills valued by dynamic and growing firms. A recent World Bank investment climate assessment (World Bank 2005a) finds that Thailand investment climate is favorable by international standards. Thailand investment climate is better than that of China, India, Brazil, and most neighboring countries, although it is not as good as that of Malaysia. Figure 11.B and Figure 11.C show that Thai firms face the lowest average number of days to clear customs for exports and the second lowest for imports. Such efficacy of customs contributes to a competitive edge of Thai traders in world markets. Figure 11.D and Figure 11.E indicate that Thai firms suffer from a lower burden of inspections and required meetings with officials than firms in China, India, Malaysia and the Philippines. Thai managers spend the smallest percentage of working time dealing with bureaucracy and regulations, accounting for visits by inspectors from all types of government agencies. About half of the time spent by firms in inspections and visits is spent with officials from the revenue department, and the second most time with officials from the industrial works department. One possible area of concern is contract enforcement. According to the 2004 Doing Business database, solving a payment dispute in Thailand takes on average 390 days, compared to 300 days in Malaysia and 241 days in China. However, the Thailand Investment Climate Survey (WB 2005a) suggests that about one-fifth of payment disputes are successfully settled in court, a similar number to Malaysia, compared to only 5 percent in China.

Overall, regulation remains an important longer-term issue, as Thailand has to keep up with the improvements in the investment climate of its competitors. Governance appears to have worsened recently, as the influence of old institutions has weakened and new institutions have failed to be empowered, leading to a greater politicization of the allocation of public resources and regulation of economic activity.

⁷ This section draws on Chapter 1 of the Thailand Investment Climate Assessment, drafted by Ana Fernandes. The cross-country indicators of governance compiled by Kaufmann, Kraay and Mastruzzi (2005) are composite indexes based on a large number of data sources reflecting the perceptions of governance across and within countries: surveys of firms and individuals, assessments of commercial risk rating agencies, non-governmental organizations, and multilateral aid agencies.

⁸ Most of Thailand's six million Muslims live in the south of predominantly Buddhist Thailand. In September 2005, the death toll from clashes between Thai authorities and Muslim students and separatists surpassed 1,000 with more than 1,500 wounded since January last year.

Figure 11: Investment Climate



IV. Infrastructure

Overview

Are low social returns the binding constraint to growth? Sections IV to VI discuss this issue in some detail by dealing separately with the three aspects referred to in Figure 1: bad infrastructure, low human capital, and poor geography. Infrastructure is an important part of Thailand's and East Asia's economic success. High domestic saving and investment rates have supported strong transport, water and sanitation, power, and telecommunication networks. Cross-country comparisons suggest that Thailand, just like Malaysia, has developed internationally competitive infrastructure networks. While geographic differences complicate international comparisons, Thailand looks well endowed with roads and railway, and weaknesses in fixed telephone lines are compensated through widespread subscription to mobile phones. The transport and communication systems and the energy generating capacity have expanded continuously. Infrastructure rankings put Thailand on par or not far behind Malaysia.

This good performance is linked to the Thai planning system which was effective in articulating effective strategic visions and in coordinating government agencies and state enterprises in providing infrastructure accordingly. In addition, Thailand spends a higher percentage of its GDP on infrastructure than many other Southeast Asian countries, even taking into account the significant slowdown during the 1998 to 2003 period. This investment has contributed substantially to promoting Thailand as industrial center in the region, and to establishing a competitive edge over previously competing areas such as the CALA areas and the Manila peri-urban area in the Philippines.

In spite of this solid record, there are a number of weaknesses that infrastructure delivery has to address. While Thailand's infrastructure investment may look healthy compared to its neighbors, it is still feeling the pinch from the Asian crisis in spite of a recent pick-up. 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. Similarly, public investment in 2003 was no more than 60 percent of the 1996 level. The government has changed the infrastructure planning process to address some of this weakness. The Prime Minister's office proposed investments 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. In real terms, public investment would exceed the 1997 peak from 2007 onwards.

Overall, the government is right in attempting to develop and implement a strategic view on infrastructure priorities. While the administration has made progress in addressing new infrastructure needs, the issues of funding and public-private partnerships are still to be solved. Given the private sector's caution to engage in large-scale projects, it is not evident that many private companies will be forthcoming with resources. Furthermore, there is a mismatch between human and administrative capacity and infrastructure needs at the local level.

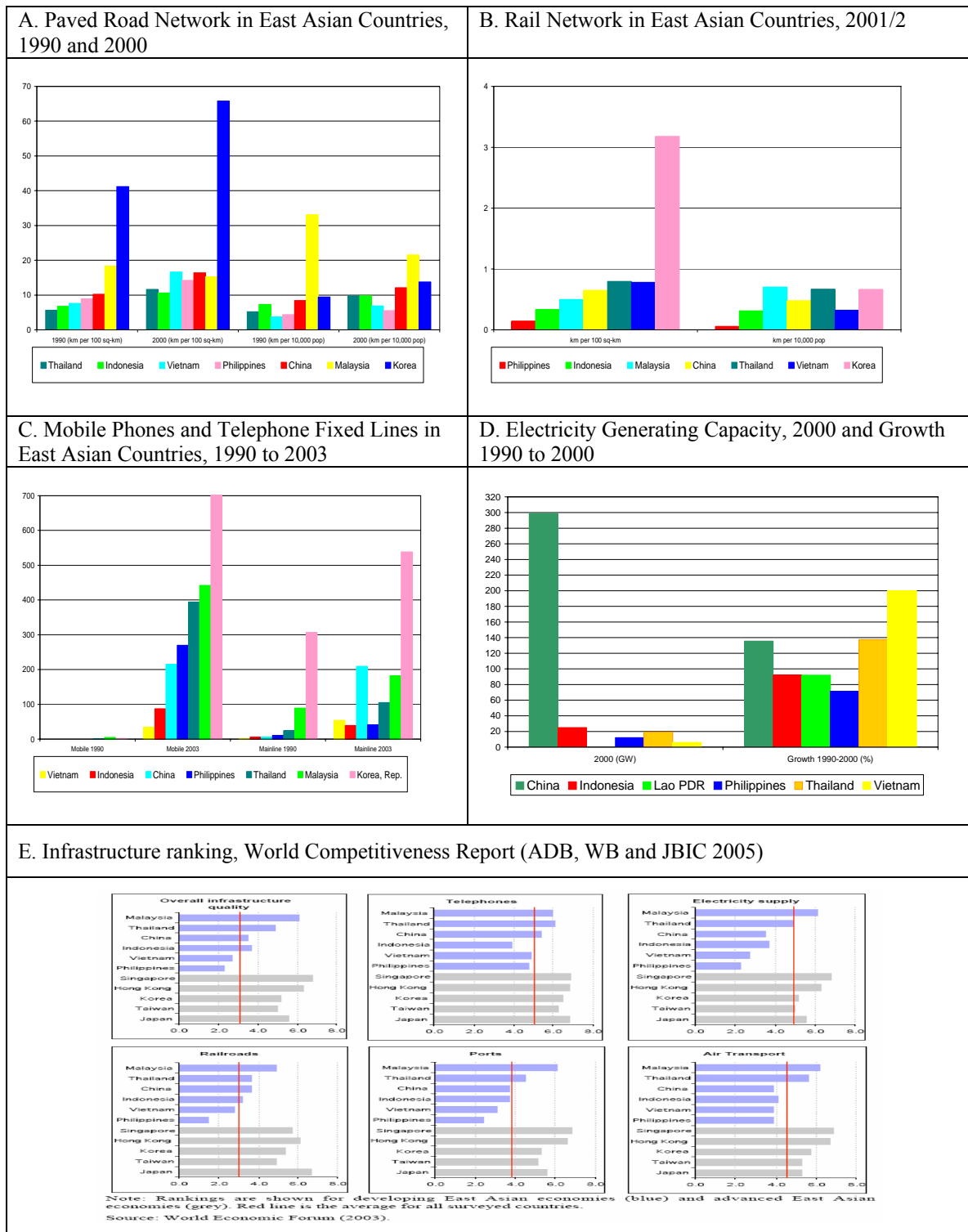
East Asian Trademark

Infrastructure is an important part of Thailand's and East Asia's economic success. High domestic saving and investment rates have supported strong transport, water and sanitation, power, and telecommunication networks. Similar to other East Asian countries, Thailand's infrastructure development in the past was heavily influenced by a strong planning agency, the National Economic and Social Development Board (NESDB). By law, NESDB has to approve all large capital investment projects, the budget of state enterprises and to develop five year national plans. These plans give guidance to central and line agencies and to promote investments that ensured the country's economic competitiveness. Other agencies collaborate with NESDB to ensure that infrastructure delivery, a capital intensive service, is embedded in a strong macroeconomic framework. They include the Bureau of Budget, which prepares the annual budgets, the Bank of Thailand, which is in charge of monetary and exchange rate policy, the Fiscal Policy Office, which sets the overall macroeconomic framework, and the Public Debt Management Office, which enforces the external debt ceilings established by the Fiscal Policy Office. More recently, the Ministry of Finance and the Prime Minister's Office have taken a more active role in higher-order strategizing to align infrastructure delivery with economic competitiveness advantages.

Over the decades, public infrastructure priorities varied (Webster and Theeratham 2004). The first two National and Socio-Economic Development Plans (1961 to 1971) emphasized transport, communication, and energy to support the country's industrialization. The focus shifted to rural areas during the third and fourth plans, and the extension of the rural road network led to a strong growth in agriculture. During 1982 to 1991, the early phase of the "Golden Age of Manufacturing", the fifth and sixth plans emphasized energy to support the manufacturing exports. The last three plans (1992 to 2006) centered on human development and provided little substantive guidance on resource allocation or projects.

The shifting priorities in the national development plans resulted in a large volatility of infrastructure investment by sector. But these swings appear to be more a sign of flexibility and adaptability of a public planning system, rather than a symbol of an erratic and dysfunctional provision system that failed to keep up with the infrastructure needs of the economy. Cross-country comparisons suggest that Thailand, just like Malaysia, has developed internationally competitive infrastructure networks (Figure 12.A to Figure 12.D). While geographic differences complicate international comparisons, Thailand looks well endowed with roads and railway, and weaknesses in fixed telephone lines are compensated through widespread subscription to mobile phones. The transport and communication systems and the energy generating capacity continued to expand, infrastructure rankings put Thailand on par or not far behind Malaysia (Figure 12.E).

Figure 12: Infrastructure Indicators



Past Strength and Future Weakness

What accounts for this good performance? First, the Thai planning system was effective in articulating effective strategic visions and in coordinating government agencies and state enterprises in providing infrastructure accordingly. For example, Thailand has not suffered from power shortages in spite of rapid industrialization, suggesting that the cut-backs in energy spending at various times were consistent with demand trends and energy reserves. Second, Thailand spends a higher percentage of its GDP on infrastructure than many other Southeast Asian countries, even taking into account the significant slowdown during the 1998 to 2003 period (Figure 13.A). Public and private infrastructure expenditure in Thailand equaled 15 percent of GDP in 2003, compared to 7 percent in China and 3 percent in Indonesia and the Philippines, although the bulk of the difference accrues to the power sector.⁹ This investment has contributed substantially to promoting Thailand as industrial center in the region, and to establishing a competitive edge over previously competing areas such as the CALA areas and the Manila peri-urban area in the Philippines (Webster and Theeratham 2004).

