Synthesis

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CHAPTER ABSTRACT

This chapter outlines the key findings of our research. Our conclusions can be summarized in three key points:

- To increase international competitiveness and return to a path of sustainable economic growth, Thailand needs to strengthen productivity throughout its economy. Only broad-based gains in productivity can allow Thailand to remain competitive in the face of globalization.
- McKinsey's research has shown that sectoral regulatory reform can dramatically increase Thailand's productivity. The good news is that addressing regulatory barriers is less costly and can even have nearer-term impact than some alternative remedies such as fiscal stimulus spending or investments in education and infrastructure.
- To carry out the far-reaching regulatory changes needed, Thailand should develop the institutional capability to guide and direct reform. The current administration's strong public mandate creates a unique window of opportunity for taking the necessary actions to boost productivity, but a dedicated agency is needed to ensure that reforms are executed and sustained.

THE PRODUCTIVITY IMPERATIVE: TO RESTORE ECONOMIC GROWTH AND INCREASE COMPETITIVENESS, THAILAND MUST STRENGTHEN PRODUCTIVITY THROUGHOUT ITS ECONOMY

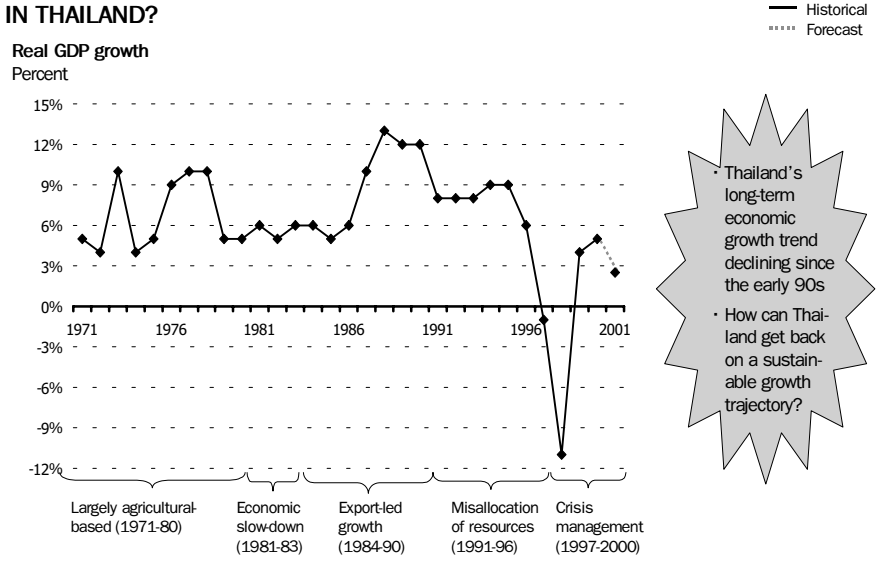
Economic growth in Thailand has stalled

Thailand boasts one of the strongest track records for long-term economic growth in the developing world. Successful develop-

ment efforts have led to three decades of sustained GDP growth averaging more than 6% per annum. Moreover, the benefits of this growth have been shared widely across Thai society, elevating living standards of the lower classes and creating one of Southeast Asia's largest middle classes.

Events in the 1990s, however, have cast doubt on the sustainability of Thailand's earlier growth models. GDP growth has slowed substantially since the early 1990s. As in many Asian countries, the regional financial crisis reversed several years of development. The dramatic economic contraction in 1997 was followed by a brief rebound–but modest GDP expansion in 2000 and 2001 suggests that a return to robust growth is not imminent (Exhibit 1).

EXHIBIT 1: WHAT FUTURE MODEL FOR SUSTAINABLE ECONOMIC GROWTH IN THAILAND?



Source: IMF; BOT; NESDB forecast

The two administrations that have governed Thailand since 1997 have explored a variety of strategies for reviving economic growth. These efforts have included fiscal stimulus spending, technical support to SMEs, and trade liberalization, among others. However, none of these efforts has proven capable of returning the country to a path of sustainable economic development.

A return to growth will require broad-based increases in productivity

McKinsey envisions a model for Thai economic growth based on dramatic increases in productivity. Indeed, we believe productivity-led growth can bring tremendous benefits to the country and unleash the latent potential of all Thai workers in all sectors.

- **Productivity is the basis of economic growth.** As with many ASEAN countries, Thailand has historically competed largely on factor input-based competitive advantage, particularly labor cost and natural resources. New international competition is now emerging–notably China (in goods) and India (in services)–which makes factor input-based competitiveness harder to sustain. In any case, to return to attractive economic growth rates and sustain higher living standards, Thailand needs to shift from labor cost advantages to productivity advantages so as to remain competitive as wages rise (see Box 1).

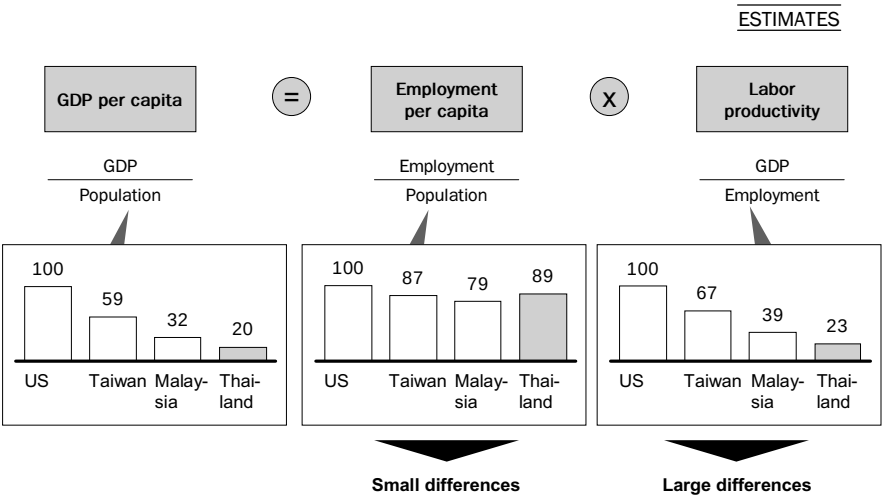
Box 1: Productivity–the source of sustainable growth

In Thailand, as in all modern economies, sustainable growth cannot be achievable without increases in productivity. This is because GDP per capita is a product of two factors: employment (the percentage of the workforce actively engaged in commercial activities) and labor productivity (the output per unit of labor). Employment levels in Thailand do not differ substantially from those in other emerging markets and mature economies. Thai labor productivity, though, is comparatively low–just 23% of the US level and below many developing countries in Asia (Exhibit 2). Consequently, the key to boosting GDP growth lies in enhancing Thai productivity. Indeed, around the world there is a clear correlation between labor productivity and GDP per capita (Exhibit 3).

Higher productivity leads directly to higher GDP: when a company increases its productivity, it is able to pay workers higher compensation, retain higher profits, and/or reduce prices, leading to increased consumer spending and business investment, and thus increasing GDP.

- **To be effective, productivity gains must span the entire economy.** Much of the recent academic literature on competi-

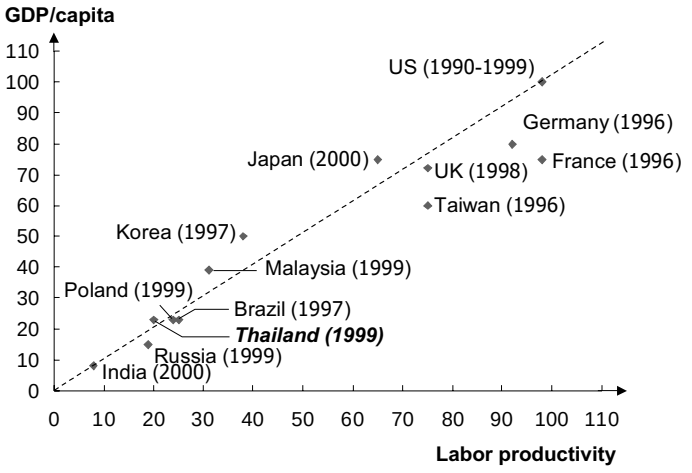
EXHIBIT 2: GDP PER CAPITA IMPROVEMENTS EITHER THROUGH INCREASES IN LABOR PRODUCTIVITY OR LABOR INPUT



Source: EIU, Labor Force Survey, NESDB, McKinsey Global Institute, McKinsey analysis

EXHIBIT 3: CLEAR, EMPIRICAL CORRELATION BETWEEN GDP PER CAPITA AND LABOR PRODUCTIVITY

Indexed to US (1999) = 100 at PPP



Source: Economic Intelligence Unit; OECD; MGI

tiveness and growth focuses on traded sectors of the economy. Export competitiveness is seen as proof of the vitality of an economy. But what about Japan? Japan has some of the most competitive traded sectors in the world–auto, electronics, advanced materials, among others–and yet it has suffered a decade of malaise. The reason is simple: the non-traded sectors of Japan's economy–about 90% of the total–remain woefully unproductive. The European Union, on the other hand, has systematically attacked productivity challenges across all sectors of the economy, and has reaped substantial economic benefits as a result.

- **Public-private sector collaboration is essential.** Around the world, efforts to boost productivity tend to emphasize the role of government. While government can take on an important role in such efforts, private companies must play a key part. For example, they must be prepared to accept increased competion and to make the often painful operational changes needed to improve productivity.

SUMMARY OF STUDY FINDINGS: McKINSEY'S RESEARCH HAS SHOWN THAT SECTORAL REGULATORY REFORM CAN DRAMATICALLY INCREASE THAILAND'S PRODUCTIVITY

McKinsey has undertaken an extensive survey of productivity in Thailand

In light of the centrality of productivity to economic growth, McKinsey & Company Thailand has undertaken the Thai Productivity Study. The objective of this study is to provide Thai policymakers with new insights on the key barriers to productivity in seven important industries[1]. The study benchmarks Thai labor productivity[2] levels in these industries against other emerg-

[1] The industries surveyed are retail trade, retail banking, cement, beer, telecommunications, chicken processing, and computer and electronics. These sectors account for roughly 10% of Thailand's non-agricultural employment and almost 20% of non-agricultural GDP. Detailed analysis of each industry is provided in the industry case chapters in this report.

[2] In the more capital-intensive industries, such as cement and telecommunications, our research analyzed capital productivity in addition to labor productivity. Where data limitations made calculating capital productivity impracticable, we analyzed proxies such as capacity utilization or space efficiency where appropriate.

ing and mature economies. It then identifies the root causes of low productivity in each industry and outlines policy recommendations for dismantling these barriers and enhancing productivity.

The report makes a new and exciting contribution to Thailand's productivity debate by utilizing a unique approach developed by the McKinsey Global Institute (MGI[3]). This approach is a hybrid of two distinct disciplines: economics and management. Both of these disciplines are concerned with productivity but neither is positioned to understand it fully: economists have scant access to the real-life problems facing business managers, while managers often lack the time and incentive to look beyond their own situation to the larger issues of productivity in their industry. McKinsey's productivity research remedies this situation by combining the academic rigor and breadth of economics with the deep industry knowledge and management understanding we use in our work with clients every day. The result is a unique perspective on productivity. By implementing this approach in 14

Box 2: Boosting productivity–what role for government?

As will be seen in the sections below, our research shows that productivity is highest in industries where government involvement is limited and competitive forces induce all players to improve productivity or exit the market. We acknowledge, though, that targeted, short-term government interventions can be needed to catalyze economic activity in some industries–a point that has been frequently made by the current administration. However, policymakers should not allow near-term interventions to obscure the fact that long-term growth derives from less, not more government involvement. Crucially, government must ensure that interventionist policies aimed at near-term stimulus do not erect lasting barriers to longer-term productivity gains.

We also acknowledge that economic policy decisions do not take place in a vacuum: policymakers must continually weigh economic concerns against social and political considerations. However, in making these tradeoffs, officials should be cognizant of the economic implications of their actions. Our report is intended to provide an objective fact-base elucidating the economic implications of various economic policies. We sincerely hope it will help the Thai government in its demanding task of balancing the political, economic, and social imperatives now facing the country.

[3] The MGI is McKinsey & Company's internal think tank dedicated to exploring issues affecting economic development around the world. (See Appendix II for further detail.)

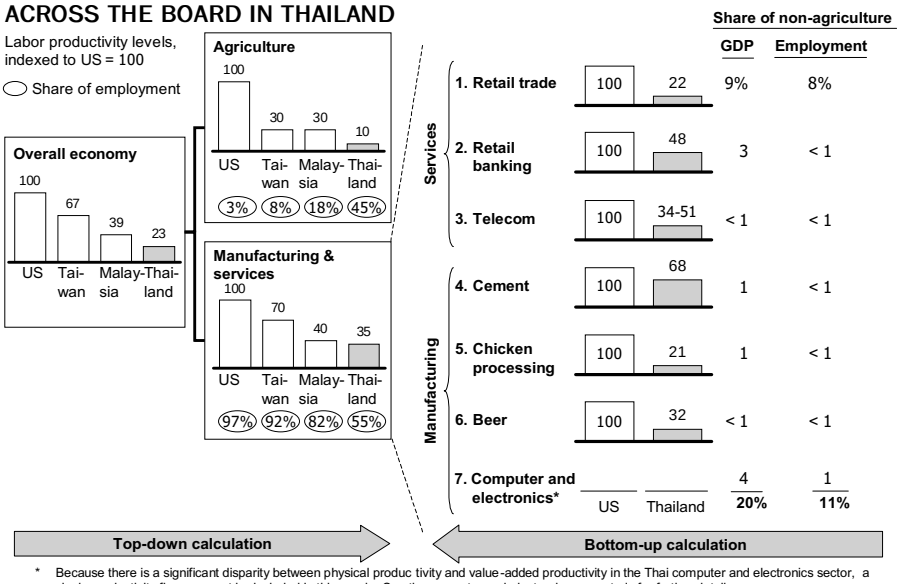
countries, McKinsey has developed a powerful global productivity database. This database forms the basis of the benchmarking conducted in this study. A full description of the study's methodology is found in the following chapter.