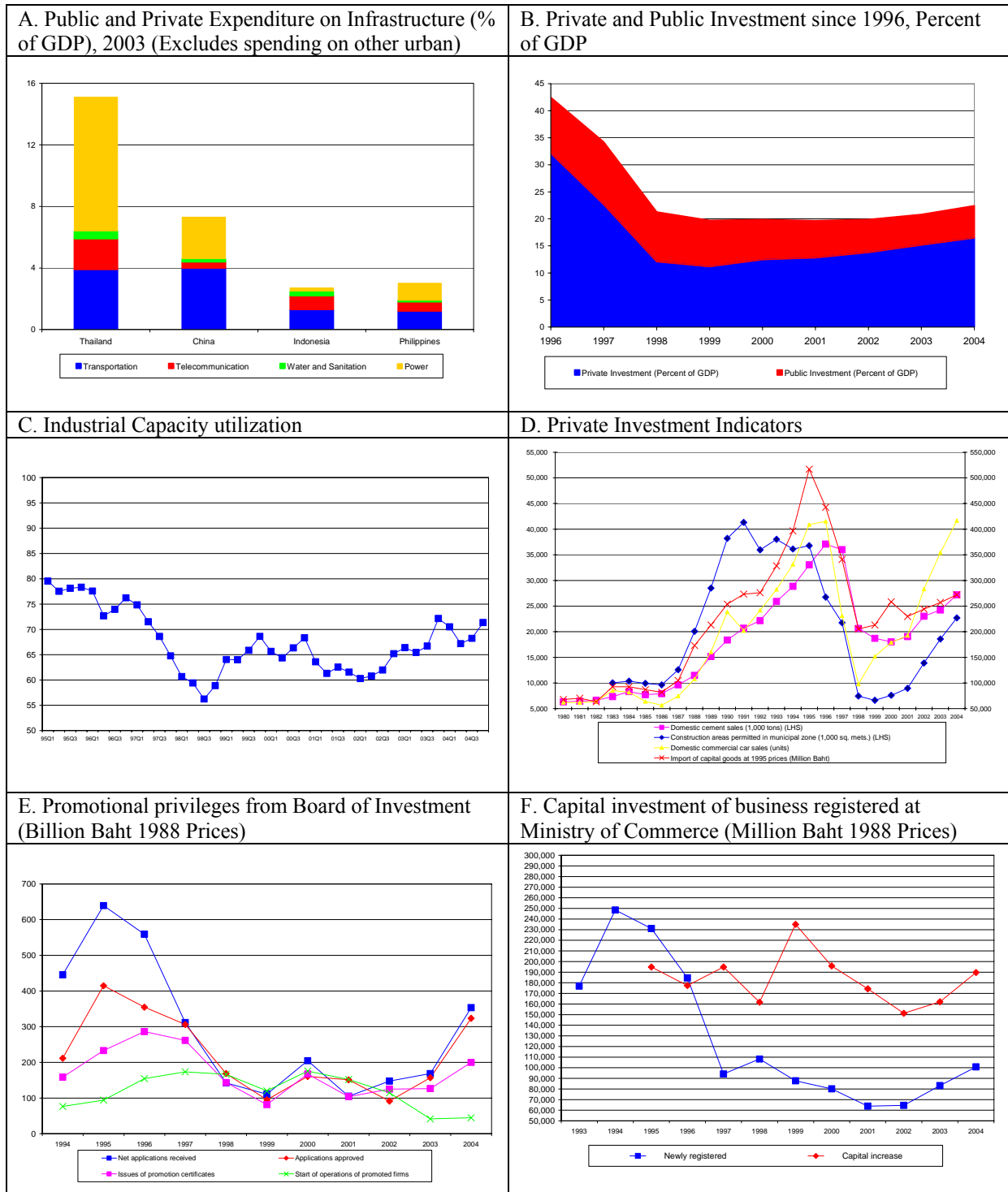
There are a number of weaknesses that infrastructure delivery going forward has to address (Webster and Theeratham 2004). First, some of the high-profile projects, such as the new Suvarnabhumi airport or the Bangkok mass rail system network, are to be completed between 10 to 20 years later than originally proposed. Second, participation of stakeholders early on at the project design stage is fairly limited,¹⁰ and detailed project design is often postponed until after construction has begun. These factors contribute to conflict and holdup. Third, infrastructure choices should be made before land use patterns become so established that retrofitting infrastructure becomes enormously expensive.

Fourth, while Thailand's infrastructure investment may look healthy compared to its neighbors, it is still feeling the pinch from the Asian crisis. 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 13.B). Similarly, public investment in 2003 was no more than 60 percent of the 1996 level. There are 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 (Figure 13.C) and good corporate earning ratios. Domestic cement sales, imports of capital goods and construction permits are on the increase, and domestic car sales have already reached pre-crisis levels (Figure 13.D). Investment promotion packages from the Board of Investment also point upwards, although promoted firms still are reluctant to launch the start of their operations and new capital investments registered at the Ministry of Commerce remain low (Figure 13.E and Figure 13.F).

⁹ NESDB's estimates are much lower due to a very narrow definition of infrastructure (Webster and Theeratham 2004). The international comparisons are indicative only due to data gaps.

¹⁰ The Environmental Impact Assessment for the Suvarnabhumi airport was less than five pages long and not publicly disclosed, even though 600,000 people are projected to live in this area by 2020.

Figure 13: Investment Indicators



Public Investment Drive

The government, reelected in February for a second term, has changed the infrastructure planning process to address some of these weaknesses. The Prime Minister's office lays out the development priorities, while the planning agencies are charged with fleshing out design details.¹¹ The government's plans to support investments 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 14.A and Figure 14.B). In real terms, public investment would exceed the 1997 peak from 2007 onwards. 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. The first priority 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.¹² 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 (World Bank 2005a).

A related issue concerns decentralization, and specifically local administrative capacity. Yet, there is a mismatch between capacity and needs at the local level. 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. 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. "It is not unusual for a peri-urban Tambon Administration Organization (sub-district), 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). In addition, the 6,754 TAOs are too small to ensure effective coordination either vertically (center and local) or horizontally (among local). In response to these problems, the government has shifted from a decentralization to a deconcentration process aimed at strengthening coordination at the province and province-cluster level.

¹¹ For example, a short-cut route for public project approvals bypasses the appraisal by NESDB, speeding up the process. It was used for the 2004 approval of the Laem Pak Bia Causeway across the Gulf of Thailand.

¹² 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.

Reluctant Private Sector

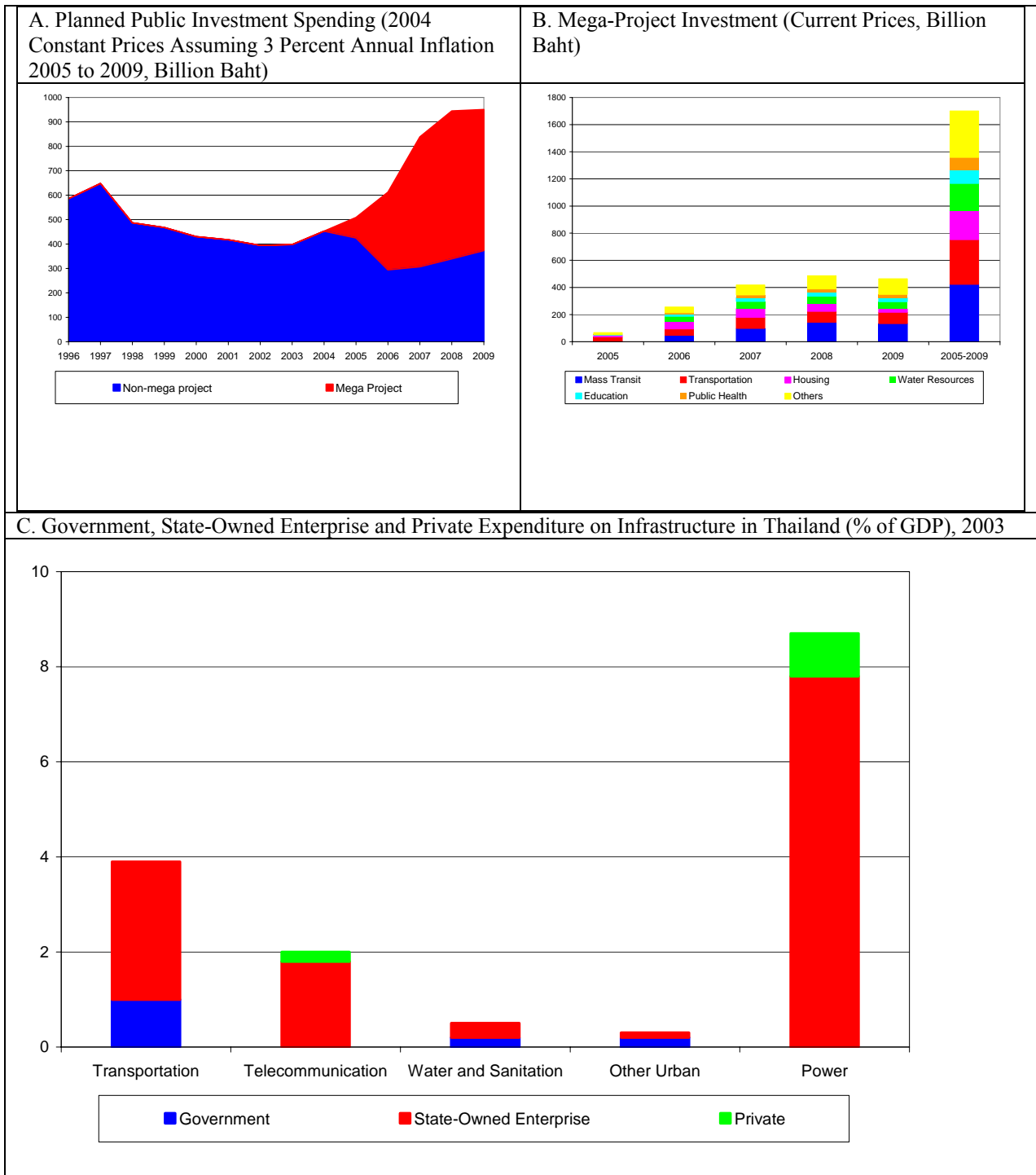
The financial modalities of the large-scale infrastructure projects are still unclear. One issue of public-private co-funding is a key aspect. As in most East Asian countries, public sector provision was for a long time the only service provision model. The costs of low tariffs were absorbed by government budgets, quasi-fiscal loans from state-controlled financial institutions, capital consumption or reducing operations. The bulk of infrastructure spending occurred through state enterprises, many of which established during the 1970s. Some of them are viewed to be efficiently run (Thai Airways, Petroleum Authority Thailand, Airports of Thailand, EGAT), while others are judged to be inefficient and providing poor services (WMA and State Railway Thailand). Only in the late 1980s, the private sector became an increasingly important force. The private sector has invested approximately \$190 billion in East Asian infrastructure since 1990. However, this is a minor share of the region's needs, and a minor share of total infrastructure investment in the past.

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 (Figure 14.C). Increased private sector participation is constrained by political resistance to user charges even in urban areas, and lack of clear regulatory environments both at the national and local levels (Webster and Theeratham 2004).¹³ Given the private sector's caution to engage in large-scale projects, it is not evident that many private companies will be forthcoming with resources. A 2004 perception survey of 50 private companies active or interest in East Asia infrastructure investment shows that private sector sentiment towards infrastructure investment is contingent on policy improvements and reduced risks (ADB, WB and JBIC 2005).

Overall, Thailand's infrastructure provision is satisfactory and infrastructure spending compares favorably with other countries in the region. The government is right in attempting to develop and implement a strategic view on infrastructure priorities. The administration has made progress in addressing new infrastructure needs, although the issues of funding and public-private partnerships are still to be solved. As emphasized in the next section, more needs to be done to extend infrastructure to outlying regions.

¹³ The Thai Supreme Court decided to nationalize the second stage expressway after a toll collection dispute between the Japanese concessionaire and the Expressway Authority of Thailand.

Figure 14: Mega-Infrastructure Projects and Public and Private Infrastructure Spending, 2003



V. Geography

Overview

Thailand's 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 less developed and more rural economy in the rest of the country. The neoclassical growth model predicts that low income regions grow faster than high income regions. Yet, in Thailand, poorer regions grew slower than richer regions since 1970 and the growth gap increased since 1986.

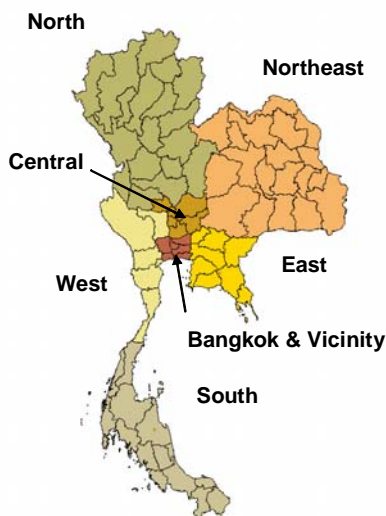
The lagging economic development of outlying regions is reflected in low overall urbanization as well as the supremacy of the extended Bangkok area among Thai urban centers. Compared to other countries, Thailand's urbanization was on par with its income level in 1963. Yet, urbanization lacked behind 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. Thailand's urban development is dominated by Bangkok. It had around 6.3 million inhabitants in 2000, which was about 17 times the number of residents of Thailand's second largest city. Changes in the growth dynamics of secondary cities have widened the gulf between the extended Bangkok area and other regions even further. The largest population growth over the last two decades has taken place in Bangkok's peripheries. 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; is by far the large domestic market; has access to a major port; is a conduit for inter-regional traffic; and is located above most of Thailand's groundwater.

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. As the importance of manufacturing has grown, the Center has taken off. 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. The differences in growth dynamics of manufacturing are linked to differences in the sectoral composition. The fast-expanding sectors, such as electronic parts, machinery, and auto parts, rely on strong enterprises linkages and locate primarily around the Bangkok area. Outlying regions also lag behind in technological capability. Given the lack of jobs and lower wages, people from outlying regions leave 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. Their remittances support a large service sector and improve household welfare. The challenge for economic policy is to strike a balance between supporting lagging regions to reduce poverty and achieve economic integration on the one hand, and tackling growth constraints in prosperous regions that provide the underpinning for the country's economic growth on the other hand.

Agglomeration

Many developing countries have well-recognized areas where poverty has been persistently high and economic growth has not kept up with other regions.¹⁴ 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 (Figure 15). 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. 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 less developed and more rural economy in the rest of the country.

Figure 15: Thailand’s Region



¹⁴ Section V draws on World Bank 2005b.

Regional Divergence

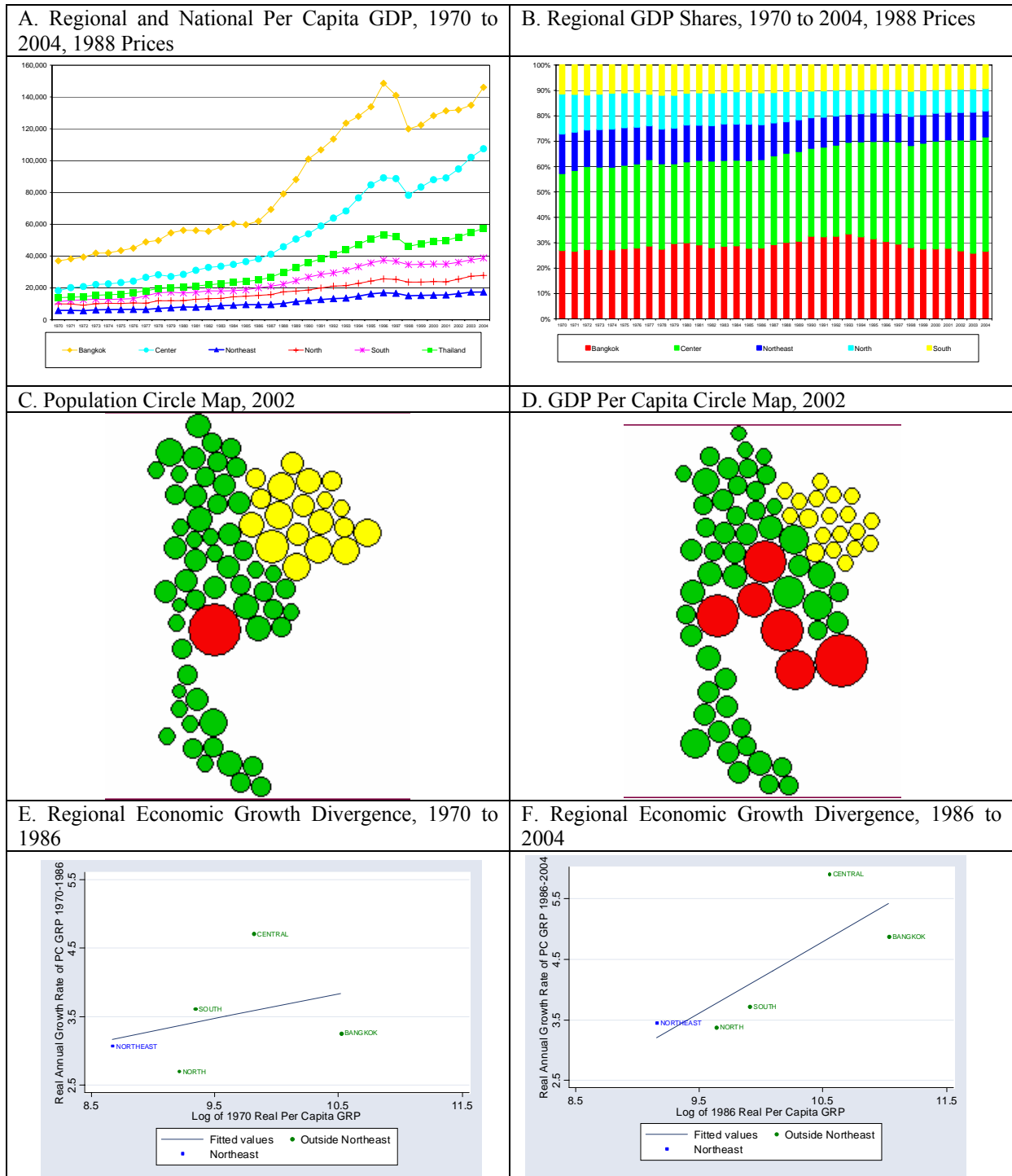
Growth in Thailand over the last three-and-a-half decades benefited all regions, but Bangkok and Center, the better-off regions, expanded fastest. Since 1970, the well-off Center and Bangkok expanded by 4.1 percent in real per capita terms, whereas the poorer outlying regions of the South, Northeast, and North grew by 3.7 percent, 3.3 percent and 3.1 percent, respectively (Figure 16.A). As a result, the Thai economy is more and more concentrated around Bangkok and the Center. Their share increased from under 60 percent in 1970 to just over 60 percent in 1986, reached 70 percent by 1996, and increased to 72 percent in 2004 (Figure 16.B).

A simple way of visualizing the differences in regional contributions to the population and value added per capita is through circle maps. Figure 16.C and Figure 16.D display 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, while there are six outliers in terms of GDP per capita, all located in and around Bangkok. Moving from the left to the right figure, the Northeast region shrinks in size, as its economy does not match its population.

Figure 16.E and Figure 16.F summarize the convergence record. 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. 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. 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. 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.¹⁵ Yet, in Thailand, poorer regions grew slower than richer regions since 1970. And the growth gap increased since 1986, as overall growth increased.

¹⁵ 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). 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 Composition of Gross Domestic Product, 1970 to 2004



Urbanization and Development

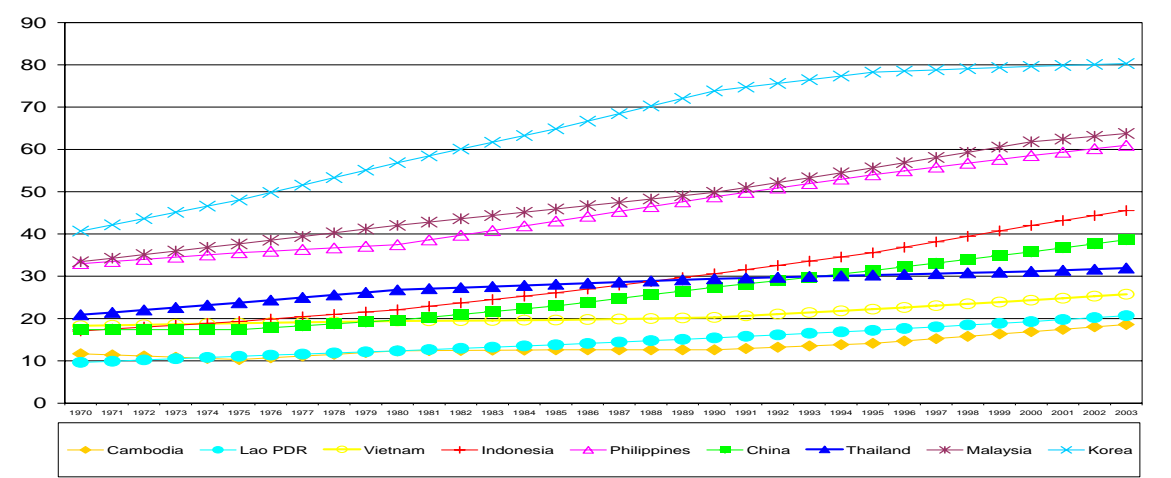
Urbanization refers to the process of growth in the population share living in cities, towns, and sub-urban areas. It is a territorial response to a structural shift away from agricultural in the economy, associated with features like division of labor, advanced production technology, variety in goods 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 17.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 17.B). Yet, urbanization lacked behind 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.

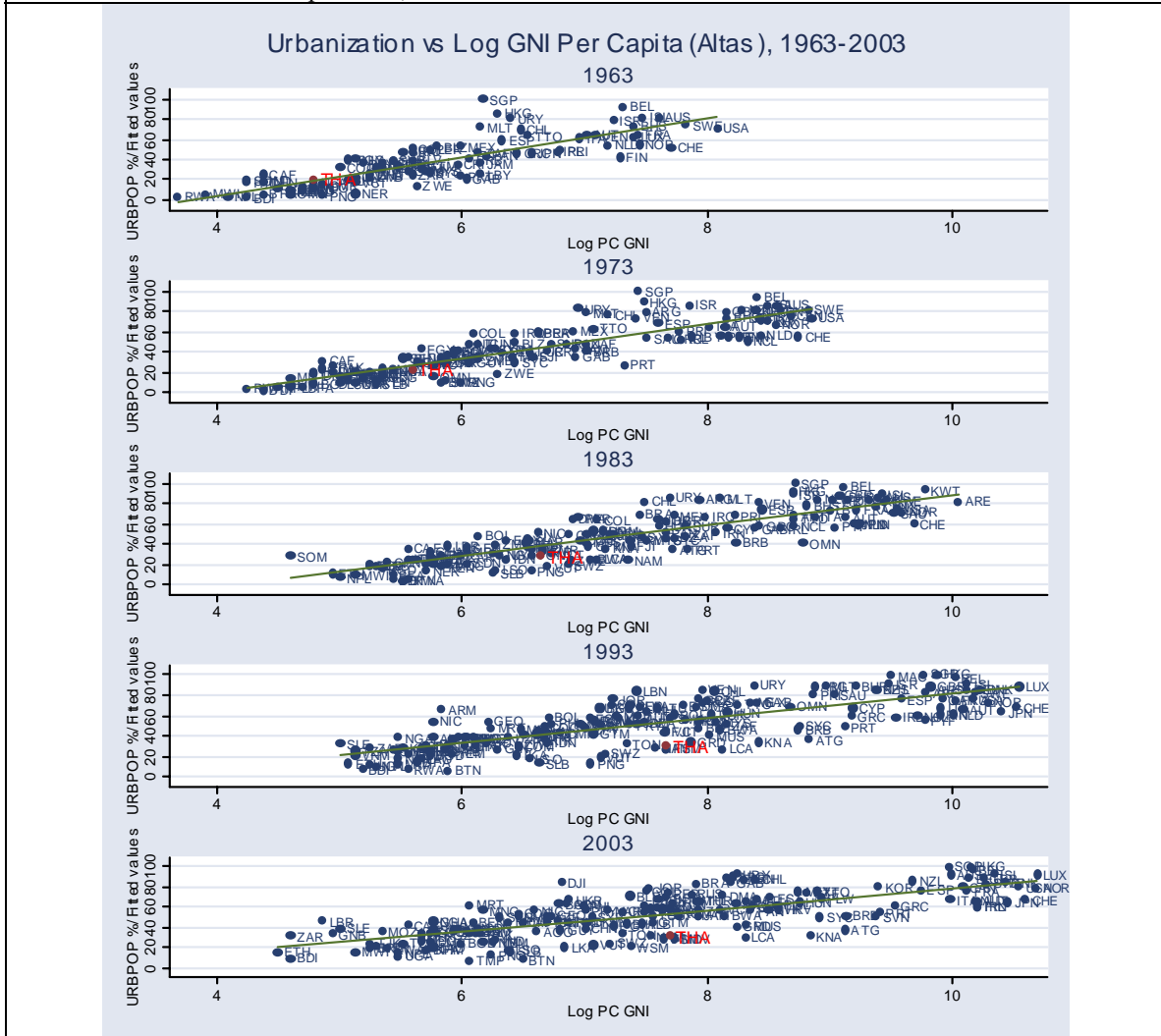
Across the world, densely-populated urban areas have been a force behind development. They provide markets for outputs, inputs, labor and other services and allow firms to profit from economies of scale and scope, specialization and the rapid diffusion of knowledge and innovation. For example, the US 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 17: Urbanization Indicators