This report does not purport to be a comprehensive survey of productivity in the overall Thai economy. Rather, our objective was to elevate the importance of productivity in the economic policy dialogue and to provide preliminary insights on productivity in several key industries that can help the government consider policy changes in these sectors (see Box 2). It is hoped that policymakers will use our findings as the basis for a broader research of productivity issues throughout the Thai economy. Such research could form the basis for a blueprint of economic reforms aimed at enhancing Thailand's national productivity.

Our findings show that productivity in Thailand is low compared to benchmark countries and that sectoral regulations are by far the single greatest barrier to productivity

Our research found that there are substantial opportunities for improving productivity in Thailand. In the seven industries we

EXHIBIT 4: HUGE PRODUCTIVITY IMPROVEMENTS ARE POSSIBLE ACROSS THE BOARD IN THAILAND ESTIMATES



* Because there is a significant disparity between physical produc tivity and value-added productivity in the Thai computer and electronics sector, a single productivity figure cannot be included in this graph . See the computer and electronics case study for further detail .

Source: McKinsey

surveyed, we found labor productivity to be 20-50% of US levels (with the exception of the cement industry, which is close to US productivity levels). In agriculture, productivity is lower still–about 10% of the US level[4] (Exhibit 4).

We found sector-specific regulations to be by far the most significant barrier to increased productivity in Thailand.

As can be seen from our industry cases, we found sector-specific regulations to be by far the most significant barrier to increased productivity in Thailand. In almost every industry we surveyed, we identified major regulatory distortions, which, if eliminated, could dramatically increase performance and efficiency.

In the sections below, we outline the key findings–across industries–from each stage of our research, starting with the operational factors directly affecting company productivity, then moving on to the underlying industry dynamics, and finally exploring the external factors that had contributed to the industry and operational causes of low productivity.

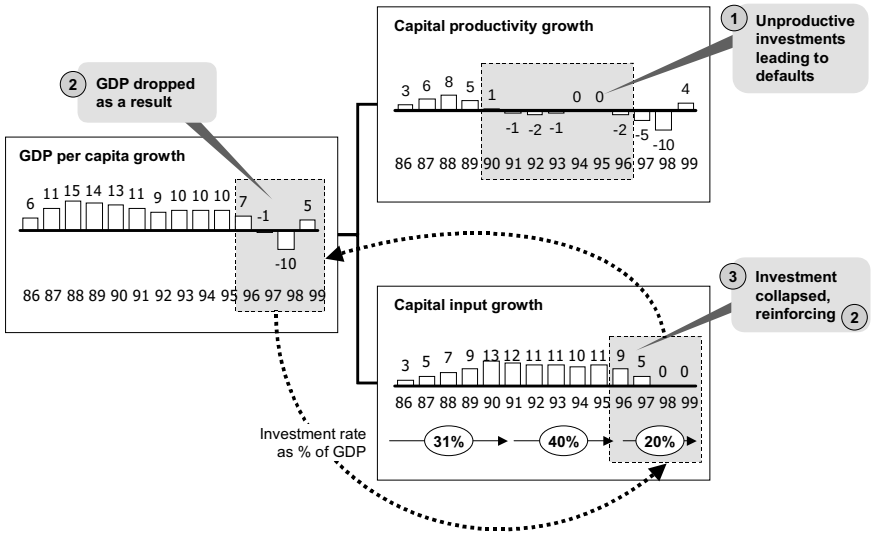
Operational factors affecting productivity. Our research in each industry began at the company level: by analyzing company productivity data and interviewing key executives, we were able to identify the major operational-level barriers to productivity. We found two primary barriers: (a) capital misallocation, and (b) organizational and technological deficiencies.

> **Capital misallocation:** Despite the external trappings of an economic 'boom', the early- and mid-1990s were a period of serious capital misallocation in Thailand. Beginning in 1991, growth in capital productivity dropped into the negative single digits (positive growth was not to return until 1999). Unproductive investments contributed to the decline in economic growth rates that began in the mid-1990s. Flagging GDP growth and low returns on invested

[4] Our research did not include an examination of productivity in the agricultural sector. This is because agriculture is a residual sector of employment, and productivity in this sector can be improved mainly by migrating employment to other sectors where productivity levels–and wages–are higher. As such migration occurs, agricultural wages rise, and productivity-enhancing investments–which could not be justified when an ample supply of low-cost labor is available–can become viable.

EXHIBIT 5: LESS PRODUCTIVE INVESTMENTS IN THE EARLY 1990s LED TO A COLLAPSE IN THAI INVESTMENT AND GROWTH RATES

Growth rates in percent



Source: NESDB, BOT

capital in turn led to a collapse in investment, which exacerbated the economic slowdown and contributed to the economic crisis in Thailand (Exhibit 5).

This top-down analysis of capital productivity is supported by substantial industry-level evidence of inefficient allocation of capital. In the fixed-line telecommunications sector, for example, some 30% of installed lines remain unsubscribed. In the beer and cement industries, capacity utilization levels are 52% and 69% respectively, far below international benchmarks. In sum, low competitive intensity and easy access to capital through much of the 1990s led to unwise investments that even today have a negative impact on productivity.

Organizational and technological deficiencies: Organizational and technological deficiencies are the second group of operational causes of low productivity. In almost all of the companies we surveyed, we identified significant inefficiencies, which, if corrected, could provide a tremendous boost to productivity. These deficiencies generally fell into three categories: automation and processes, innovation, and performance management (Exhibit 6).

EXHIBIT 6: ORGANIZATION/TECHNOLOGY DEFICIENCIES ALSO CONTRIBUTE TO PRODUCTIVITY GAP IN THAILAND

Deficiencies	Sector examples	Selected evidence
Automation* and processes	• Telecom	· Use of aerial rather than underground wires · Lack of automated problem tracking devices, insufficient maintenance system toolkits
	• Retail banking	· Limited use of machines to replace counter services and back-office operations, e.g., automatic passbook update, check clearing
	• Chicken processing	· Manual basic parts cutting and evisceration
Innovation	• Telecom	· Low line penetration – both fixed and mobile · Traditionally, limited offering and marketing of lines and value added services
	• Retail banking	· Lack of product development and risk management skills, as well as incentive based direct sales teams
	• Retail	· Disproportionately large share of employment in less productive traditional retail formats
	• Computer	· Majority of Thai-made products are labor intensive, low value-added products with limited innovation potential
Performance management	• Telecom/retail banking	· Excess labor/lack of performance culture, especially in state-owned enterprises

* Considering viable investments

Source: McKinsey analysis

Automation and processes: Thai companies have been slow to cut costs and increase efficiency by automating core processes (e.g. utilizing high-tech machinery or information technology, rather than manual processes) or streamlining those processes that cannot be automated.

In every sector, our research identified many potential operational improvements that could increase automation levels and optimize processes. We categorized these changes as 'viable'–those that are NPV (net present value)-positive, meaning the cost of implementing the change would be lower than the resulting labor cost savings–and 'non-viable'–those that are NPV-negative, meaning that the cost of the change would exceed the value of labor cost savings over time.

An example from the poultry industry is illustrative. The process of evisceration (removing internal organs from a chicken carcass) has historically been performed manually because the cost of labor required to

execute this function is low. In addition, manual evisceration preserves edible organs, which can in turn be sold. Under these circumstances, automating evisceration would be NPV-negative and therefore a non-viable improvement. As labor costs rise, however, automated evisceration can become NPV-positive and therefore viable. Indeed, our interviews revealed that many chicken processors are currently re-evaluating the financial implications of such automation.

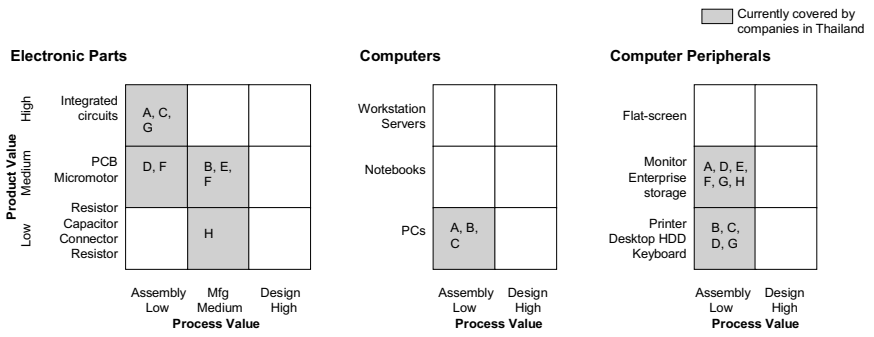
Of the operational changes we identified, only a handful proved to be non-viable. Many opportunities exist for Thai companies to boost operational productivity in an economically sound way. Thai retail banks, for example, have been slow to introduce and effectively promote automated channels such as phone banking or Internet banking to replace traditional branch-based transactions. Such modern channels are more cost-efficient than counter transactions and often offer superior customer service (such as 24-hour availability), yet they remain underutilized in Thailand.

Innovation increases productivity by creating new, higher value-added products.

Another example is chicken processing: while the viability of automated evisceration remains uncertain, other operational improvements are viable at current factor costs. For example, automating the basic cuts process could be NPV-positive and could add up to 35% to the industry's overall productivity.

Innovation: Innovation increases productivity by creating new, higher value-added products or by devising better ways to produce and deliver existing goods or services. Our research found that, with a few notable exceptions, Thai companies often fail to capture the full productivity-enhancing benefits of innovation.

EXHIBIT 7: COMPUTER & ELECTRONIC PARTS: MAJORITY OF THAI PRODUCTS ARE LABOR-INTENSIVE AND LOW VALUE-ADDED



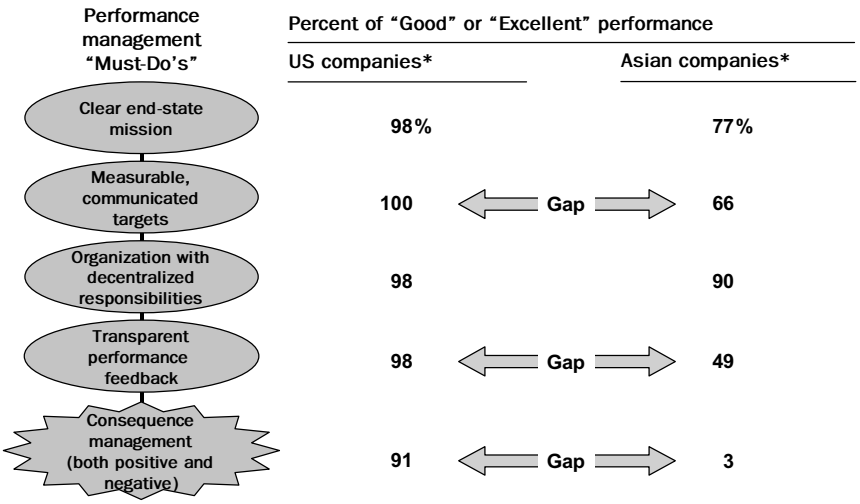
Sample companies
A. Alphatec
B. Elec & Eltek
C. Hana Semiconductor
D. Nidec
E. PCB Center
F. SCI
G. Sony Semiconductor
H. Tana Elnin

Sample companies
A. ATEC Computer
B. Belta Computer
C. Powell Computer

Sample companies
A. Delta
B. Cal-Comp
C. Capetronic
D. Fujitsu
E. IBM
F. NEC
G. Seagate
H. Toshiba Display

Source: ASIDnet

EXHIBIT 8: PERFORMANCE MANAGEMENT "MUST-DO'S" – ASIAN COMPANIES STILL LAGGING



* 46 high performing US companies in overall 2000 company survey; 35 Asian companies, including Thailand

Source: McKinsey "Performance Ethics" survey 2000

The computer and electronics industry is a telling example. Although Thailand has become a major manufacturing hub for a number of computer and electronics products and components, most Thai companies focus on low value-added activities such as assembling basic PCs or computer peripherals. Few have increased value added by producing more sophisticated hardware, such as notebook computers or servers, or by moving into the design of sophisticated electronic parts. As long as Thai computer and electronics companies remain constrained to low value-added activities, their potential productivity will be limited (Exhibit 7).

Organization/performance management[5]*:* The way companies organize their operations and manage the performance of employees has a substantial impact on productivity. Although a thorough survey of these practices is beyond the scope of this study, preliminary research shows Thai companies to be weak in several key aspects of organization/performance management. Most notably, Thai managers often struggle with 'consequence management'–the consistent, objective application of rewards and penalties based on individual performance. This shortcoming is in line with an Asia-wide weakness identified in McKinsey's recent regional survey of performance management practices at leading Asian companies[6] (Exhibit 8).

On a related note, a recent study by the Thai Institute of Directors and McKinsey has shown corporate governance practices in Thailand to be weak by international and even regional standards. This is significant in the context of performance management, as corporate governance practices serve to align the interests of shareholders and managers within a com-

[5] 'Performance management' refers to the ways companies organize, direct, and motivate their employees. Effective performance management ensures that every employee has a clear set of objectives and targets and that strong performance is consistently rewarded and weak performance penalized.

[6] Two of the most respected companies in Thailand participated in this survey. Their results were in line with the survey's broader regional findings.

pany. When effectively implemented, these practices force managers to be responsive to the concerns of shareholders, who are primarily interested in the long-term profitability (and therefore productivity) of the company. Shareholder activism can often force managers to make tough decisions that may be painful in the near term but contribute to the company's long-term effectiveness and profitability.

Industry dynamics affecting productivity. In the next phase of research, we explored the industry dynamics that led to the above operational-level gaps in productivity. We found that operational inefficiencies most commonly result from industry structures in which competition is limited. In such industries, companies are often not compelled to make the sometimes-painful operational changes needed to boost productivity.

Operational inefficiencies most commonly result from industry structures in which competition is limited.

Despite considerable deregulation in recent years, many Thai industries remain far from what could be called 'fair competition'. In most sectors, competitive pressure is mitigated by (1) limited foreign participation, (2) the existence of non-level playing fields, and (3) monopolistic or oligopolistic industry structures.

Limited foreign participation: Foreign participation in a sector increases competitive pressure while at the same time providing exposure to international best practices. An example is Thailand's retail trade sector where liberal regulations and openness to FDI have led to substantial foreign participation and therefore to rapid modernization. Of all the countries McKinsey has studied, Thailand has been among the fastest in increasing retail productivity by introducing modern formats such as supermarkets/ hypermarkets, convenience stores, and specialty stores. Domestic competition alone can have only limited impact

on productivity because local players typically do not have access to the latest best practices, cutting-edge capabilities, and leading technologies (see Box 3).

Box 3: How much foreign ownership is optimal?

A common objection to foreign participation is that by expatriating profits, foreign players drain capital from the domestic economy. This can indeed happen when a limited number of foreign players are admitted into an industry and quickly establish dominant positions. However, international experience shows that when an industry is opened broadly to foreign entry, the intensity of competition keeps foreign players' margins thin, meaning that little if any capital is expatriated. In these cases, the real beneficiary is the consumer, who enjoys lower prices and better selection of products thanks to increased competitive intensity.

In cases where foreign ownership of companies may not be desirable, there are still options for encouraging foreign participation and international skills transfer through alliances. The credit card and consumer finance joint venture between Bank of Ayudhya and GE Capital or the consumer finance collaboration between Thai Farmers Bank and Cetelem/BNP Paribas are examples of Thai-international partnerships in the retail banking sector.

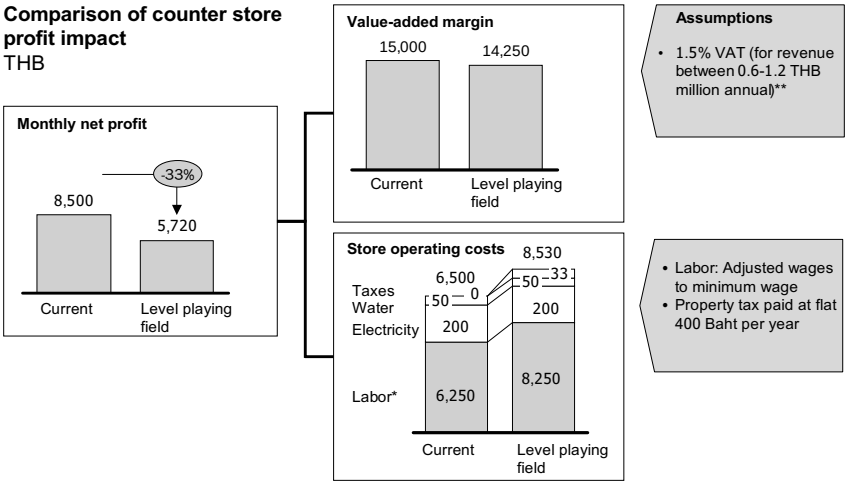
In many Thai industries, though, participation by foreign players remains limited. An interesting example is retail banking where foreign banks have traditionally been limited to a single branch. Since 1997, foreign banks have been allowed to take controlling stakes in four local banks (creating so-called 'hybrid' banks), yet these institutions remain too small to have a major impact in increasing competition or diffusing best practices across the Thai banking sector.

Non-level playing fields: In some industries, inconsistent enforcement of regulations can create advantages for some parties at the expense of others. The retail sector again provides a telling example. As noted, a liberal regulatory environment has enabled foreign retailers to establish and expand operations in Thailand, dramatically accelerating the introduction of modern retail formats. Economic logic would normally dictate that these efficient modern formats

should rapidly replace significantly less efficient traditional formats such as counter stores and wet markets. While the transition has been moving comparatively fast, traditional formats still command a majority of Thai retail trade. As informal entities, counter stores and wet markets are able to avoid taxes and skirt minimum wage requirements. Hence, these operators have an improved chance to remain cost competitive with modern retail formats despite the latter's much higher actual productivity (Exhibit 9).

EXHIBIT 9: TAX AND LABOR ADVANTAGES ALLOW TRADITIONAL PLAYERS TO REMAIN COMPETITIVE

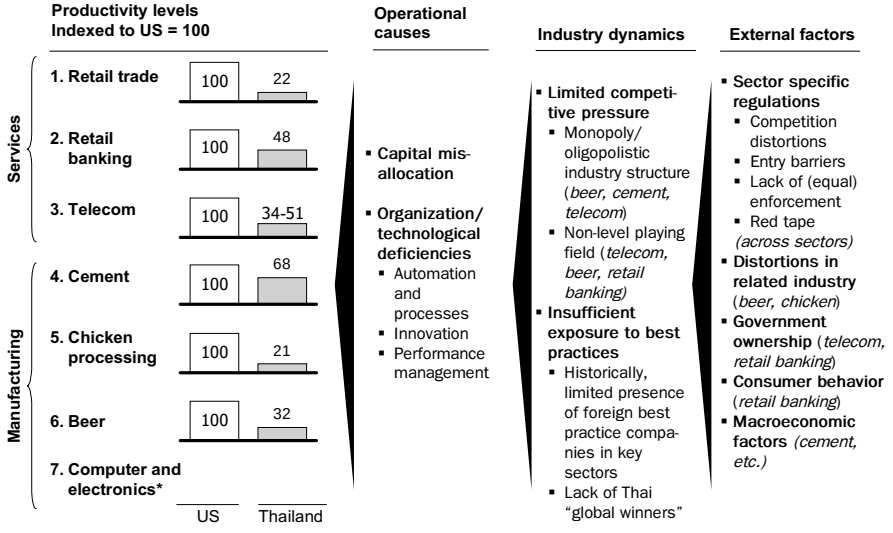
ESTIMATES



* 250 THB/day and 330 THB/day, respectively 25 days/month
** VAT is 7% for large stores with annual incomes exceeding 1.2 THB million
Source: Interviews

Monopolistic or oligopolistic industry structures: In several industries, we found that competition was or could be inhibited by the presence of companies exhibiting monopolistic or oligopolistic market behaviors. Such industry structures can be the result of official regulations, as in the fixed-line telecommunications sector. In other cases, such as the beer or cement industries, oligopolistic (or de facto oligopolistic) positions are not sanctioned by official regulations. Rather, they are allowed to exist informally because of the nature of the industry or the absence of rigorous pro-competition policies.

EXHIBIT 10: EXTERNAL FACTORS LEADING TO LOW PRODUCTIVITY



* Because there is a significant disparity between physical productivity and value-added productivity in the Thai computer and electronics sector, a single productivity figure cannot be included in this graph. See the computer and electronics case study for further detail.

Source: McKinsey analysis

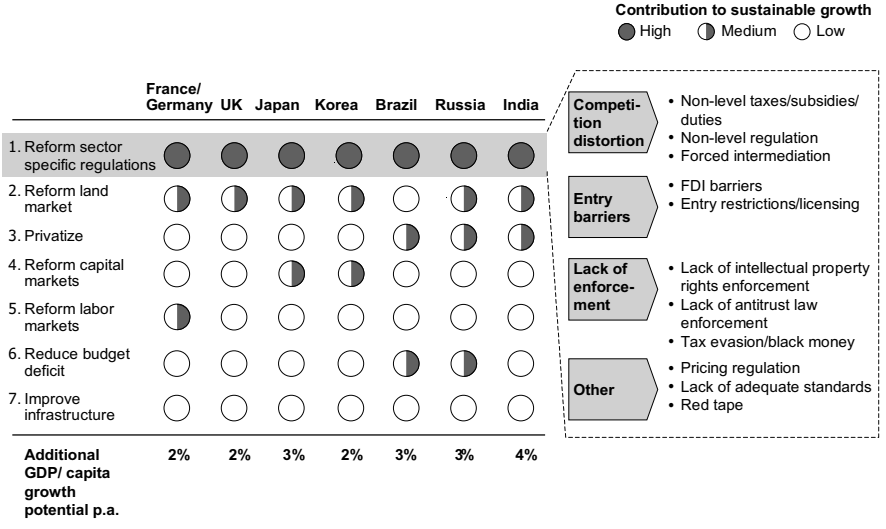
EXHIBIT 11: SECTOR-SPECIFIC REGULATIONS FOUND TO BE MAJOR PRODUCTIVITY BARRIER IN THAILAND

Source: McKinsey analysis

External factors. Following our industry-level research, we next explored the external factors that had created the industry behaviors that lead to low productivity (Exhibit 10).

Sector-specific regulatory issues: Our research found that sector-specific regulations are by far the greatest barrier to higher productivity levels in Thailand (Exhibit 11). This finding is consistent with McKinsey's research in 13 other countries around the world: in every country we surveyed, sector-specific regulatory distortions were found to be the greatest inhibitor to productivity (Exhibit 12). The regulatory barriers to productivity we identified in Thailand fell into the following main categories.

EXHIBIT 12: AROUND THE WORLD, REFORM OF SECTOR REGULATIONS IS THE KEY TO UNLOCKING PRODUCTIVITY AND GROWTH POTENTIAL



Source: MGI

Competition distortions: In a number of cases, regulations overtly favored certain players at the expense of others, thus limiting the fairness and intensity of competition. One example is the fixed-line telecommunications industry, where the two dominant players–TOT and CAT–serve as both operators and industry regulators at the same time. Not surprisingly, much regulation in the sector tends to favor these two

incumbents. As another example, tax regulations require large retailers (those with annual incomes exceeding 1.2 million Baht) to pay value-added tax (VAT) at an official rate of 7% while smaller retailers are required to pay only 1.5% VAT.

Entry barriers: In several industries, we found formal or informal barriers that prevented new players–in particular, foreign players–from entering and increasing competition. In some cases, industries had been formally opened to foreign players, but operational restrictions limited the ability of new entrants to compete effectively. As noted, foreign banks have long been allowed to operate in Thailand, but have historically been limited to a single branch. The creation of majority foreign-owned hybrid banks (which can operate multi-branch networks) has somewhat reduced the barriers to foreign entry in retail banking. However, as described above, because the acquired banks were comparatively small, the hybrid banks have been unable to exert significant competitive pressure on the industry.

In several industries, we found formal or informal barriers that prevented new players from entering and increasing competition.

Unequal enforcement of regulations: In some industries, the formal regulations appear to create a relatively level playing field for all companies. However, unequal enforcement of regulations favors certain players, leading to an environment in which fair competition is compromised. The previous retail example is again relevant here: because counter stores and wet markets are not consistently upholding the minimum wage, they are at an advantage with respect to their labor cost vis-à-vis more productive modern formats such as hypermarkets. In essence, unequal enforcement of tax or labor regulations limits the competitive pressure that is needed to maximize

productivity. Similarly, the ability of 'informal vendors' to sell counterfeit products enables these less productive players to thrive, at the expense of stronger professional companies, which are more rigorously monitored for counterfeits.

Distortions in related industries: In some cases, productivity in one sector can be constrained by issues in another. The beer industry is illustrative: a large manufacturer's monopoly in one sector (liquor) has allowed the company to rapidly build a dominant position in another sector (beer) by bundling sales of beer to monopolized liquor sales, even though the beer sector regulations themselves appear to support free competition. A second example is chicken processing where high prices of agricultural products (specifically corn and soybeans) inflate the price of chicken feed and weaken the performance of the entire Thai poultry value chain.

In some cases, productivity in one sector can be constrained by issues in another.

Red tape: Bureaucratic 'red tape' was found to be another significant factor delaying or blocking productivity improvements and innovation. For example, product/service innovation in the Thai banking sector has been hindered or delayed due to unclear approval regulations and slow approval processes by the Bank of Thailand.

Other factors affecting productivity: We found several other external factors affecting productivity, although their impact is limited in comparison to that of sector-specific regulations.

Government ownership: A significant share of assets in many industries remains under government control. Shielded from shareholder pressure (and often benefiting from official subsidies), government controlled

companies are consistently less productive than their private sector counterparts. An example is the Thai telecommunications sector, where considerable assets are under government control. State-owned telecommunications companies are markedly less productive than their private sector counterparts: they account for 67% of total employment in the telecom sector while only providing 36% of the total lines[7].

Consumer behavior: The behavior of Thai consumers also affects productivity. Thai consumers tend to demonstrate a strong sense of loyalty to 'their' existing merchants, and are often reluctant to switch even when a stronger value proposition is offered. Consequently, in many cases the threat of customer churn does not compel Thai companies to continually innovate and enhance their efficiency and productivity.

Conservatism on the part of Thai consumers has a negative impact on productivity in a number of industries.

Thai consumers also tend to be slow in embracing new, higher value-added products and services. Because companies producing low value-added goods tend to be less productive, this conservatism on the part of Thai consumers has a negative impact on productivity in a number of industries.

The retail banking sector provides the most telling example. Despite the entry of foreign banks, many offering services superior to domestic banks, there has been only limited migration of customers away from incumbent banks. Nearly 90% of Thai banking customers describe themselves as 'very loyal' to their existing bank, according to an annual McKinsey survey tracking the behavior of Thai and other Asian retail banking customers. This degree of loyalty limits the pressure on incumbents to enhance their productivity.

[7] While state-owned telecommunications companies do provide certain services for their private sector counterparts, this does not significantly change the ratio.

Macroeconomic factors: The macroeconomic volatility of the last few years has also affected productivity levels in Thailand. Most notably, the rapid and unexpected economic contraction in 1997 resulted in considerable overcapacity in several industries. In pre-crisis days, for example, cement producers had been encouraged by the government to build capacity ahead of demand in order to ensure self-sufficiency. When construction came to a virtual standstill in early 1998, cement capacity utilization dropped to under 60%. Similarly, in the telecommunications sector, fixed-line companies installed substantial line capacity in (speculative) property developments that, as a result of the crisis, were never completed or opened only after substantial delays. As a consequence, the fixed telecommunications lines operated by concessionaires have subscription rates as low as 58%.