A. Urbanization in East Asian Countries, 1970 to 2003



B. Urbanization and Per Capita GNI, 1963 to 2003

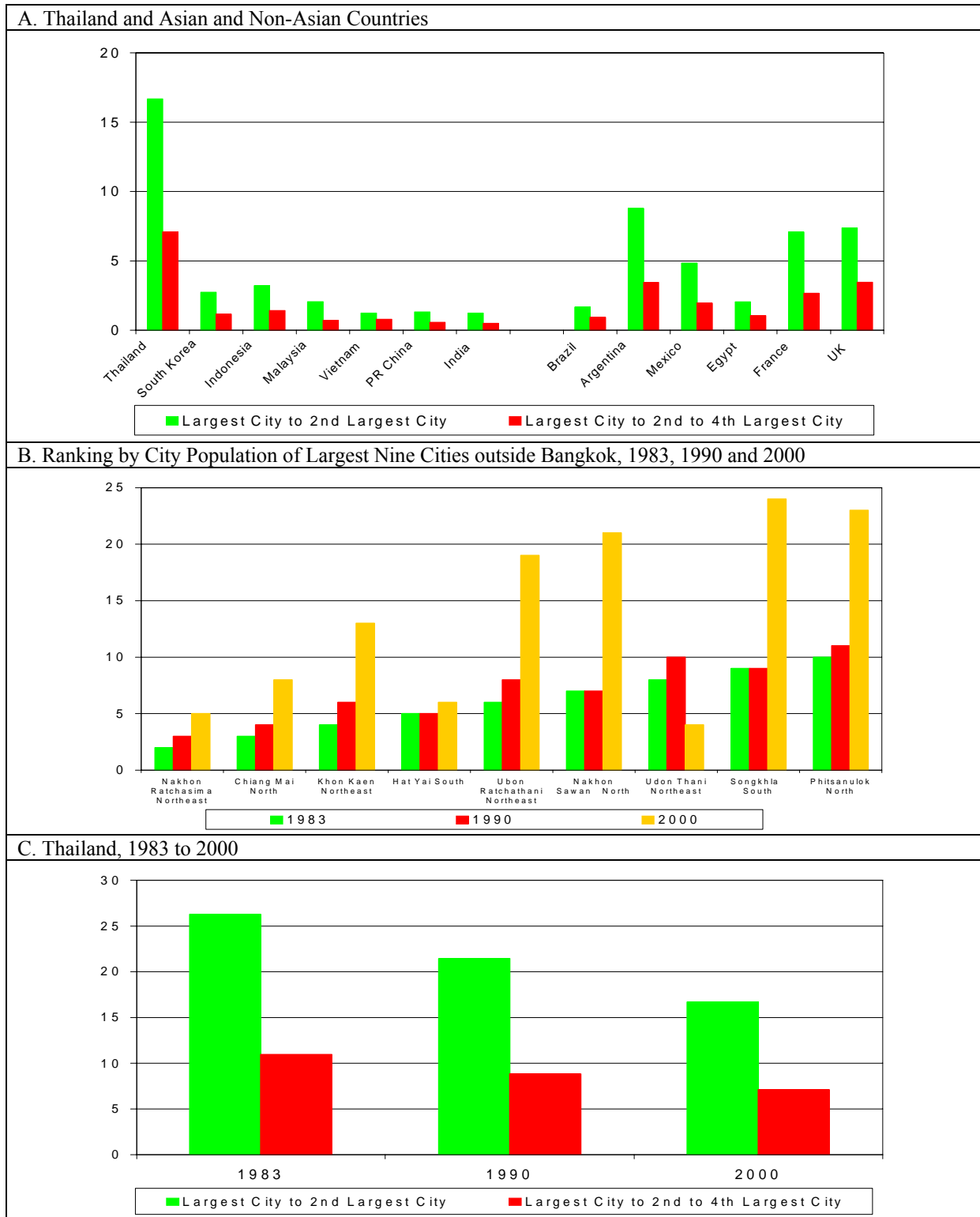


A Dominant Primate City

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 (Figure 18.A), the factors of primacy conform to experience elsewhere. 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).

Changes in the growth dynamics of secondary cities have widened the gulf between the extended Bangkok area and other regions even further. 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 18.B). Clearly, Bangkok's strong pull factor has undermined urban development in outlying regions. The rise of these urban agglomerations in Bangkok's neighborhood has led to a fall in the primacy index for Thailand (Figure 18.C), while at the same time widening the gap between the extended Bangkok area and the rest of Thailand. 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 Philippines' National Capital Region, the cross-border cluster of Singapore-Riau-Johore, and Bangkok, Vicinity and Eastern Seaboard in Thailand.

Figure 18: Primacy Indices



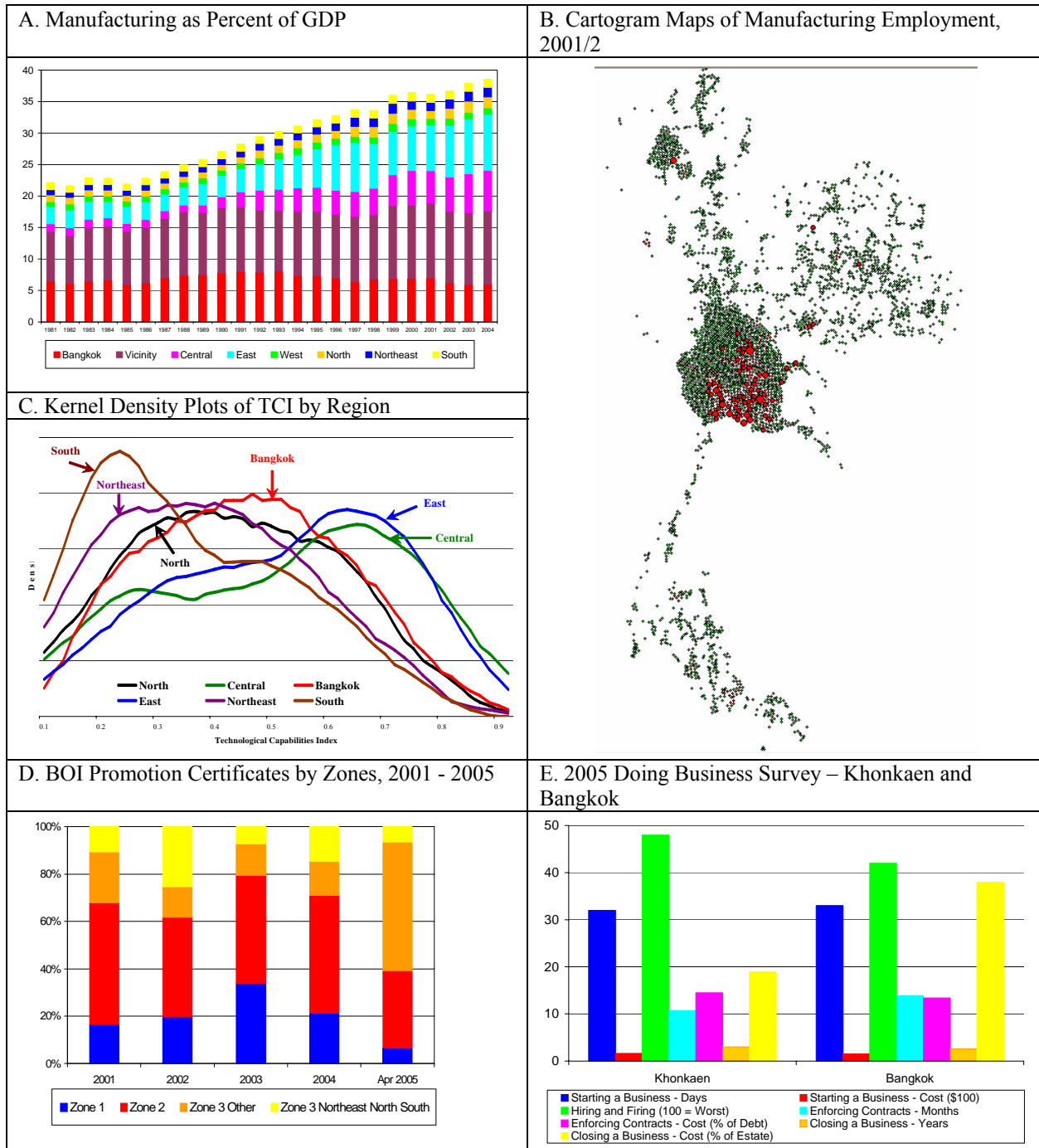
Inability to Attract Manufacturing

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 19.A). Figure 19.B plots circles of employment for enterprises with 10 workers or more, where the size of the circles corresponds to employment levels. There is a strong concentration of employment in and around the Bangkok area.

The differences in growth dynamics of manufacturing are linked to differences in the sectoral composition. The fast-expanding sectors, such as electronic parts, machinery, and auto parts, rely on strong enterprises linkages and locate primarily around the Bangkok area. Outlying regions also lag behind in technological capability (TC). Establishments located in the East and Central score highest and those in the North, Northeast and the South regions score lowest on the TC index scale (Figure 19.C). Low agglomeration and weak technological capabilities ultimately lead to low efficiency in combining capital and labor to generate output. For example, the Northeast's total factor productivity is estimated to be 30 percent less than Bangkok's (World Bank 2005a). 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 BOI has divided the country in three zones based on proximity to Bangkok, and offered higher incentives to outlying zones. Nevertheless, the share of the North, Northeast and South in BOI promotions averaged less than 10 percent since 2001 (Figure 19.D). 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. 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.

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 Khonkaen (Figure 19.E). 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.

Figure 19: Spatial Distribution of Manufacturing



Migration for Wage Jobs

Finding employment in Thailand is not a problem. Even during the Asian crisis, the employment rate dropped by no more than 4 percent. First, wages are downward-flexible as labor unions are weak and minimum wage legislation is not 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 return to family or other farms.

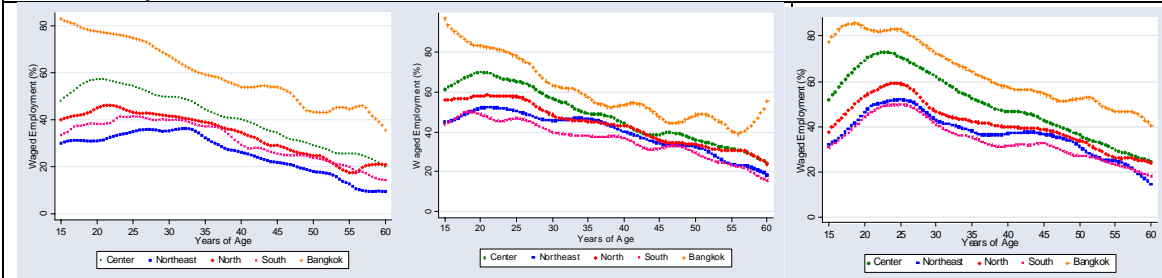
While getting a job is easy, receiving a good wage is harder. Only about two-fifths of workers in the Northeast, North or South earned a wage at the age of 35, and just over one fifth earned a monthly wage (Figure 20.A and Figure 20.B). This compares to two thirds and one half in Bangkok, respectively. Wage employment is not only harder to come by, but it is also less well enumerated. Wages in the outlying regions, whether paid daily or monthly, are around 50 percent less than those in Bangkok (Figure 20.C). These differences in wages and wage employment rates link back to occupation and education, as high wages and wage employment is more common outside of agriculture and among skilled workers. While the importance of agriculture as job provider has declined across the country, agriculture remains the dominant employer, even during the off-season, still providing jobs to more than 45 to 50 percent of workers in the North, Northeast and South. The key sector that provides monthly wage jobs in the Northeast, North or South is services rather than industry.

Given the lack of jobs and lower wages, workers turn to migration, especially among the young. People from outlying regions leave 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. 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 20.D). But perhaps the most important effect of migration is remittances, which support a large service sector and improve household welfare. 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.

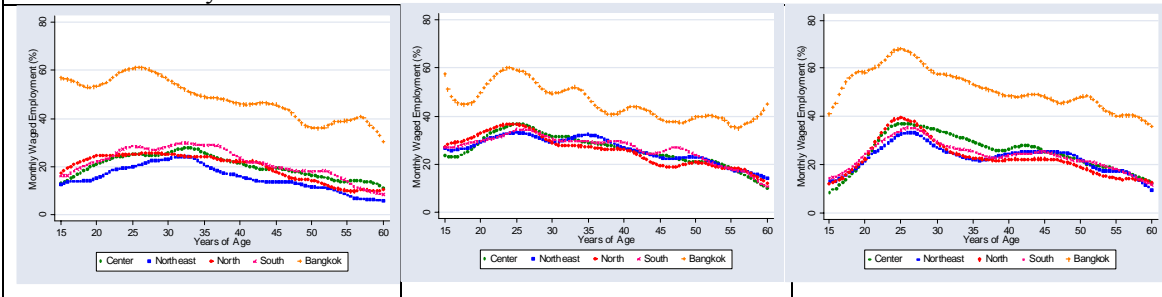
Regional economic convergence is only one part of the development challenge, but it is in Thailand among the most important. Much of Thailand continues to grow rapidly, driven to a considerable extent by the growth pole of the extended Bangkok area. Urbanization is proceeding, but from a lower level 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 on the one hand, and tackling growth constraints in prosperous regions that provide the underpinning for the country's economic growth on the other hand.