Box 4: 'Smart regulation', not deregulation

While regulatory distortions are clearly the greatest barrier to productivity, blanket deregulation of industry sectors is not the solution, for two reasons. First, as noted above, some sectors-particularly those dominated by natural monopolies or oligopolies-may actually require more regulation, typically in the form of pro-competition and/or consumer protection policies, in order to ensure high levels of competition and productivity. Second, deregulation can have negative social implications in the short term that citizens may or may not be prepared to accept.

McKinsey advocates what we call 'smart' regulatory regimes. This means that regulatory structures are designed with clear, transparent economic and social objectives in mind, and based on a proper understanding of every regulation's impact on productivity in the short as well as in the long term.

Significantly, McKinsey's global research has shown that social objectives are often best achieved not indirectly through the regulation of industries, but rather through direct demand-side targeted fiscal subsidies. An example is the United States' 'lifeline' telecom subscription subsidy for poor and elderly people. This program provides subsidies to economically disadvantaged groups without distorting the overall pricing structure of the telecommunications industry. The idea of de-coupling economic and social policies in order to maximize social welfare is becoming a central and powerful theme in many countries considering regulatory reform.

Addressing regulatory barriers to productivity at the sector level can substantially accelerate Thai economic growth

Judging from our experience in other countries, productivity-enhancing regulatory reforms, if carried out thoughtfully across all economic sectors (see Box 4), could potentially add some 2-4% to Thailand's annual per capita GDP growth, effectively doubling current growth rates. The other encouraging insight is that most of the needed policy reforms are ultimately 'free'–they require no fiscal stimulus packages or industry subsidies. Moreover, these reforms can impact broad economic growth more quickly than the important but longer-term solutions of investment in education and infrastructure.

IMPLICATIONS FOR GOVERNMENT: THAILAND SHOULD BUILD THE INSTITUTIONAL CAPABILITY TO CARRY OUT PRODUCTIVITY-ENHANCING REGULATORY REFORM

Thailand currently lacks the institutional capability to undertake sector-specific regulatory reform

Given the dramatic impact of regulatory issues on productivity and GDP growth, we recommend that the Thai Government initiate a broad-based program of regulatory reform aimed at facilitating the transition to a high-productivity economy. The current Thai Government faces a unique window of opportunity to conduct such an endeavor: it has been elected with an unparalleled vote of confidence by the Thai people a year ago and therefore possesses the popular mandate needed to undertake tough policy actions. In addition, the world economy has entered into a severe downturn, which makes it easier to argue for fundamental reforms that might otherwise be resisted as going against 'the traditional way of doing things'.

Implementing a broad-based regulatory reform program is no small task. It will require a detailed understanding of the complex cross-sectoral issues affecting productivity, supported by a

compelling fact base. Equally important is a solid process management capability that can engage and take account of all affected constituencies. Specifically, such a program must:

- Cover numerous industry sectors and clusters, and appropriately consider cross-sectoral linkages, constraints and opportunities;
- Coordinate across multiple branches of government, business organizations, and non-governmental bodies; and
- Overcome vested interests, deep-rooted traditions, and political and social roadblocks.

While the current Thai political leadership has the mandate and the willingness to pursue far-reaching regulatory improvements, a unique set of executional capabilities will need to be developed. Regulatory policymaking on the level of industry sectors is currently fragmented across a multitude of public sector institutions, including several ministries, such as the Ministries of Finance, Commerce, Industry, Transportation and Telecommunications, as well as agencies, such as the Bank of Thailand, the Board of Investment, and others. Growing perceptions that the Thai Government is sending out inconsistent signals to prospective international investors are just one of many negative consequences of such fragmentation.

Regulatory policymaking on the level of industry sectors is currently fragmented across a multitude of institutions.

While the NESDB does play an integrative role, it is predominantly focused on macro-economic issues and may not be well positioned to coordinate micro-economic policies across divergent policymaking bodies. The Thai Productivity Institute[8] is also not oriented towards cross-agency, broad-based regulatory reform. And the TDRI is a research institute that plays primarily an advisory role. Finally, while the integrative industry workshops organized by the current administration can help to surface issues and to brainstorm ideas, they are unlikely to produce a detailed, fact-based agenda for productivity enhancement, nor

[8] Part of the Ministry of Industry.

can they ensure the coordinated and programmatic implementation of such an agenda.

For example, the current policy debate concerning protection of small, traditional Thai retailers from large scale (primarily foreign) discounters seems to lack fact-based analysis of the economic benefits created by productive modern retailers. Our research showed that the presence of modern retailers leads to lower prices and greater selection for consumers and, contrary to popular views, does not necessarily result in net job destruction[9]. The benefits can also extend far beyond the retail sector itself: we found that a competitive retail sector is essential to fostering productivity growth in related 'upstream' industries such as wholesale, consumer goods manufacturing, basic materials and even agriculture (see Box 5).

Box 5. Getting the facts right: retail trade's true impact on the economy

In any modern economy, the structure and efficiency of the retail sector has a significant impact on several related sectors. An efficient retail sector can generate efficiencies all the way back up the value chain, improving productivity and thereby accelerating growth across industries. As has been demonstrated around the world, a retail sector populated with strong, productive players will actively seek out the best consumer products and prices, rewarding and developing efficient producers, and penalizing inefficient ones. Consumers benefit directly because of greater choice and lower prices, and the economy benefits because producers have to deal with consumers through a sophisticated and demanding retail sector.

A dedicated agency should be established to research productivity issues and drive productivity-enhancing regulatory reform

To effectively pursue a broad-based regulatory reform program, the government should establish a dedicated institution that effectively integrates regulatory improvements across sectors.

[9] See the retail trade case for an analysis of a modern retailer's impact on job creation/destruction.

This institution should be able to define and drive the implementation of such a reform agenda in a well-coordinated fashion. It should be part of the Prime Minister's Office in order to command clear political support, which will be required in order to overcome entrenched interests. It may well be integrated into the NESDB, or it could be established as a free-standing agency.

In its analytical role, this institution could potentially be modeled on the US Council of Competitiveness, an organization whose mission is "to drive US economic competitiveness and leadership in world markets and to raise the standard of living for its citizens". The Council has a full-time staff of about 16 and is focused on benchmarking US productivity and innovation levels against those of other countries, as well as publishing the influential annual State of US Competitiveness report. While the Council has no executive powers–it acts purely as an advisory council to the US President–its influence in policy matters is substantial.

Closer to home, other Asian countries have also made competitiveness and productivity a key part of their economic policy agenda. In 1997, Singapore's Prime Minister, for example, established the Singapore Committee on Competitiveness (CSC), which is affiliated with the Economic Development Board (EDB). After a careful review of Singapore's competitive position vis-à-vis a number of benchmark countries, a detailed implementation plan was agreed, which has shaped Singapore's economic policy agenda for the last three years. Concrete results of the competitiveness review included a commitment to early liberalization of the telecommunications sector as well as an increased focus on becoming a preferred location for global best-practice companies. The CSC has been instrumental in shaping and monitoring progress in the city-state's efforts to raise its competitive credentials.

The agency must be equipped to overcome a host of challenges

The agency will undoubtedly face a number of challenges in driving the implementation of policy reforms. Below we outline three of the most critical challenges we have observed around the

world and present some preliminary steps for addressing these challenges.

Establishing a 'shared language': Executing a coherent regulatory reform program–one that is based on a consistent economic growth strategy for Thailand–will require more than just a new institutional set-up. It will also require a clearly defined methodological framework–a 'shared language' to which all stakeholders subscribe–in order to engage and integrate a multitude of different perspectives and interests. Reliable and widely accepted insights on microeconomic policy issues will be pivotal to the success of the Thai Government's efforts to identify and dismantle regulatory barriers to productivity.

Executing a coherent regulatory reform program will require a 'shared language' to which all stakeholders subscribe.

This study has provided preliminary perspectives on the key productivity barriers in seven industries. It has also established a methodology that works and that has been successfully applied around the world. We firmly believe that this methodology can be utilized to assess productivity in the broader Thai economy on an ongoing basis. In short, it can form the basis for the continuing stream of productivity research that will be needed to support an effective regulatory reform program.

Addressing issues of worker displacement: A common concern surrounding productivity enhancements is the potential negative impact on employment. Over the long term, though, productivity improvements lead to lower prices and increased consumption, higher levels of investment, and therefore to overall job creation. In addition, productivity gains increase export competitiveness, creating new sources of economic growth and job creation. An interesting example is the Thai retail sector, in which productive modern formats–usually foreign owned–have made considerable inroads. Although supermarkets,

hypermarkets and other modern retail formats are often thought to destroy jobs within smaller competitors, our research found that the picture changes if a more comprehensive perspective is chosen.

Global retailers do indeed operate with comparatively fewer employees than the many smaller retail operations they replace. However, they also create new job opportunities in other industries such as consumer goods: companies like Tesco Lotus screen and 'qualify' Thai products that are often exported into their global supply chain. Company statements indicate that Tesco currently exports some US$100 million worth of Thai products annually into its global operations. When the jobs resulting from such increased exports are added to the other economic impacts[10], Tesco Lotus' impact in terms of job creation or destruction becomes more or less neutral. If one then considers a potential 'multiplier effect' arising from productivity gains across the retail and consumer goods sectors, the net impact on employment is likely to turn out to be positive.

An important first step is to raise public awareness of the relationship between fair competition, higher productivity, and economic prosperity.

In the short-term, though, some displacement of workers will inevitably accompany productivity enhancement. Governments should respond by providing unemployment benefits that directly protect displaced workers during a transition period, and by encouraging training and job-search programs that help to redeploy displaced labor to more productive industries–not by postponing this important transition, which is part and parcel to economic growth.

Overcoming entrenched interests: Around the world, entrenched interests threaten efforts to reform industries

[10] Specifically, additional employment from higher local consumption resulting from lower prices, as well as job creation from investment in new stores and distribution centers.

and enhance productivity. Powerful incumbent companies who benefit from entry barriers, non-level playing fields, and other restrictions on competition will aggressively resist any efforts to introduce greater competition in the sectors in which they operate–often by calling for protection of domestic companies or pointing to their own strategic importance as a major national employer.

There are no simple solutions for overcoming entrenched interests. However, an important first step is to raise public awareness of the relationship between fair competition, higher productivity, and economic prosperity. Once this relationship is more broadly understood, public opinion can be brought to bear against those players who seek continued protection at the expense of productivity gains and consumer benefits.

* * *

In almost every sector that our research covered, we observed operational deficiencies that reduced the productivity of Thai companies. We found that these constraints result from industry structures that restrict competition and limit exposure to best practices. These industry structures are in turn created by several external factors, of which the most significant by far is sector-specific regulations. As such, government efforts to restore rapid GDP growth in Thailand should focus primarily on eliminating regulatory barriers to productivity. To remove such barriers with a careful eye to their economic and social implications can bring tremendous benefits to the people of Thailand. If this chance is foregone, the country could, like Japan since the early 1990s, lapse into a prolonged period of stagnation.

Following this chapter is a description of the study methodology as well as case studies analyzing productivity issues in the seven industries surveyed. Each case study also outlines policy recommendations for addressing the sector-specific barriers to higher productivity.

Methodology

Methodology

CHAPTER ABSTRACT

The purpose of this study is to help Thai policymakers define and prioritize reforms that can accelerate productivity-led economic growth. To do this, our research team has identified and analyzed Thailand's productivity gaps relative to international benchmarks, based on a number of sector case studies. The framework used has been developed by the McKinsey Global Institute in collaboration with leading international economists, and has been successfully applied in 14 country studies to date. The methodology has consistently delivered a solid fact base and a clear logical foundation for deriving policy recommendations and determining their economic impact. It is built on the following key elements:

- International productivity benchmarking. We compare real company and sectoral productivity performance with other countries, leveraging our international database.
- Systematic root-cause analysis. The reasons for performance gaps are explained through a systematic analysis of key causalities–sector by sector–leveraging our checklists of operational, industry and other relevant factors (including government policy levers) derived from experiences from other country studies.
- Implications for the economy as a whole. Finally, it is important to identify patterns across sectors, and to explore the impact of productivity-maximizing policy measures in different sectors on productivity and growth in the economy as a whole.

Our framework illustrates a relatively easy-to-understand, yet compelling linkage between productivity performance on the

micro-level, policy reforms and other actions at the government level, and economic growth for the country as a whole.

OVERALL APPROACH OF THE STUDY

The approach used in this study is based on the methodology applied in previous McKinsey Global Institute (MGI) reports. We first benchmark the productivity performance of Thai industries relative to the best performing economies in the world. Then we seek to understand the main barriers to productivity improvements and productive investments that are necessary for growth within the sectors that have been selected for more in-depth analysis. By synthesizing these case studies, we draw conclusions on the actions needed to improve Thailand's economic performance in the future.

Sector case studies

The core of the research project is seven detailed industry case studies. In each we start by measuring the productivity gap between Thailand and the benchmark countries (in most cases the US and 1-2 regional comparators). We then analyze the sector to understand how Thai operations differ from international benchmarks and the reasons for the different choices Thai managers have made. By developing a deep microeconomic understanding of industry operations, we are able to draw conclusions on the relative importance of the external factors affecting managers' decisions. In doing this, we focus on the barriers that are preventing productivity growth within existing assets as well as the factors that are limiting investment in new productive capacity.

By understanding industry operations, we are able to draw conclusions on the external factors affecting managers' decisions.

The sectors that have been selected for Thailand cover around 10% of Thailand's non-agricultural employment and almost 20% of non-agricultural GDP (Exhibit 1). The cement and beer

EXHIBIT 1: SECTOR COVERAGE OF MGI THAILAND STUDY ESTIMATES

Key sector-screening criteria

- International benchmarks available from past MGI studies
- Available and accessible data for productivity analyses
- Representative sample
  - Economic structure
  - Regulatory, social, economic issues

	Sectors	Share of non-agricultural GDP	Share of non-agricultural employment	Rationale for selection
Services	Retail trade	9%	8%	• Large sector, recent re-structuring, impacts other sectors and consumer pricing
Services	Retail banking*	3	< 1	• Recent deregulation and change in industry landscape
Services	Telecom	< 1	< 1	• Major destination for FDI, important infrastructure sector
Manufacturing	Cement	1	< 1	• Large sector, linked to construction
Manufacturing	Chicken processing	1	< 1	• Major export sector
Manufacturing	Beer	< 1	< 1	• Important, fast-growing consumer sector, recent competitive changes
Manufacturing	Computer and electronics	4	1	• Major export sector considered to be potential growth area
	MGI coverage	**~20%**	**~ 11%**	

* Assumes retail banking value-added accounts for 50% of total banking value-added

Source: NESDB, McKinsey analysis

cases represent manufacturing sectors that are predominantly oriented towards serving domestic markets, while chicken processing and computers/electronics have developed into important export industries for Thailand. Telecommunications represents a critical infrastructure sector where substantial investment is required. Finally, we studied retail trade and retail banking, service sectors that are critical to any modern economy.

Each of the sector cases follows the same sequential analytical process described above, starting with a measurement of the Thai industry's current productivity level relative to world benchmarks (see Box 1). Then we generate and test hypotheses on the causal factors that explain the observed gap.

Measuring productivity: Productivity reflects the efficiency with which resources are used to create value in the marketplace. It is measured by computing the ratio of output to input. We first define each industry in a consistent manner in Thailand and the comparison countries, making sure that

Box 1: Interpreting global productivity benchmarks

To assess the productivity performance of Thai industries, we compared their labor productivity with those of the best performing countries in the world. This benchmarking allows us to measure how efficient Thai companies are in their production processes relative to their potential. The use of comparison countries allows us also to identify the reasons for productivity gaps through a detailed comparison of production processes and other business practices between Thailand and the benchmark countries.

The global benchmarks should not, however, be perceived as a measure of maximum possible productivity level. At any moment in time, there are individual companies with productivity levels above the average of the best performing country. And over time, the global benchmark rises as individual companies continuously improve their productivity. So while the benchmark productivity level can be interpreted as a realistically achievable level of efficiency, it should not be seen as a limitation.

Independent of the global benchmark for any specific sector, we have chosen to express all of our productivity measures in consistent units defined relative to the US productivity level. The US has the highest real income level among large countries, which makes it the benchmark for the level of total GDP per capita. While this is not the case for several industries, we believe that using a consistent benchmark unit helps the interpretation of productivity gaps in individual industries and facilitates performance comparisons across industries.

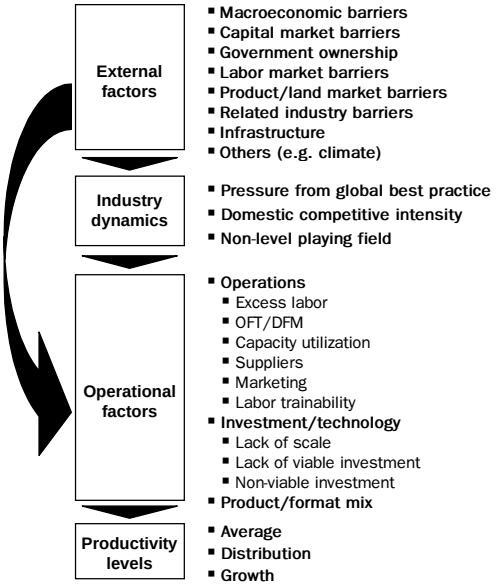
our industries include the same parts of an industry value chain. We then determine the sector's output using measures of Purchasing Power Parity-adjusted value added or physical output. The labor inputs are measured as number of hours worked, and capital inputs as capital services derived from the existing stock of physical capital. We measure labor productivity in all seven case studies. For the particularly capital-intensive sectors, like retail trade, telecommunications and cement, we also examine and explain differences in capital productivity. Given the difficulty in obtaining reliable data on capital productivity at the micro-level (and because available data is often not comparable across companies or between different countries), we have used proxy data. For example, in the retail trade sector, we have used space efficiency (measured as value added per square meter) as a proxy for capital productivity.

Given the lack of reliable statistical data in some sectors, we complemented official information with customized surveys and extensive interviews with company representatives and other sector experts. This methodology was particularly helpful in deriving bottom-up productivity estimates in sectors such as retail trade, retail banking, computers/electronics, and chicken processing, where traditional sources of information may be unreliable or incomplete.

Generating and testing causality hypotheses: To explain why levels of productivity in Thailand differ from the benchmarks, we start by generating a set of hypotheses on the possible causes.

We use a systematic framework to explain productivity differences across countries that captures the major possible causal factors. This causal framework has three hierarchical layers of causality: differences observed at the operational level, factors arising from industry dynamics, and external factors that explain why the choices of Thai companies differ from those in the comparison countries (Exhibit 2).

EXHIBIT 2: BASIC MGI FRAMEWORK FOR FINDING THE CAUSES FOR LOW PRODUCTIVITY



Source: MGI

The hypotheses are tested with further fact-based analyses and company or expert interviews that allow us to assess the relative importance of the causal factors in explaining the productivity difference in each sector.

Synthesis and growth potential

Having identified the causal factors for each industry, we compare the results across industries. The patterns that emerge allow us to draw conclusions about the causes of the aggregate productivity gap between Thailand and the comparison countries, as well as about the level to which productivity can rise when the external factors are addressed.

We also consider the potential job creation that would result from productivity gains. For example, in examining the replacement of traditional retail formats by hypermarkets, we examine job losses at traditional stores as well as job creation opportunities resulting from the high productivity of hypermarkets.

Our work focuses on the factors that determine Thailand's economic prospects in the medium and long term. We do not focus on the short-term macroeconomic factors that may affect economic performance at any given moment. In drawing policy implications from our findings, it is also important to bear in mind that higher material living standards are only one of many policy goals that a government can have. We believe, however, that higher productivity and economic growth provide the resources required to address social challenges more effectively.

MEASUREMENT OF OUTPUT AND PRODUCTIVITY

Productivity reflects the efficiency with which resources are used to create value in the marketplace. We measure productivity by computing the ratio of output produced in a year to inputs used in that production over the same time period.

Output (value added)

Our study uses two basic ways of determining output: it can be measured as physical production or as value added.

For a given industry, the output produced differs from the traditional notion of sales. Sales figures include the value of goods and services purchased by the industry to produce the final goods or services (e.g. chicken purchased from farms to produce processed chicken). In contrast, the notion of value added is defined as factory-gate gross output less purchased materials, services, and energy. The advantage of using value added is that it accounts for differences in vertical integration. Furthermore, it accommodates quality differences between products, as higher quality goods normally receive a price premium that translates into higher value added. It also takes into account differences in the efficiency with which inputs are used (e.g. energy).

Using value added accounts for differences in vertical integration and product quality.

In the case study for the Thai retail industry, for example, we used the value added measure of output for international comparisons. However, complications arise from the fact that value added is not denominated in the same currency across countries. As a result, this approach requires a mechanism to convert value added into a common currency. The standard approach uses Purchasing Power Parity (PPP) exchange rates, a topic discussed separately below.

In sectors that allow a direct physical comparison of outputs, we have used the physical production (number of units produced, etc.) as a measure of output. This was the case for our analysis of telecommunications, retail banking, cement, and beer. To make our measures comparable to the benchmark countries, we needed to adjust for the product variety and quality differences across countries. This approach also requires data to be taken from the same part of the value chain in every country; in some

countries an industry may simply assemble products while in others it may produce them from raw materials. Physical measures would tend to overestimate the productivity of the former, as fewer inputs would be required to produce the same amount of output. To overcome these problems, our adjusted physical output measure accounts for differences in vertical integration, quality, and, in the case of cement, relative differences in energy consumption.

In the chicken processing and computer/electronics sectors we used both the physical and the value added measures for output in order to provide a richer basis for analyzing productivity gaps and their causalities. In the computer and electronics sector, for example, this allowed us to clearly differentiate between productivity gaps caused by efficiency differences in manufacturing the same type of components (an 'apples-to-apples' comparison) versus gaps resulting from a different product mix produced by Thai electronics makers vis-à-vis international competitors.

Purchasing Power Parity exchange rate

To convert value added of different countries to a common currency, we use PPP exchange rates rather than market exchange rates. PPP exchange rates can be thought of as reflecting the ratio of the actual costs of purchasing the same basket of goods and services in local currencies in two countries. The PPP exchange rates are constructed 'bottom up' by comparing the actual market prices of comparable goods and services across countries, and then aggregating the individual prices up to a 'price' for sector-specific baskets and finally for total GDP.

The reason for not using the market exchange rate, except for export-oriented sectors, is that it properly reflects international transactions alone.

The reason for not using the market exchange rate, except for export-oriented sectors, is that it reflects international transactions alone, while it may not properly reflect the prices of non-tradable goods and services in the economy. Furthermore, comparisons made on the basis of mar-

ket exchange rates would be affected by fluctuations in the exchange rate resulting from, say, international capital movements.

For our aggregate survey and some of our cases, we use PPP exchange rates reported by the United Nations and by The Economist Intelligence Unit. In principle, as long as the products are in the same market, we only need the PPP for one product and can use the market relative prices to compute the PPPs for the rest of the product range.

Finally, we adjusted our PPPs to exclude sales tax and other taxes, and we accounted for different input prices in order to obtain a Double Deflated PPP, which is the PPP exchange rate ultimately used in our value added comparisons. In addition, in the case of retail trade, differences in gross margins resulting from factor cost differences were adjusted by assuming similar service quality for the same retailers in other countries.

Inputs

Our inputs consist of labor and capital. Labor inputs are the more straightforward to measure: we seek to use the total annual number of hours worked in the industry by workers. When actual hours are not available, we estimate labor inputs by using the best available measure of full-time equivalent (FTE) employees.

For the more capital-intensive sectors, such as telecommunications, cement, beer, and retail trade, we also attempt to analyze and explain differences in capital productivity, mostly by using proxies due to difficulties in obtaining and comparing reliable data on capital expenditures. For example, we have used space efficiency in the retail sector and capacity utilization in the cement sector as proxies for capital productivity. In general, capital usage has been treated as an important causal factor in explaining different levels of labor productivity for our sector case studies.

CAUSALITY FRAMEWORK

Our framework for synthesizing the explanatory factors for the productivity performance in each industry is summarized in Exhibit 2. The various elements of the framework are further described below. Illustrations of possible barriers to higher productivity are also presented under some of the subheadings, both in order to clarify the potential relevance of each point and to introduce some of the barriers that are presented in the later discussions.

Operational factors

The factors affecting productivity arise first at the individual company level. These can be grouped into factors related to operations, investment and technology, and product/format mix. These operational factors are in turn determined by elements of a firm's external environment outside its control and beyond the decisions made by its managers.

Operations:

- *Excess labor:* Excess labor refers to workers who could be eliminated without any significant changes to the organization of functions and tasks. It also includes the variable portion of workers still employed despite a drop in output.
- *Organization of functions and tasks (OFT):* This is a broad category encompassing the way in which production processes and other key functions (product development, sales, marketing) are organized and run. It reflects managerial practices in most areas of the business system as well as the structure of incentive systems that employees and companies use.
- *Design for manufacturing (DFM):* DFM is the adoption of efficient building or product design by using an optimal site/plant layout, and then using standard, interchangeable and cost competitive materials.

- *Capacity utilization:* Represents the labor productivity penalty associated with low capacity utilization given the fixed portion of workers (i.e. management, machine operators, maintenance, etc.).
- *Suppliers:* Suppliers can contribute to industry productivity by providing efficient delivery processes, by collaborating in product development, or by providing products or services that facilitate production (e.g. materials suppliers in residential construction). Suppliers can also impede productivity by providing lower quality products and services or inconsistent delivery of inputs.
- *Marketing:* Within product categories, countries may differ in the quality of products they produce. Production of higher value-added products or services using similar levels of input is reflected in higher productivity. Another source of productivity differences within product categories is differences in product proliferation (e.g. variety of stock-keeping units or SKUs in retail). A wide range of product or service lines can reflect a sub-optimal product mix that reduces productivity. Finally, both in manufacturing sectors and in services, design can influence which technology might be applied. Design changes might simplify the production process and improve productivity.
- *Labor skills and trainability:* This factor captures any possible labor productivity penalties due to lower frontline trainability potentially caused by lower levels of education, different educational focus (disciplines/skills), low frontline worker motivation, etc.

Investment/technology:

- *Lack of scale:* Higher production scale generally leads to increased productivity if fixed assets are a large enough proportion of total costs. We use capital in the sense of physical assets and their embodied technologies (e.g. machines, plants, buildings, and hardware). We classify assets as being sub-scale when they

don't reach the minimum efficient scale.

- *Viable investments:* Refers to investment in upgrading assets as well as investment in green-field operations that would be economical even given Thailand's relatively low labor cost. For our calculations, we apply current wage levels and a weighted average cost of capital (WACC) of 8%.
- *Non-viable investments:* Refers to investment in upgrading assets or in green-field operations that would not be economical given Thailand's relatively low labor cost.
- *Product/format mix:* Countries may differ in the categories of products or services they demand or supply, and a productivity penalty can arise if a country's output consists of a comparatively high share of inherently less valuable product or service categories. For example, Thailand's computer and electronics sector is predominantly focused on low value-added products and production processes, such as assembling hard disk drives.

Industry dynamics

The competitive pressure in an industry influences the pressure on management to adopt best practices and improve company and industry performance. We examine three basic types of factors: domestic competitive intensity, exposure to best practices, and non-level playing fields.

The competitive intensity in an industry influences the pressure on management to improve performance.

Domestic competitive intensity: Includes differences in industry structures and the resulting competitive behaviors of domestic players. Other factors being equal, more competitive industries will put more pressure on managers to adopt more productive processes. Industries with high

competitive intensity typically experience frequent entry and exit of players as well as changes in prices and profitability, rewarding high performers and penalizing unproductive players.