Figure 20: Employment Composition

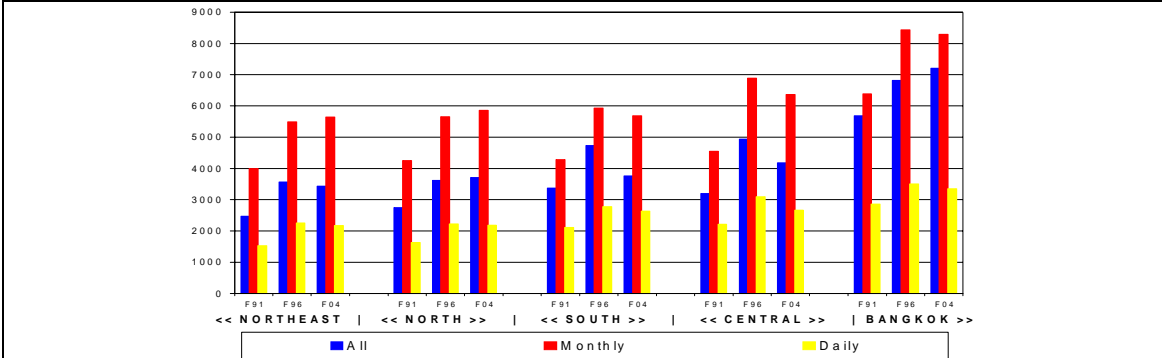
A. Wage Employment as Percentage of Overall Employment by Region; February 1991, February 1996 and February 2004



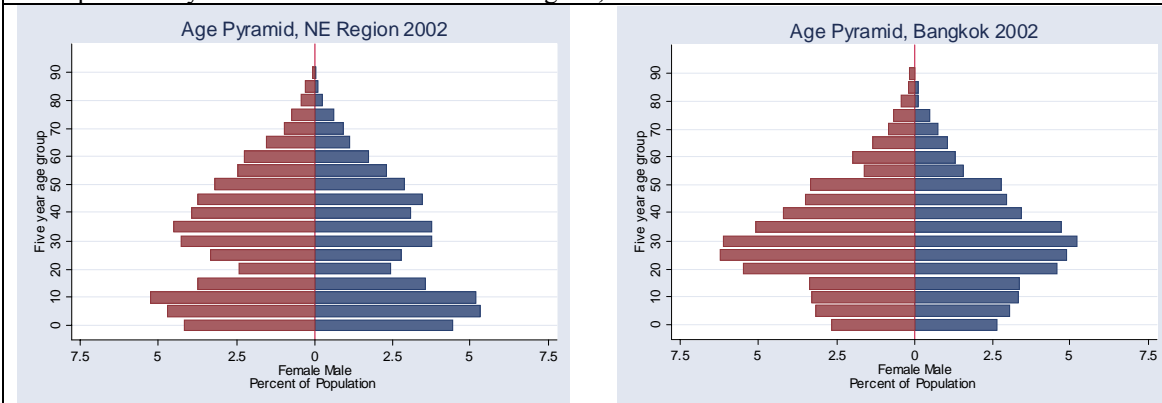
B. Monthly Wage Employment as Percentage of Overall Employment by Region; February 1991, February 1996 and February 2004



C. Wages in February 1991, February 1996, and February 2004



D. Population Pyramids in the Northeast and Bangkok, 2002



VI. Skills

Overview

The strong rise in exports over the last decade suggests that lack of skilled labor may well become the binding constraint to growth. According to this view, Thailand's comparative advantage, as that of other middle income countries, is shifting up the skill ladder towards more skill-intensive products with economic development and globalization. This trend is expected to accelerate over time, increasing demand for skilled workers. Unless the supply of skills is improved, it is likely to fall short of what is needed to sustain a more skill-intensive growth path. However, the wage patterns since the 1997 crisis tell a different story. The real hourly wage of monthly wage workers, the most qualified group of workers, increased in real terms annually by about 7 percent from August 1991 to August 1997, but they declined by 3 percent from August 1997 to August 2004. Since the crisis, employed workers have become older and more educated, yet their wages have stagnated.

What could account for the absence of wage pressure? One factor is that the supply of skilled labor has vastly increased. Thailand's primary education rate was high already in 1960s, and access to education increased continuously over the last 20 years. Higher school attendance came together with more students reaching higher education levels. Among the 6 to 25 year-old, the share attending lower secondary or higher education levels more than doubled to around one third between 1988 and 2002. Thailand's expansion of access to secondary and tertiary education is unlikely to have come at the expense of quality. International achievement test show Thai students consistently outperforming not just Indonesia, whose per capita national income is less than half of Thailand's, but also Tunisia, Brazil and Mexico whose income levels are 20 percent to 300 percent higher than Thailand. As to be expected, the increase in enrolment rates since the early 1990s led to a more qualified labor force. The labor force with more than primary education doubled since 1991 to reach close to 40 percent in 2004. Today, the 25-year old entrées to the labor market are clearly more skilled than their counterparts in the early 1990s. The Asian crisis accelerated this trend, as young adults decided to continue schooling due to a lack of well-paying jobs.

In addition, demand for skilled labor may not have risen as fast. As discussed in Section I, in spite of the sharp rise in exports and expansion of manufacturing since the mid-1990s, the contribution of heavy and high-skill labor-intensive industries is still below the levels of prior to the Asian crisis. Correspondingly, the amount of jobs with monthly wages is below the 1997 level. As supply of skilled workers increased faster than demand, the wage gap between workers with and without skills failed to increase. The returns on educational achievement relative to less than primary education are flat over time and there is no trend towards higher wage differentials across skill levels.

Overall, while the Asian crisis took place almost eight years ago, sluggish labor demand and wage rates suggest that its impact is still being felt. A reduction in monthly wage jobs, combined by an increase in the supply of educated workers, has allowed companies to improve the skill profile of their workers without raising wages.

Catching Up on Enrollment

The strong rise in exports over the last decade suggests that lack of skilled labor may well become the binding constraint to growth. Indeed, about 30 percent of manufacturing firms consider this as severe or very severe obstacle according to the 2004/5 Investment Climate Survey (World Bank 2005a). The argument goes as follows. With economic development and globalization, Thailand's comparative advantage, as that of other middle income countries, is shifting up the skill ladder towards more skill-intensive products. This trend is expected to accelerate over time, increasing demand for skilled workers. Unless the supply of skills is improved, it is likely to fall short of what is needed to sustain a more skill-intensive growth path. However, data on Thailand's manufacturing sector suggested that in spite of the sharp rise in exports since the mid-1990s, the contribution of heavy and high-skill labor-intensive industries is still below the levels of prior to the Asian crisis (Figure 7.C). This section will look at education and wages for evidence on increasing returns to skills.

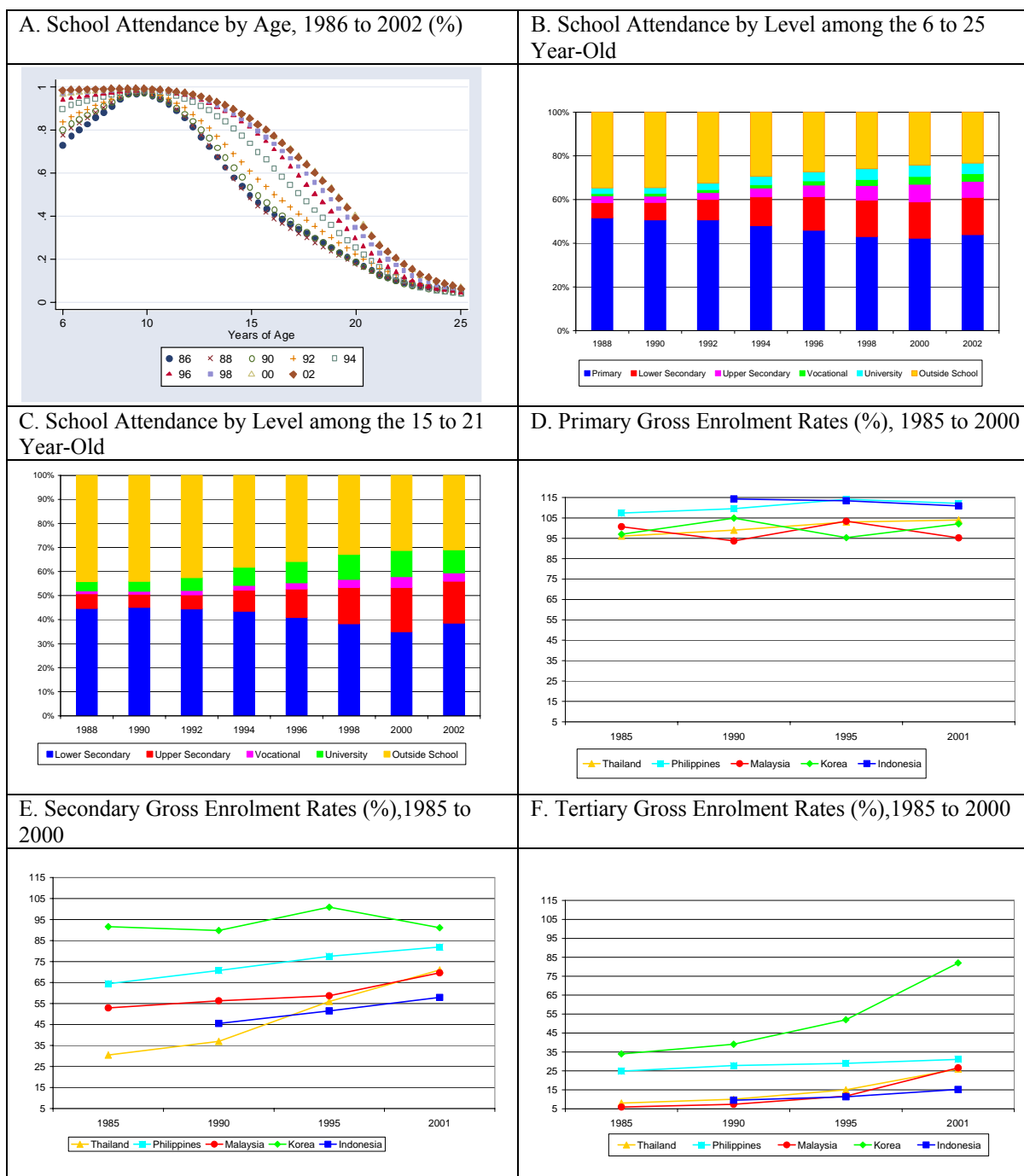
Thailand's primary education rate was high already in 1960s, and access to education increased continuously over the last 20 years.¹⁶ Figure 21.A shows that attendance to educational institutions was substantially higher in 2002 than in 1986 across all age groups. While less than half of the 15 year-old were in school in 1986, it is more than four in five in 2002. Higher school attendance came together with more students reaching higher education levels (Figure 21.B). Among the 6 to 25 year-old, the share attending lower secondary or higher education levels more than doubled to around one third between 1988 and 2002.¹⁷ Among the age group of the 15 to 21 year-old, one in ten attended university in 2002, compared to one in 25 in 1988, and close to one in five upper secondary education, compared to one in 16 in 1988 (Figure 21.C).

How does Thailand compare internationally in terms of access to education? At the primary level, there is almost universal access, similar to other East Asian countries (Figure 21.D). By contrast, gross secondary enrolment lacked behind until the late 1980s. It increased strongly during the 1990s, and reached levels similar to Malaysia by 2001 (Figure 21.E). Tertiary enrolment began increasing from the mid-1990s onwards, reflecting partially the impact of higher secondary enrolment (Figure 21.F). By 2001, Thailand was on track to closing the gap to the Philippines.

¹⁶ Universal primary education was introduced in 1932, in the aftermath of the coup d'etat, in order to promote nationalism and support for the new regime. The government also wanted to equip ethnic Thais to compete with the Chinese (Christensen et al 1993). Mandatory schooling was extended to six years (upper primary) in 1978 and to nine year (lower secondary) in 1999.

¹⁷ Vocational education covers lower, upper, and higher education. University education includes teacher training. The education questions in the SES questionnaire changed in 2002, making a comparison of secondary, vocational and university enrolment between 2000 and 2002 problematic.