Exposure to best practices: Refers to competitive pressures as well as opportunities for learning from international best practice companies either via imports or through foreign direct investment.

Non-level playing field: In a fair market economy, the same laws and rules (e.g. pricing, taxes, etc.) apply equally to different industry players. In contrast, a 'non-level playing' field reflects distortions that result from differential treatment of industry players by parties outside the industry (e.g. the government). Within the same market, a non-level playing field may result in more productive firms not being the most profitable ones (see Box 2).

External factors

Managers' behavior is also affected by a variety of external factors (i.e. those beyond managers' control). These external factors can affect managers indirectly by influencing the industry (e.g. restrictions on new entry) or directly (e.g. quotas on installation of fixed telecommunications lines).

Managers' behavior is also affected by a variety of external factors (i.e. those beyond managers' control).

Macroeconomic conditions: The general macroeconomic environment affects, for example, capacity utilization, managers' planning horizons, investment decisions, and everyday operational decisions.

It is more difficult to commit to investments, for example, in an unstable macroeconomic and political environment where high inflation rates, uncertainty about exchange rates, or frequently changing fiscal policies create ambiguity. Such instability–along with other factors, such as large

public budget deficits–leads to higher capital costs (for domestic investors) or higher country risk (for foreign investors). Higher discount rates will lead managers to

Box 2: Productivity and profitability

Within any given market, a firm that is more productive will enjoy higher profitability, unless it suffers from some other source of cost disadvantage. A more productive firm will either produce the same output with fewer inputs, and thus enjoy a cost-advantage, or produce better output with the same inputs, and thus enjoy a price-premium.

Over time, the higher profitability of productive firms will attract competition. As competitors catch up in productivity, profitability will tend to converge. In such an environment, the only way a firm can continue to enjoy higher profitability is by pushing the productivity frontier beyond its competitors. If, as a result, the firm achieves higher productivity, it will enjoy higher profitability only until its competitors catch up again. In other words, profitability is a transient reward for productivity improvements. This linkage holds within a given market, unless there is a non-level playing field or some other competitive distortion among different players.

While a more productive firm will enjoy higher profitability within a given market, this may not be true for firms operating in different markets, for two reasons. First, higher cost of inputs may render a productive firm in one market unprofitable, while a less productive firm in a market with lower-cost inputs may be profitable. For example, a US firm may be more productive but less profitable than a Thai firm because US wages are higher. Second, competitive intensity may differ across markets so that a productive firm in a highly competitive market may be less profitable than an unproductive monopolist or oligopolist in another market. For example, in the 1980s European airlines enjoyed higher profitability than their more productive US counterparts because they faced much less price competition.

However, deregulation and globalization are eliminating distinctions between national markets. As barriers are removed, productive firms will enter markets with unproductive incumbents. This could take the form of exports if the goods are traded. While cheap input prices may temporarily shield unproductive incumbents in the importing country, those input price differences are not sustainable in the long run. The cost of capital (a key input price) is converging internationally, and wages (the other key input price) will eventually catch up with productivity (so that no country can enjoy both low wages and high productivity in the long-run). The other form of market entry for productive firms is foreign direct investments. In this case, productive transplants will face the same input prices as unproductive incumbents, and will therefore enjoy higher profitability.

In sum, as markets liberalize and globalize, the only way to sustain higher profitability will be to continually raise productivity levels above those of competitors.

delay investments or choose different production technologies, resulting in labor and capital productivity differences across economies.

Capital markets: Distortions in the capital markets (e.g. administered interest rates) result in inefficient allocation of resources that will distort the ability of the market mechanism to reward productive firms over their lower-performing counterparts.

Government ownership: The extent to which management is exposed to pressure from owners or shareholders can influence the rate at which productivity is improved. Such pressure is consistently lower in state-owned enterprises than in private companies. In addition, companies under government ownership often receive subsidies that allow them to compete against more productive players.

Labor market:

- *Stringent labor regulations:* Labor regulations can influence the possibility of implementing productivity improvements (e.g. layoff restrictions limit the ability to reduce excess labor).
- *Inadequate education:* Managers and frontline workers in one country may have lower levels of education or a different educational focus than those in other countries. This may lead to more limited skills and lower trainability, resulting in lower productivity.

Product markets:

- *Entry barriers:* Regulations prohibiting or discouraging certain services, products, or players can reduce or eliminate high-productivity production. Examples include restrictions focusing on the origin of players (e.g. trade barriers and FDI restrictions), or the type or number of players (e.g. limited number of licenses for mobile telephone operators).
- *Competition distortions:* Regulations can introduce distortions to competition by creating a non-level

playing field among different players. Examples include direct tax breaks and/or subsidies for specific players, as well as regulations that protect or favor incumbent companies (e.g. state-owned telecommunications operators). Similarly, regulations prohibiting or discouraging certain product or service offerings (including regulations on pricing) can result in distortions to competition.

- *Lack of enforcement:* Unequal enforcement of taxation (e.g. tax evasion by small-scale vendors) as well as other regulations (e.g. lack of enforcement for counterfeits in retail) also create a non-level playing field and distort competition among players.
- *Standardization:* Although companies and consumers alike can benefit from the use of standards, individual firms often do not have sufficient incentive to take action to promote a standard. Government intervention is often required in order to establish key industry standards (e.g. quality standards for construction materials), which can help to enhance productivity.
- *Threat of red tape/'harassment':* Excessive red tape and 'regulatory harassment' increase complexity costs and limit the incentives for companies to optimize their operations. They often also prevent or delay productivity-enhancing product/service or process innovation.

Related industries: Conditions in supply or downstream industries can hamper productivity by reducing the competitive pressures on the industry players or by distorting competition. An underdeveloped upstream industry, for example, can impose significant productivity costs on its customers by failing to offer products or services that facilitate production or by providing low quality outputs and/or inconsistent delivery.

Poor infrastructure: Includes differences in a country's infrastructure such as roads, rail links, telecommunications, etc. Infrastructure deficiencies can affect productivity in terms of reduced demand (e.g. lack of distribution chan-

nels) and/or increased costs (e.g. procurement).

Other demand/supply factors: Thailand and its comparison countries may differ in factors such as the structure of consumer demand as a result of varying climates, tastes, or traditional consumption patterns. This can influence the product mix demanded in the marketplace, which in turn can affect the value of the total output and thus productivity. Climate, geographical, and geological differences across countries can also result in disparities in cost structures, which can be another cause of productivity penalties.

SECTION II

INDUSTRY CASES

Retail Trade

Retail Trade

CHAPTER ABSTRACT

- Retail trade is an important sector in Thailand, accounting for a sizable share of GDP and employment. Beyond these direct economic contributions, retail trade plays a critical role in determining consumer prices and fostering productivity growth and innovation in 'upstream' industries such as consumer goods manufacturing and distribution.
- In recent years, liberal sectoral regulations and openness to foreign investment have enabled Thailand to rapidly introduce productive modern retail formats such as hypermarkets, supermarkets, convenience stores, and specialty stores.
- Nonetheless, overall labor productivity in the sector remains low–just 22% of the level of the US benchmark. This is because most retail employment in Thailand remains tied to traditional formats such as counter stores, wet markets, and street vendors. These formats are only around 10% as productive as their modern counterparts.
- The migration of commercial activity from traditional to modern formats has been slowed because regulatory differentiation and weak regulatory enforcement allow traditional retailers to reduce their tax burden and skirt minimum wage requirements, thereby creating an artificial cost advantage over moderns. In addition, the absence of specific legislation protecting franchisees has discouraged independent counter stores from joining modern convenience store franchise systems.
- To boost productivity in the retail sector, the government should consider several actions. First and foremost, the current liberal regulatory environment should be maintained despite recent calls for protection of traditional formats and domestic players. Second, a level playing field should be ensured for all

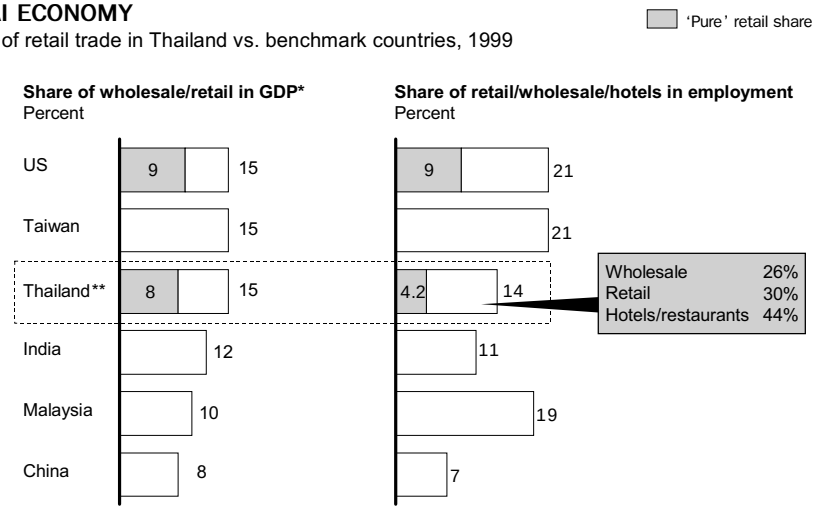
retail players by providing consistent enforcement of equal tax and labor regulations. Finally, the transition process from traditional to modern retail formats should be facilitated, for example by assisting the integration of traditional Thai retailers into modern franchise systems through the establishment of a franchise law that clearly defines the rights of franchisees.

INDUSTRY OVERVIEW

Retail trade is an important sector for Thailand, representing a significant share of national economic activity (Exhibit 1). The retail sector accounts for approximately 8% of Thailand's GDP[1].

EXHIBIT 1: RETAIL TRADE ACCOUNTS FOR A SIGNIFICANT SHARE OF THE THAI ECONOMY

Size of retail trade in Thailand vs. benchmark countries, 1999



* GDP expressed as net value added/national income

** Includes all store formats, gas stations, auto dealers

Source: Euromonitor International Marketing Data and Statistics, WEFA-WIM, Thai Retailers Association, US Census Bureau, Thailand I/O Report

It is also a major employer: based on published statistics, employment in the retail trade sector is estimated at roughly 4% of total employment in Thailand–equivalent to about 1.3 million jobs. This figure, however, probably understates the actual number, given the sizable informal segment in which jobs cannot be reliably accounted for. Also, the importance of retail trade

[1] GDP representing net value added/national income.

Box 1: Retail trade's impact on the broader economy

In any modern economy, the structure and efficiency of the retail sector creates numerous externalities. A strong retail sector can generate efficiencies all the way back up the value chain, driving productivity and innovation, and thereby accelerating growth in consumer goods manufacturing, wholesale/distribution, and related industries.

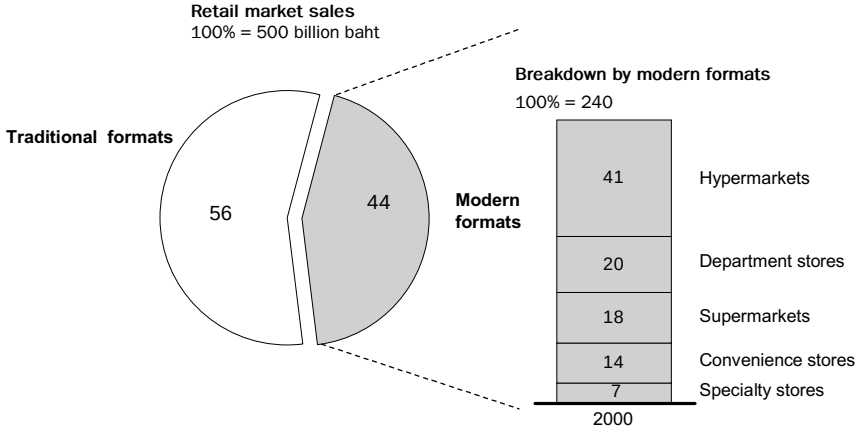
As has been demonstrated around the world, a retail sector populated with modern and productive players will actively seek out the best consumer products and prices, rewarding and developing efficient producers, and penalizing inefficient ones. Consumers benefit directly because of greater choice and lower prices, and the economy benefits because producers have to deal with consumers through a sophisticated and demanding retail sector.

extends far beyond the sector itself: the development of a country's retail sector has a tremendous impact on a number of related 'upstream' industries (see Box 1).

Our research segmented retailers into two groups: modern formats and traditional formats. 'Modern formats' refer to large, technically advanced retailers: hypermarkets, supermarkets,

EXHIBIT 2: MODERN TRADE ACCOUNTS FOR 44% OF THAI RETAIL SALES

THB billions, percent ESTIMATES

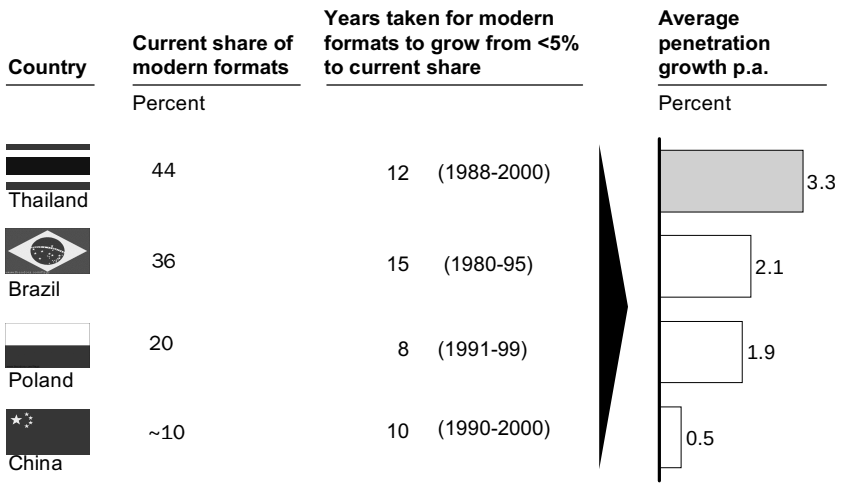


Source: Press clippings; Thai Retailers Association

department stores, convenience stores, and specialty chains. 'Traditional formats' are small, independent (often owner-operated) retailers: counter stores (often called 'mom-and-pop shops'), wet markets, and street vendors.

A liberal regulatory regime has encouraged an influx of investment into modern retail formats in Thailand. As of 2000, modern formats' share of retail sales (excluding gas stations' and auto dealers' sales) is estimated at 44% (Exhibit 2). Penetration of these formats has grown by an average of 3.3% per annum for the past 12 years–one of the strongest sustained growth rates in the countries we have studied (Exhibit 3). Growth of hypermarkets has been particularly robust: hypermarkets now account for roughly 40% of all modern retail sales in Thailand.

EXHIBIT 3: TRANSITION TO MODERN RETAIL FORMATS



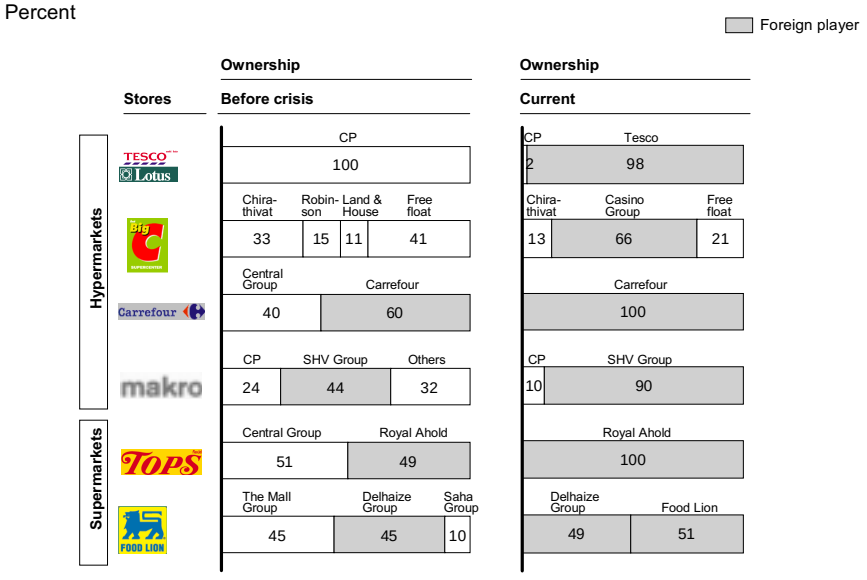
Source: MGI; team analysis

Since the onset of the Asian economic crisis, foreign ownership in the sector has increased markedly. With many domestic retailers experiencing financial difficulties, FDI restrictions were relaxed in 1998 allowing foreign players to own up to 100% of Thai retail interests. Foreign investment increased dramatically thereafter, particularly in the hypermarket/supermarket formats (Ex-

hibit 4). Seven of the top ten retailers in Thailand now have significant foreign ownership. The level of FDI is now above other countries whose retail sectors are at similar stages of development, such as China, Poland, and Brazil.

EXHIBIT 4: SIGNIFICANT FOREIGN INVESTMENTS SINCE THE CRISIS

Percent



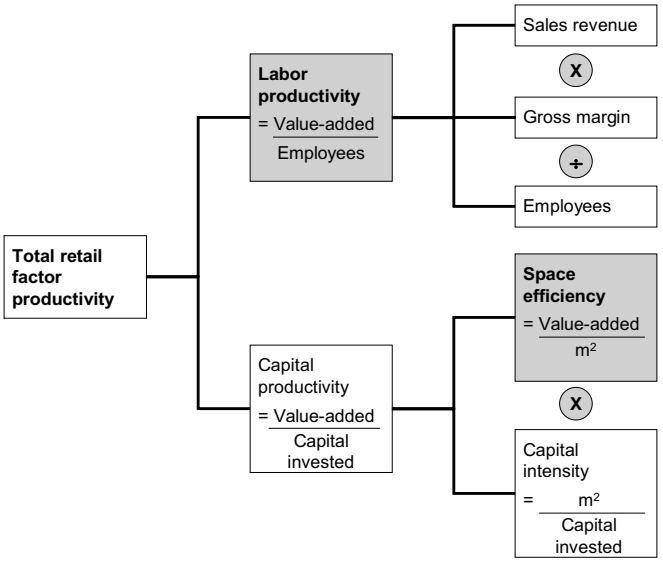
Source: Business media; interviews

Recently, there have been increasing calls for the government to protect small traditional retailers by tightening zoning laws in city centers and taking other measures to limit the further expansion of modern retail formats in Thailand. In response, many hypermarket and supermarket chains have rushed to build new facilities before the proposed regulations take effect.

PRODUCTIVITY ASSESSMENT

Our research measured the two key determinants of retail productivity: labor productivity and capital productivity (Exhibit 5). Labor productivity is defined as value-added per employee (or full time equivalent). We adjusted value-added for consumer Purchasing Power Parity (PPP) to ensure comparability with benchmark countries. In particular, differences in gross margins resulting from factor cost differences were adjusted by assuming

EXHIBIT 5: STUDY EXAMINED TWO KEY INDICATORS OF RETAIL PRODUCTIVITY



similar service quality for the same retailers in different countries. The estimated numbers of employees were calculated bottom-up, format by format.

To calculate capital productivity, we used space efficiency as a proxy[2]–measured as value-added per square meter. This was done because calculating the second determinant–capital intensity, or capital invested per square meter–was not practicable due to the unreliability of existing data.

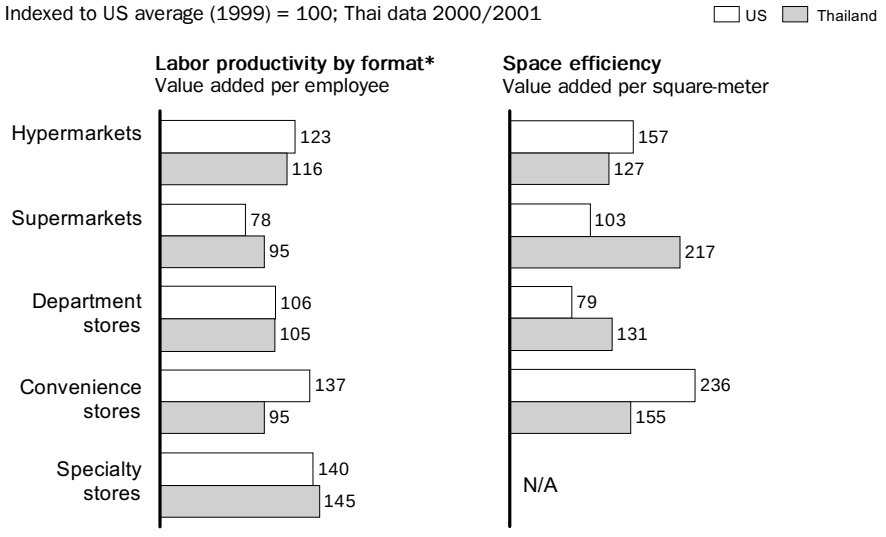
Despite the rapid introduction of modern formats, we have found that overall productivity in the Thai retail sector remains low–roughly 20% of the US level. Logically, only two factors can account for this disparity: (1) retail formats in Thailand are less productive than the corresponding formats in the US (i.e. a 'format-to-format' productivity gap exists), or (2) Thailand has a greater share of retail activity in less productive traditional formats (i.e. a 'format-mix' gap exists).

[2] We analyzed space efficiency for modern formats, but not for traditional players. This is because wet market vendors and street vendors do not necessarily operate from a formally defined space. Furthermore, no reliable source exists for data on space utilized by counter stores. Consequently, space efficiency cannot be properly calculated for these players.

Our research showed that the format-to-format productivity gap is relatively small: the productivity of modern Thai retailers is close to US levels, in terms of both labor and capital productivity. Indeed, Thai specialty stores and supermarkets are on average even more productive than their US counterparts (Exhibit 6).

EXHIBIT 6: THAI MODERN RETAIL FORMATS ARE RELATIVELY PRODUCTIVE COMPARED TO US BENCHMARKS

Indexed to US average (1999) = 100; Thai data 2000/2001



* Adjusted for consumption PPP and gross margin differences between US and Thailand
Source: Business media; TRA; interviews; McKinsey Global Institute; McKinsey analysis

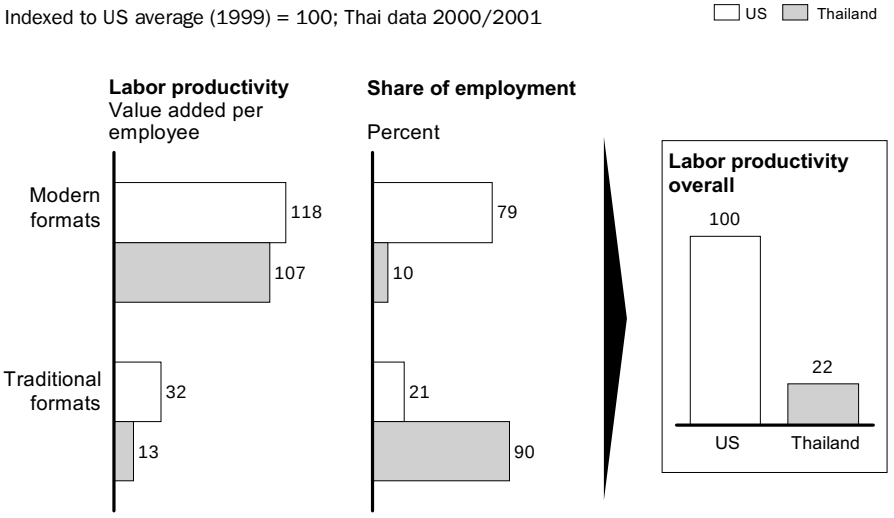
Rather, Thai retail productivity remains low because some 90% of employment in the sector is tied to traditional retail formats, which have productivity levels of roughly 10% of their modern counterparts (Exhibit 7). Consequently, the key lever for boosting productivity is to further shift the format mix away from traditional towards modern formats, rather than emphasizing format-to-format improvements (Exhibit 8).

Format mix issues

The large remaining share of traditional formats in Thai retail trade can be explained by considering (1) current industry dynamics, and (2) the external/regulatory factors driving these industry dynamics (Exhibit 9).

EXHIBIT 7: HIGH SHARE OF EMPLOYMENT IN TRADITIONAL FORMATS REDUCES OVERALL PRODUCTIVITY

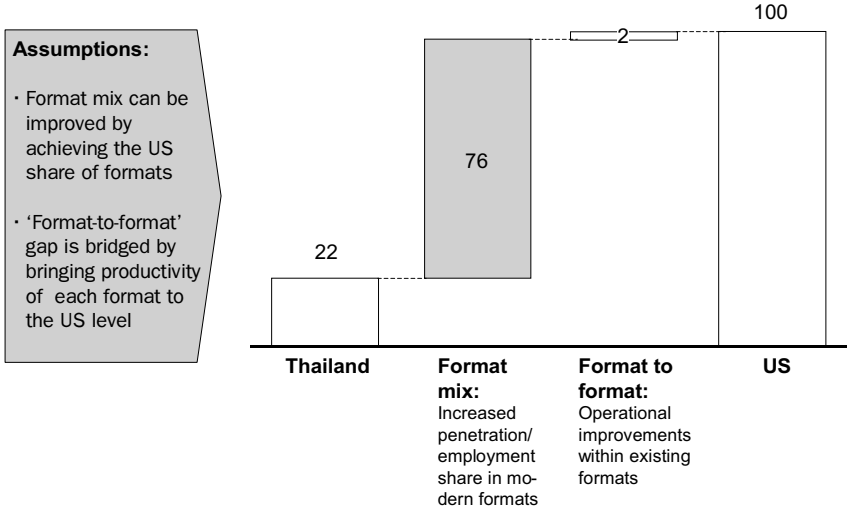
Indexed to US average (1999) = 100; Thai data 2000/2001



* Adjusted for consumption PPP and gross margin differences between US and Thailand
Source: Business media; TRA; interviews; MGI; McKinsey analysis

EXHIBIT 8: CHANGING FORMAT MIX IS THE KEY LEVER TO ACHIEVE HIGHER PRODUCTIVITY

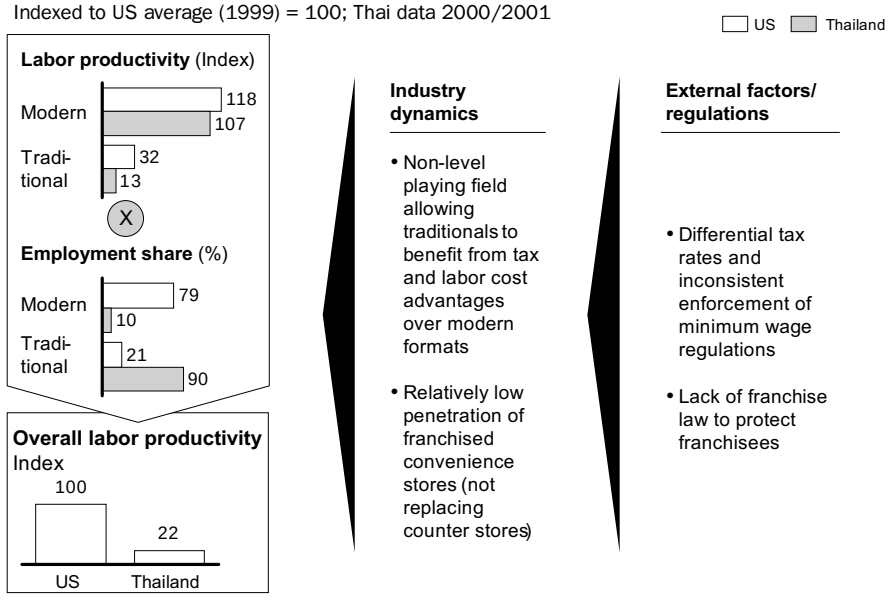
Labor productivity; indexed to US average (1999) = 100; Thai data 2000/2001



Source: McKinsey analysis

EXHIBIT 9: IMPORTANT FACTORS UNDERLYING CURRENT FORMAT MIX

Indexed to US average (1999) = 100; Thai data 2000/2001



Source: Team analysis

Industry dynamics. At the industry level, two important factors are slowing the migration from traditional to modern formats.