Figure 21: Education Indicators



Quality Gap with the Best

Did Thailand's expansion of access to secondary and tertiary education, just as other come at the price of lower quality of education? The government has begun reforming the education system. The agenda includes upgrading teacher training, modernizing curricula to meet international standards, operating 175 Local Education Authorities in line with the 1999 National Education Act, promoting school accountability towards parents, and raising mandatory schooling to 12 years by 2015. While there are no data to assess trends in the quality of education over the last decade or so, it is possible to compare Thailand to other countries in terms of test scores. At first glance, it seems that international comparisons of test scores confirm the weaknesses in knowledge and creative thinking. The 2003 Program for International Student Assessment (PISA) found that 15 year-old Thais ranked 36rd in mathematics, in science and in reading out of 40 countries.¹⁸ By contrast, their Korean counterparts ranked second in mathematics and in reading and fourth in science. For mathematics, this translates into more than one in two Thai failing to progress beyond the most basic proficiency level compared to only one in twenty Korean. The 2003 PISA results were similar compared to the first assessment in 2000, perhaps indicating that the ongoing education reforms have not yet born fruit.

However, this pessimistic reading of Thailand's performance can be challenged. Of the 40 PISA countries, 33 are OECD member states. In fact, Thailand consistently outperforms not just Indonesia, whose per capita national income is less than half of Thailand's, but also Tunisia, Brazil and Mexico whose income levels are 20 percent to 300 percent higher than Thailand. The results of the 1999 Trends in International Mathematics and Science Study (TIMSS) show a similar pattern.¹⁹ TIMSS is more evenly balanced among high-, middle- and low-income countries. It includes only 13 industrialized countries out of the 38 participants. Thailand's eight-graders ranked 27th in mathematics and 24th in science (statistically equal to the international average). Again, this position looks abysmal against Asian high-income countries: Singapore, Korea, Chinese Taipei, Hong Kong, and Japan occupied the top five ranks in mathematics, and Chinese Taipei, Singapore, Japan and Korea were placed among the top five in science. Yet, relative to national income levels, Thailand's performance is satisfactory (Figure 22). For both mathematics and science, Thailand ranks above the trend line for its per capita GNI level. While there are many countries that do worse with lower income (including Indonesia and the Philippines in the southwest quadrant relative to Thailand) or higher income, only Bulgaria does better at the same income, arguably due to the legacy of high human capital during the Communist period.²⁰

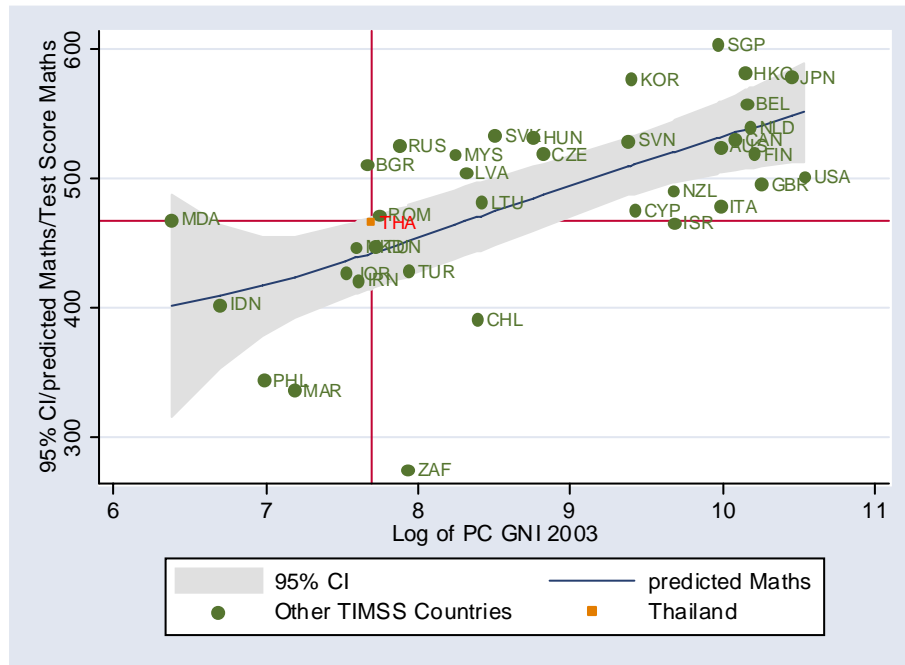
¹⁸ PISA measures the skills and competencies that students have acquired and can apply to real-world context by age 15. The mathematics test had four subcomponents. Thailand ranked 36th in three of them and 34th in one.

¹⁹ TIMSS measures the skills that eight-grade students (typically 14 to 15 years of age) have acquired for the topics from curricula. Thailand did not participate in the 2003 TIMSS. It took part in the 1995 TIMSS but the sampling deviated from approved procedures and the results are likely to be biased upwards.

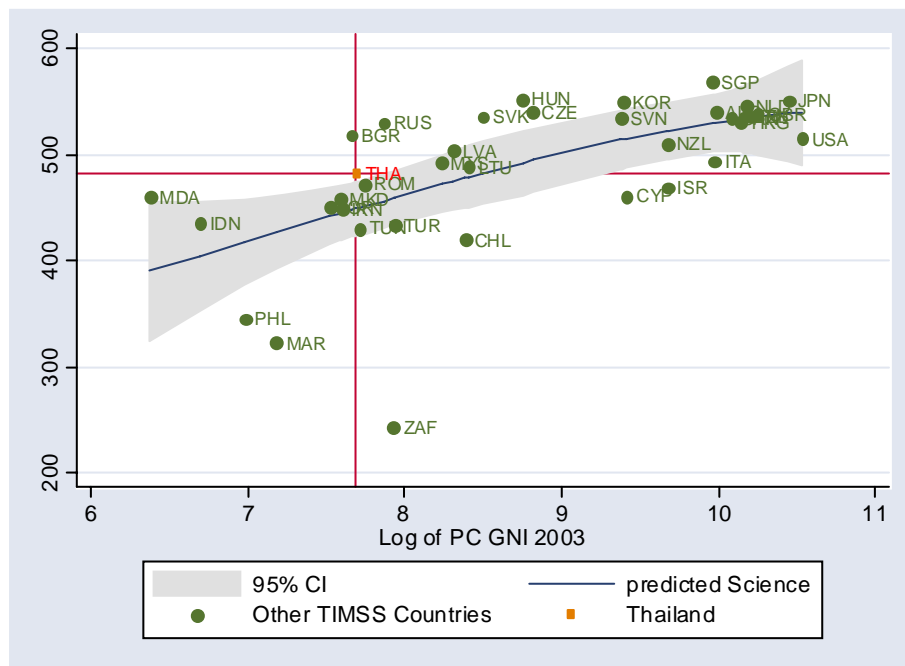
²⁰ The same holds for Moldova, which is substantially poorer and has similar test score results.

Figure 22: The 1999 Trends in International Mathematics and Science Study and National Income Levels

A. Mathematics Test Scores and 2003 Per Capita GNI



B. Science Test Scores and 2003 Per Capita GNI



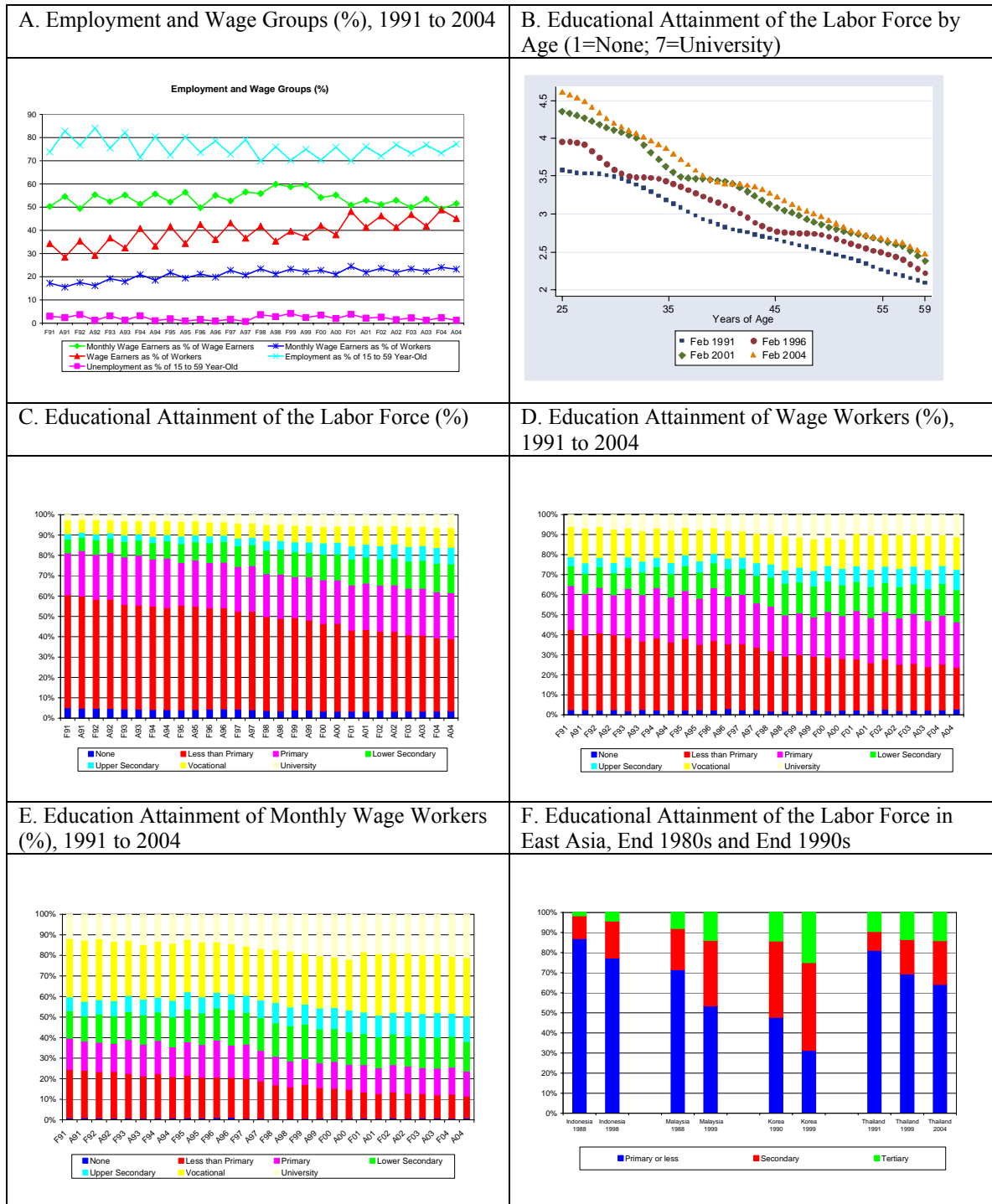
Better Educated Labor Force

Before looking at how the rise in educational attainment translated into higher skills of the labor force, it is useful to have a brief look at the types of workers in the labor market. The Labor Force Survey (LFS) shows that between three-quarters to four-fifths of the population aged 15 to 59 years were employed in 2004 (Figure 23.A). Unemployment never rose above 5 percent and was just over 1 percent in August 2004. The rest are those not in the labor force due to household duties, old age, seasonality, studying, or other reasons. Labor force participation dropped by about five percent due to the early 1990s, principally due to more and longer school attendance and in spite of a decline of seasonal work.

With economic development, more people leave family work, primarily in agriculture, to take up wage employment. Indeed, the share of wage workers among the employed in February increased by about one half. The rise in wage employment also led to a decline in the August harvest season effects. Nevertheless, still more than half of all jobs were non-wage in 2004. Further, among wage workers, only about half received monthly wages in 2004. While almost 99 percent of the monthly wage workers are covered by the 1998 Labor Protection Act or are public sector workers, only 70 percent of other wage workers, and six percent of non-wage workers, belong to these categories. Remarkably, the share of monthly wage workers among wage workers is unchanged compared to the early 1990s, and about 10 percent lower than prior to the crisis in 1996. Due to the continued rise in wage employment, the share of workers on monthly payroll in total employment increased up to 1996 and stagnated since.

As to be expected, the increase in enrolment rates since the early 1990s led to a more qualified labor force. The education attainment of the labor force improved steadily since the early 1990s. The labor force with more than primary education doubled since 1991 to reach close to 40 percent in 2004. Today, the 25-year old entrées to the labor market are clearly more skilled than their counterparts in the early 1990s (Figure 23.B). The Asian crisis accelerated this trend, as young adults decided to continue schooling due to a lack of well-paying jobs. The skill profile of wage workers at any given year is substantially better than that of the labor force overall (Figure 23.D compared to Figure 23.C). It improved steadily over time in spite of the higher share of wage employment in total employment, although the share of wage workers with upper secondary education or more remained constant since 1998. Wage workers on a monthly payroll have better skills than those of wage workers overall (Figure 23.E). Almost one in two finished at least upper secondary education. Perhaps due to the crunch in jobs on monthly wages since the crisis, the improvement in the skill profile of monthly wage workers continued up to today in contrast to the wage workers overall. In spite of the improvement, Thailand's stock of human capital is still lower than Malaysia's and especially Korea's (Figure 23.F). Both countries made impressive strides in improving attainment levels since the mid-80s. While Thailand's current labor force looks skilled relative to Malaysia's in the late 1980s, it still looks unskilled relative to Malaysia's in the late 1990s.

Figure 23: Labor Market Indicators



Flat Returns

While skill supply increased, has it kept up with demand? If demand is outpacing supply, one would expect to see the wage gap between workers with skills and without skills to increase. Figure 24.A (all wage workers) and Figure 24.B (monthly wage workers only) suggest that, first, more education is associated with higher wages at any point in time; and, second, real monthly wages trended upward until 1996, fell during the crisis, and remained roughly constant since, especially for secondary or higher education levels. Wage data from the national Socio-Economic Surveys (SES) from 1986 to 2002 for wage workers confirms this pattern, although the actual wage time series differ somewhat (Figure 24.C).

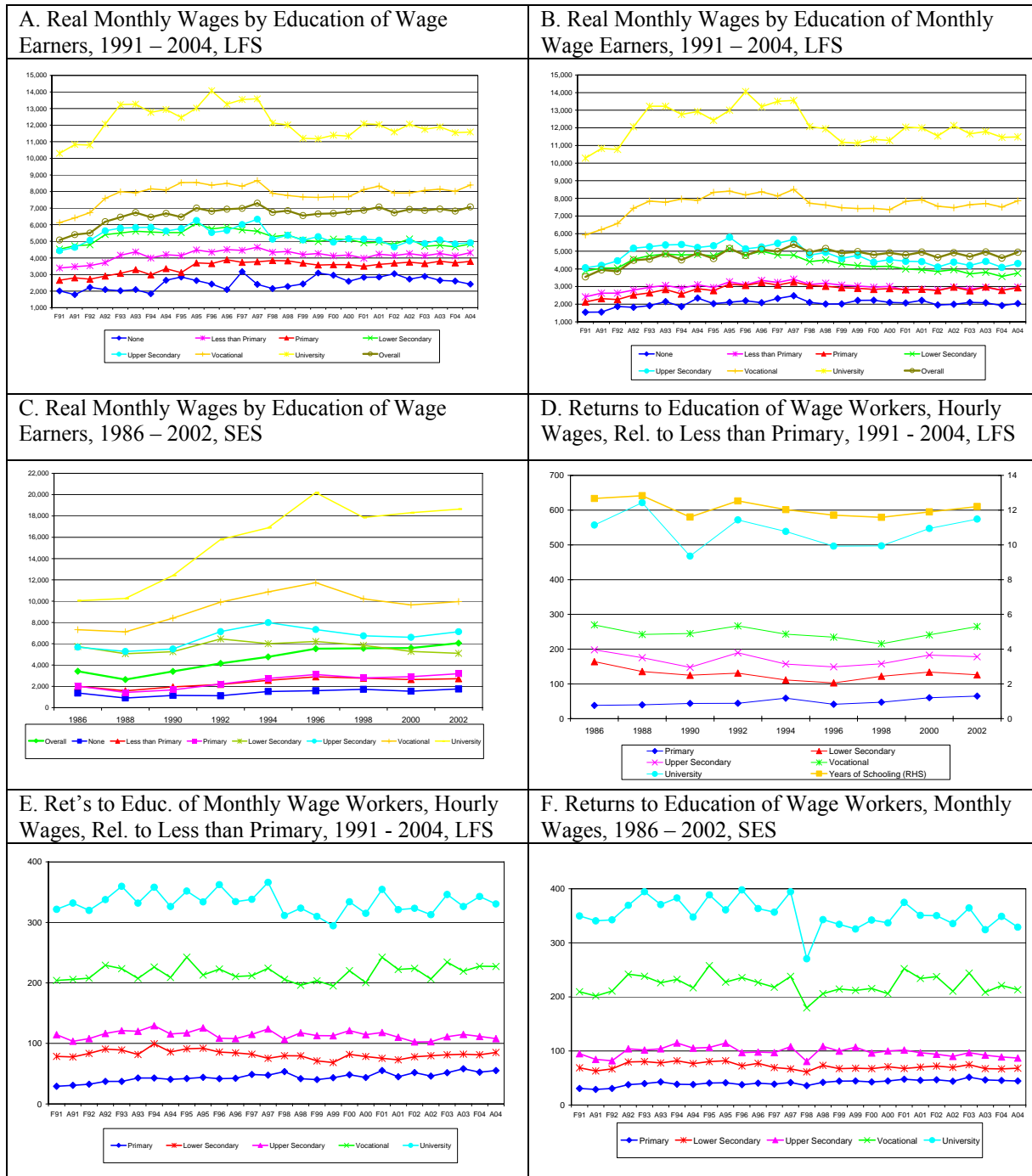
Combining wages and education, it is possible to estimate returns to education over time using Mincer regressions. In its most basic form, log hourly wages are regressed on education, controlling for age, age squared, gender, province and urbanization.²¹ Figure 24.D shows the coefficients on education levels from a series of such cross-sectional regressions for 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 returns relative to less than primary education are flat over time and there is no trend towards higher wage differentials across skill levels. If anything, there is a small downward shift of returns to university post crisis.

A robustness check is to restrict the sample to workers on a monthly payroll, in case rising returns are restricted to workers in regular employment. Again, there are no signs of rising returns to skills (Figure 24.E), apart from modest increases for primary and vocational education. The wage premium to university is even higher, but again, the returns to education look fairly stable over time. Using years of schooling instead of education level, the returns equal to 12.2 in 2002, compared to 12.7 in 1986 and 11.7 in 1996 (top line in Figure 24.F).²² This is roughly comparable to other countries. For example, Psacharopoulos and Patrinos (2002) give 14.7 percent for Brazil, 10.3 percent for Argentina, 12.6 percent for the Philippines, and 9.4 percent for Malaysia, but the comparisons are problematic due to differences in data, methodology, and years.

²¹ 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.

²² 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 24: Returns to Education



Sluggish Demand

One explanation for the lack of rising returns to education is that, while demand did increase, skilled labor supply rose by even more. Indeed, Figure 24.B and Figure 24.E suggest that the supply of skilled labor has increased continuously, which may have reduced upward-pressure on wages for skilled workers. Figure 25.A shows relative labor supply for adjacent skill groups. Relative labor supply increased by between 30 to 80 percent over the entire period. The sole exception is vocational education relative to upper secondary education, which decreased by 40 percent. At the same time, relative wages declined or remained the same, again with the exception of vocational education. Real hourly wages of upper secondary workers relative to lower secondary workers decreased between February 1991 to February 2004 by 11 percent, and of university workers relative to vocational workers increased by only 4 percent (Figure 25.B).

This contrasts with middle-income Latin American countries. Sanchez-Paramo and Schady (2003) find that real hourly wages of tertiary workers relative to secondary workers increased over the 1990s by 73 percent in Columbia, 48 percent in Mexico, 20 percent in Argentina and 12 percent in Brazil. Similarly, the wage of skilled workers in Malaysia rose 10 percent annually between 1987 and 1993, and the wage of unskilled workers rose less than 5 percent over the same period. The reason is that the supply of skilled workers did not keep up with demand (Tan and Gill 1998).

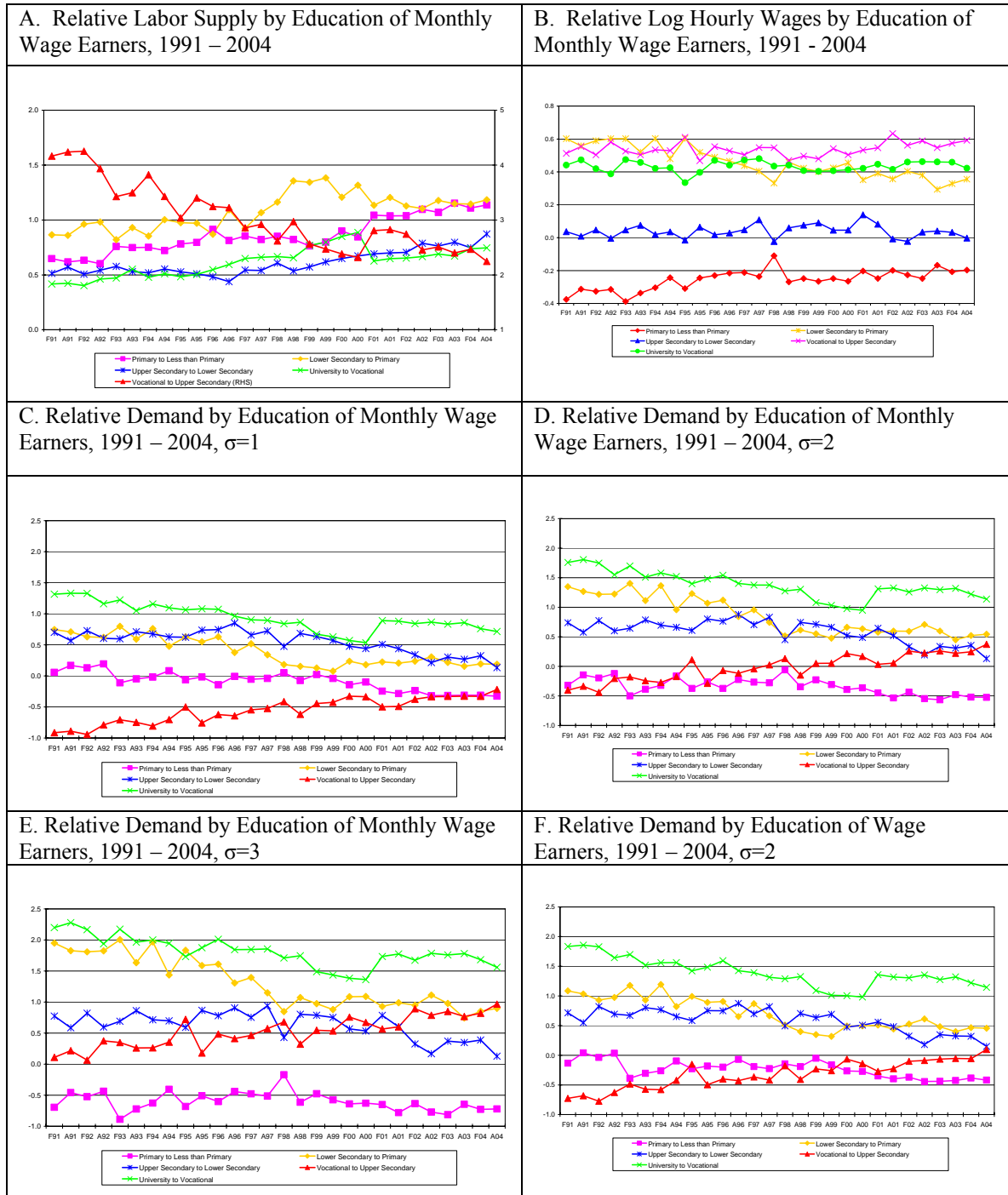
The combination of rising relative labor supply and falling relative wages suggests weakly increasing or declining labor demand. For vocational education, falling relative labor supply and rising relative wages also suggest small increases or decreases in relative labor demand. Katz and Murphy (1992) developed a framework to back out relative labor demand from relative wage trends controlling for relative labor supply.

Following the methodology laid out in Sanchez-Paramo and Schady (2003), Figure 25.C to Figure 25.E show relative labor demand for different elasticities of substitution across skill levels.²³ Labor demand for university relative to vocational education declined since the early 1990s, and labor demand for upper secondary to lower secondary education declined since early 1997. Labor demand for vocational education has risen throughout.²⁴ By contrast, Sanchez-Paramo and Schady (2003) show that relative labor demand for tertiary education increased over the 1990s for Argentina, Chile, Colombia and Mexico (and for Brazil since 1993).

²³ 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 constant elasticity of substitution. The economy is assumed to be operating on the demand curve, and labor supply is taken to be inelastic in the short run. Furthermore, 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 (Sanchez-Paramo and Schady 2003). In practice, the reweighing makes little difference to the findings.

²⁴ 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 25: Relative Wages, Labor Demand and Labor Supply

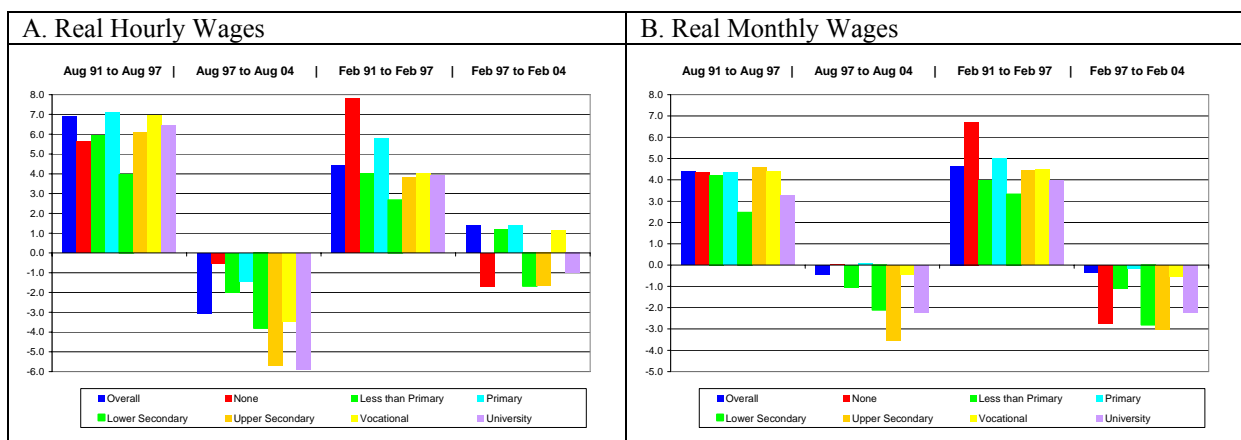


Recovery without Wage Growth

While the Asian crisis took place almost eight years ago, sluggish labor demand and wage rates suggest that its impact is still being felt. Perhaps the most striking change is the trend in wages. From August 1991 to August 1997, real hourly wage of monthly wage earners increased in real terms annually by about 7 percent, and declined by 3 percent from August 1997 to August 2004. Similarly, monthly wages of monthly wage earners increased in the first period by over 4 percent, yet remained constant in the second period. This pattern holds also for the agricultural slack season, although the changes in hourly wages are smaller. Along the lines of the Lewis surplus labor model (Lewis 1954), the rapid wage increases in the early 1990s suggested that the boom in manufacturing and services began to deplete the supply of unskilled rural labor. As the elasticity of labor supply increased, wages increased and the competitiveness of Thailand's exports declined. This process contributed to the collapse in export growth in 1996, the trigger for the Asian crisis. By contrast, the recovery has taken place without wage growth, in spite of annual GDP growth between 3 to 4 percent and unemployment rates around 1 percent.

This suggests that labor market conditions have changed. Indeed, employed workers have become older and more educated, yet wages have stagnated. The share of the labor force among the 15 to 59 year-old in August is still 2 percent below the 1996/97 level, as entry to wage jobs has become more difficult for the 15 to 20 year-olds. Unemployment for the 15 year-old labor market entrants are around 50 percent higher in 2004 than in 1996, and the average age increased from 31 to 34 years for a wage worker and from 33 to 35 years for a monthly salaried worker. Educational attainment has increased 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. Overall, the share of monthly wage workers among wage workers is about 10 percent lower than before the crisis. This reduction in monthly wage jobs, combined by an increase in the supply of educated workers, has allowed companies to improve the skill profile of their workers without raising wages.

Figure 26: Annual Real Growth in Wages of Monthly Wage Earners, 1991 to 2004



VII. Conclusion

Taking Stock

Thailand is a stellar performer in terms of growth. Its real per capita growth rate of 4.8 percent since 1960 was the seventh highest worldwide. From 1987 to 1996, Thailand grew even by 8.1 percent, the second highest growth rate after China. Yet, Thailand appears to be on a lower growth trajectory since the recovery from the Asian crisis, with growth averaging barely half the rate of the boom period. Lower growth today reflects the end of extensive capital accumulation: today's recovery stands only on one leg (exports) rather than two legs (exports and investment).

Private investment in 2004 was just over half of the 32 percent of GDP in 1996, and public investment reached only 6 percent, compared to 10 percent of GDP before the Asian crisis. The fast capital accumulation during the boom period was only possible due to a large capital inflow from abroad, much of it as short-term loans, attracted by high growth rates, low inflation, a liberalized capital market and a fixed exchange rate. Once export growth stalled, capital flows reversed and the exchange rate gave way, leaving the private sector stranded with foreign debt over two-thirds of GDP. Today, Thailand's external debt has fallen sharply due to current account surpluses, the private sector remains reluctant to take on foreign loans and inflation targeting provides a degree of flexibility in case of external shocks.

There are also important similarities between 1987 to 1996 and 1999 to today. As during the boom period, exports play a key role to the current growth spur. They accounted for 20 percent of GDP in 1980, rose to around 45 percent before the Asian Crisis, and now contribute close to 65 percent of GDP. In addition, the boom period coincided with double-digit industrial growth rates, and the recovery since 1999 is also led by industry with growth rates twice as high as in the other two sectors. As a result, industry is since 2003 Thailand's largest sector, contributing 46 percent of GDP, the bulk of which is manufacturing. The rise in exports and industry are in fact two sides of the same coin. 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.

Thailand has made great strides in increasing enrolment rates since the early 1990s, together with its neighbors. There is no obvious indication that higher access came at the cost of lower quality. Thailand does well in international skill assessments of 14 to 15 year-old relative to its income level. The quality gap exists only so far as the wealthier countries in the region, from Malaysia to Japan, are among the very best performers in these tests. Real wages increased up to 1996, fell during the crisis, and are still below pre-crisis level. Wage premiums relative to those with less than primary education have remained remarkably constant since the early 1990s. Controlling for the increases in skilled labor supply, relative labor demand has remained constant or declined over the same period, with the exception of vocational education. This suggests that Thailand's manufacturing continues to be primarily based on affordable labor and raw materials.

Policies

Thailand's challenge is to maintain growth levels of 4 to 5 percent over the medium term. To achieve this goal, Thailand needs to continue its efforts of improving business infrastructure, trade integration, and skills, as well as intensifying its governance reforms. 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, Thailand's most important growth driver. On the one hand, improving the business environment in the manufacturing in the Central and East regions 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. On the other hand, 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.

In the longer term, growth will depend on how well Thai policymakers meet the challenge of skills, trade integration and governance. First, the skills of workers have to improve to allow them to compete on par with workers from more advanced countries in the region. The expansion of education to secondary education facilitated the recovery from the Asian crisis, as it allowed enterprises to raise the skills of their workers without boosting wage costs. Yet, East Asian standards are taxing. The education system requires modernization, especially for the upper secondary level which does not get rewarded in the labor market. Second, further integration with prosperous Asian countries can help Thailand to sustain exports as growth driver. This will require reducing structural and institutional impediments to the movements of goods, people, and capital. The ASEAN countries aim to remove non-tariff barriers, quantitative restrictions, custom surcharges and reduce tariffs. 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.

Finally, 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 municipalities should support the development of secondary cities.

References

Ahuja, Ashvin and Thammarak Moenjak. Economic Arrangements and Long-Term Growth in Thailand. Bank of Thailand Discussion Paper 06/02. December 2002.

Asian Development Bank, The World Bank, and Japan Bank for International Cooperation. *Connecting East Asia: A New Framework for Infrastructure*. March. 2005.

Athukorala, Prema-chandra, Juthathip Jogwanich and Archanun Kohpaiboon. Tariff Reform and the Structure of Protection in Thailand. Incomplete Transcript. 2004.

Baqir, Reza and Alessandro Zanello. Growth without Credit, in Thailand: Selected Issues, IMF Staff Country Report. 2003.

Barro, Robert J., and Xavier Sala-i-Martin. Convergence across States and Regions. Brookings Papers on Economic Activity 1, pp.107-182. 1991.

Blunch, Niels-Hugo. Returns to Education in Thailand, 1994 to 2002. Transcript, World Bank and George Washington University. 2004.

Bosworth, Barry. Economic Growth in Thailand. Transcript, World Bank and Brookings Institution. 2005.

Christensen, Scott and Ammar Siamwalla. Muddling Toward a Miracle: Thailand and East Asian Growth. TDRI Quarterly Review. 1994. 9.2 pp.13-19.

Christensen, Scott, David Dollar, Ammar Siamwalla and Pakorn Vichyanond. Thailand – The Institutional and Political Underpinnings of Growth. World Bank. 1993.

Dixon, Chris. Post-Crisis Restructuring: Foreign Ownership, Corporate Resistance and Economic Nationalism in Thailand. Contemporary Southeast Asia. 26, No.1, pp.45-72. 2004.

The Economist, February 4, 2005.

Gordon, Clark, Meric Gertler and Maryann Feldmann. *The Oxford Handbook of Economic Geography*. Oxford: Oxford University Press. 2003.

Griffiths, Mark. From Recession to Recovery: A Real Sector Perspective, in Thailand: Selected Issues, IMF Country Report. 2000.

Gustafson, James. Northeast Thailand: The Underdevelopment of a Marginalized Periphery. University of Wisconsin at Madison transcript. 1994.

Hausmann, Ricardo, Dani Rodrik and Andrés Velasco. Growth Diagnostics. Transcript, Kennedy School of Government, Harvard University. 2005.

- Hawley, Joshua. Changing Returns to Education in Times of Prosperity and Crisis, Thailand 1985-1998. *Economics of Education Review* 23, pp. 273-286. 2004.
- IMF Research Bulletin. Reza Baqir. Thailand Country Study. 2001/2.
- International Monetary Fund. Article IV Consultations. 2004.
- Jonsson, Gunnar. Growth Accounting and the Medium Term Outlook in Thailand, in Thailand: Selected Issues, IMF Staff country Report No.01/147. 2001.
- Katz, Lawrence F. and Kevin Murphy. Changes in Relative Demand, 1963-1987: Supply and Demand Forces. *Quarterly Journal of Economics* 107 (1), pp.35-78.
- Kaufmann, Daniel, Kraay, Aart and Mastruzzi, Massimo. Governance Matters IV: Governance Indicators for 1996-2004. World Bank Policy Research Working Paper Series No. 3630. May 2005.
- Kennedy, Peter. Estimation with Correctly Interpreted Dummy Variables in Semilogarithmic Equations. *American Economic Review* 71, p.801.
- Krugman, Paul. The Role of Geography in Development. World Bank transcript. 1998.
- Krumm, Kathie and Homi Kharas. *East Asia Intergrates – A Trade Policy Agenda for Shared Growth*. World Bank and Oxford University Press: Washington, DC. 2004.
- Lewis, W. Arthur. *The Theory of Economic Growth*. George Allen & Unwin: London. 1954.
- The Nation, Article on Ammar Siamwalla, January 28, 2005
- Moenjak, Thammarak and Christopher Worswick. Vocational Education in Thailand: a Study of Choice and Returns. *Economics of Education Review* 22, pp.99-107. 2003.
- Nabi, Ijaz and Jayasankar Shivakumar. *Back from the Brink*. World Bank: Washington DC. 2001.
- Pootrakul, Kobsak and Chayawadee Chai-anant, Suchada Dejtrakul and Bunnaree Punnarach. Can We Count on Intra-Regional Trade as a Source of Growth? Bank of Thailand Discussion Paper 11. 2003.
- Psacharopoulos, George and Harry Patrinos. Returns to Investment in Education – A Further Update. World Bank Policy Research Working Paper 2881. 2002.

Psacharopoulos, George. The Profitability of Investment in Education: Concepts and Methods. World Bank Human Capital Development and Operational Policy Working Papers December. 1995.

Rodrik, Dani. Growth Strategies. Transcript, Kennedy School of Government, Harvard University. 2004.

Sanchez-Paramo, Carolina and Norbert Schady. Off and Running ? Technology, Trade, and the Rising Demand for Skilled Workers in Latin America. 2003. World Bank.

Tan and Gill. Malaysia: Meeting the Demand for Skilled Workers in a Rapidly Growing Economy. World Bank Report. 1998.

Webster, Douglas and Patharaporn Theeratham: Policy Coordination, Planning and Infrastructure Provision: A Case Study of Thailand. 2004. Transcript, World Bank.

Webster, Douglas. Urbanization: New Drivers, New Outcomes. In: Peter Warr. *Thailand Beyond the Crisis*. Chapter 10, pp. 285-314. RoutledgeCurzon: London and New York 2005.

Webster, Douglas. On the Edge: Shaping the Future of Peri-Urban East Asia. Stanford University transcript. 2002.

World Bank. Thailand Investment Climate, Firm Competitiveness and Growth. World Bank transcript. 2005a.

World Bank. Thailand Northeast Economic Development Report. World Bank transcript. 2005b.