Existence of a 'non-level playing field': Inconsistent tax and wage regulations and enforcement create cost distortions that favor traditional players over moderns. Traditional players are often able to avoid taxation and skirt minimum wage requirements. Such 'informal' cost advantages can add up to a substantial share of net profits–roughly30% according to our model calculations-for these retailers. Consequently, they are able to remain competitive with modern formats despite much lower levels of productivity (Exhibit 10).

As long as a non-level playing field persists in the retail sector, traditional players will not experience the competitive pressure that would normally compel them to increase their productivity or be replaced by more efficient formats.

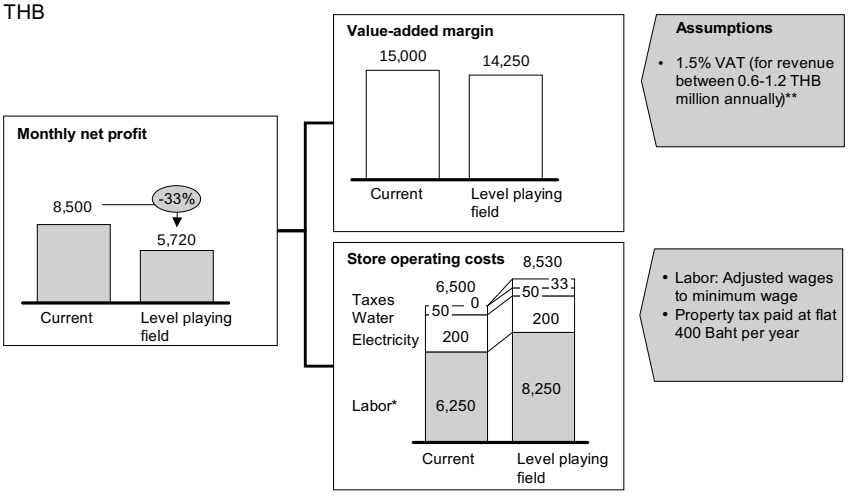
Reluctance of counter stores to join modern franchise chains: By joining a modern franchise chain, independent stores can gain access to managerial best practices and sophisticated IT, accounting, and administrative systems.

EXHIBIT 10: TAX AND LABOR COST ADVANTAGES ALLOW TRADITIONAL PLAYERS TO REMAIN COMPETITIVE

ESTIMATES

Comparison of counter store profit impact

THB



* 250 THB/day and 330 THB/day, respectively 25 days/month

** VAT is 7% for large stores with annual income exceeding 1.2 THB million

Source: Interviews

EXHIBIT 11: LOW PENETRATION OF CONVENIENCE STORE FRANCHISES IN THAILAND

EXAMPLE

Source: Business media

They can also secure cost savings from group purchasing arrangements. In Thailand, however, counter stores have been slow to join franchise systems. For example, of all 7-Eleven outlets in Thailand, only around 30% are owned by franchisees, versus some 70% in the US and over 95% in Japan (Exhibit 11).

External/regulatory constraints to productivity. A set of external/regulatory factors have been driving the industry dynamics described above.

Inconsistent enforcement of minimum wage and tax regulations: As noted, weak enforcement of minimum wage and tax regulations provides smaller retailers in Thailand with 'informal' tax and labor cost advantages over modern retailers.

Unequal tax rates: Even when smaller retailers do fulfill their tax obligations, they incur a lower rate of value added tax (VAT) than larger operators: shops whose annual income is below 1.2 THB million pay 1.5% VAT on revenues, whereas companies whose annual income exceeds this threshold pay VAT at a rate of 7%.

Lack of franchise law to protect franchisees: As noted, independent counter stores or convenience stores in Thailand have been comparatively slow to boost their efficiency by joining modern franchise chains. This is caused to some extent by the lack of a franchise law in Thailand that would protect franchisees and clearly define their rights vis-à-vis the franchise-owner. Such a law would provide greater certainty for franchisees by, for example, prohibiting termination of a franchise relationship without good cause or preventing a franchise-owner from introducing new (company-owned) outlets in close proximity to existing ones owned by franchisees.

Format-to-format issues

Although format-to-format issues are not the primary contributor to low productivity in the Thai retail sector, some efficiency

gains can be realized by addressing gaps in this area as well. Our research found three key format-to-format issues that prevented modern Thai retailers from reaching their productive potential:

Limited use of part-time help and 'multi-tasking': In many countries, use of part-time workers allows retailers to cover peak hours while keeping their full-time workforce as lean as possible. In Thailand, though, part-time labor is not systematically utilized, and there are no clear laws governing part-time employment.

Thai retailers have also been slow to introduce 'multi-tasking'–shifting employees to various departments of a store based on need. Consequently, the total number of employees needed to operate a retail facility in Thailand is comparatively high.

Lack of outsourcing: Outsourcing of non-core business activities can allow retailers to boost efficiency by focusing on their primary competencies. In Thailand, though, outsourcing has not taken off because professional services industries such as logistics and storage are still underdeveloped.

Outsourcing of non-core business activities can allow retailers to boost efficiency by focusing on their primary competencies.

Fragmented procurement practices: Few large-scale suppliers of retail goods have emerged in Thailand, meaning retailers must procure their goods from multiple, subscale suppliers. Consequently, they incur higher transaction costs and forego the cost savings that consolidated ordering with a limited number of core suppliers could offer.

POLICY RECOMMENDATIONS

Unlike several of the other Thai industries we surveyed, the retail trade sector does not require further deregulation in order to achieve its productive potential. Rather, the government should focus on (1) maintaining the current liberal regulatory environ-

ment, (2) ensuring a level playing field and fair competition, and (3) facilitating the transition to modern formats by, for example, introducing a franchise law.

Maintaining the current liberal regulatory environment: Thailand's success in introducing modern retail formats is a direct result of liberal retail regulations. Recently, however, there have been calls for increased regulation of the retail sector in order to protect domestic and traditional retailers. Proposals have been tabled that would, among other things, regulate retailers' operating hours, limit foreign participation in the sector, and prevent any one player from controlling more than 10% of market share.

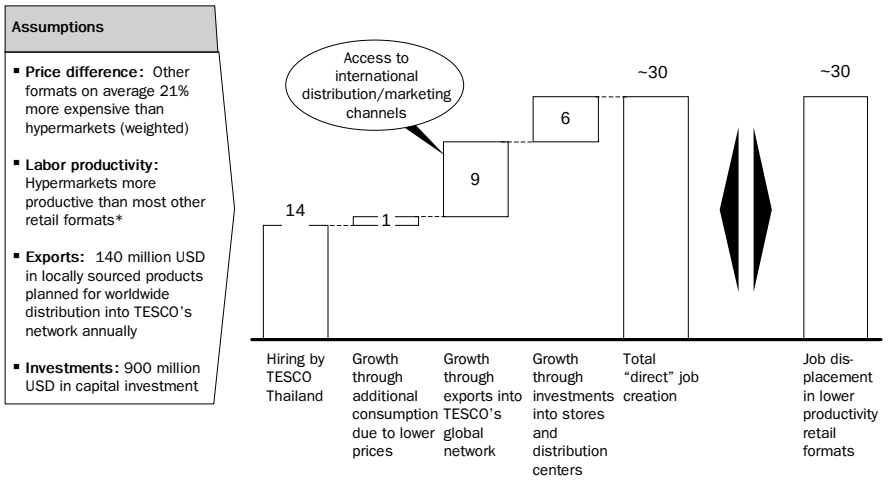
It is critical that the government resist these demands. Although the traditional retail sector does indeed play an important role in generating employment and encouraging entrepreneurship, the government should also consider the needs of the Thai consumers (modern formats can sell products up to 20% cheaper than counter stores while offering greater selection) as well as the economy as a whole. Furthermore, while the migration to modern formats may temporarily displace workers in the retail sector, it should be understood that the broader impact of an effective retail sector on employment will be attractive (see Box 2). Rather than introducing regulations that defend

Box 2: Modern retail's impact on employment

A common rallying cry against modern retailers is that they destroy jobs by pushing smaller competitors out of business. Global retailers do indeed operate with fewer employees than the less sophisticated retail operations they replace. However, they also create new job opportunities not only within their own operations, but also in other industries such as consumer goods: companies like Tesco Lotus screen and 'qualify' Thai products for their local operations, and–if proven to be internationally competitive–often also export these products into their global supply chain. Company statements indicate that Tesco currently exports over US$100 million worth of Thai products annually into its global operations. When the jobs resulting from increased exports are calculated and added to jobs created by Tesco's domestic operations, investments and other factors, the impact on job creation/destruction becomes attractive (Exhibit 12).

EXHIBIT 12: 'DIRECT' JOB CREATION BY MODERN RETAILERS CAN OFFSET DISPLACEMENT EXAMPLE

Employment effects from introduction of modern retail format–Tesco Lotus Thailand
Estimated number of jobs in thousands (rough estimates – model calculation)



* See detailed retail productivity analysis
Source: Interviews; press clippings;McKinsey analysis

unproductive traditional retailers, the government should help these companies to increase efficiency, for example by encouraging counter stores to integrate with modern franchise systems (see final recommendation).

Enforcing a level playing field for all retail players: Leveling the retail playing field would increase competitive pressure on traditional retailers, compelling them to either enhance their productivity or be replaced by modern formats. The government should seek to level the field through equal treatment and consistent enforcement of tax and labor regulations for all retail players. However, enforcing tax and labor laws amongst the myriad of small, independent counter stores is a significant challenge that will require careful planning. Preliminary steps could include publicly announcing that enforcement will be pursued and formally requiring counter stores to keep receipts for all register sales as well as payroll expenses. Even these minor steps would apply some additional com-

petitive pressure to counters stores, encouraging them to seek ways to further boost efficiency.

Facilitating the transition to modern formats by, for example, introducing a franchise law: The absence of clearly defined legal rights of franchisees discourages counter stores from integrating with franchise chains. The introduction of a law defining the rights and obligations of both franchise-owners and franchisees could help to accelerate the growth of Thailand's franchise system. There are ample international examples of franchise laws. The government should assign a team to study laws in countries whose retail sector resembles Thailand's. Based on this research, draft legislation for Thailand could be rapidly introduced.

The above recommendations directly attack the 'format mix' issue, which is the primary barrier to higher retail productivity. In addition, 'format-to-format' issues, such as the facilitation of part-time work, should be addressed in parallel.

* * *

Thailand's retail trade sector provides a compelling example of how liberal regulations can underwrite rapid, productivity-enhancing change. However, the current calls for increased regulation in the sector threaten future productivity gains. Given the role of retail trade in determining consumer prices and influencing upstream industries like consumer goods manufacturing, it is vital that the government maintain its liberal posture in this large and important sector.

Retail Banking

Retail Banking

CHAPTER ABSTRACT

- Despite some liberalization since 1997, the Thai banking landscape has experienced only limited structural change. Large domestic banks remain dominant, and consumers continue to underutilize retail banking products.
- Thailand's productivity in retail banking is about half of the US level, with the largest productivity gap in loans. Operational causes of low productivity include inefficient branch design, lack of marketing and risk management skills, and over-reliance on cash-based and branch-based transactions.
- These operational inefficiencies have persisted largely because regulatory barriers to foreign entry have historically reduced competitive pressure within the industry. Other regulatory issues include government involvement in bank operations, delays in passing important financial sector legislation, and a high proportion of government ownership of banking assets.
- To help increase productivity in the Thai retail banking sector, three policy actions should be taken: (1) a clear financial sector master plan that includes a meaningful role for foreign banks should be developed, (2) existing banking regulations should be clarified and streamlined, and (3) approval of new supporting legislation such as the Credit Bureau Act and a comprehensive electronic commerce law[1] should be accelerated.

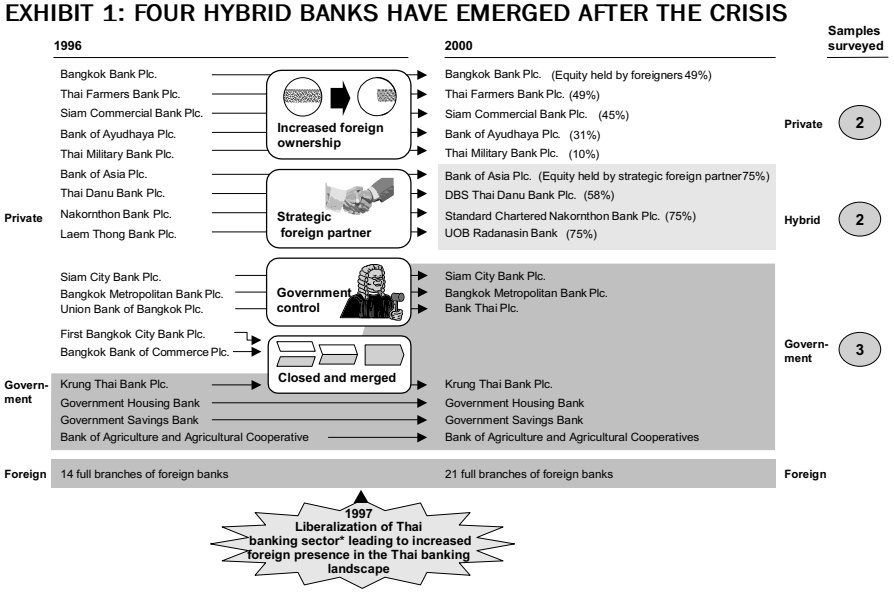
INDUSTRY OVERVIEW

In response to the regional financial crisis that began in 1997, the Thai government has introduced a number of liberalization

[1] While laws governing some aspects of electronic commerce have been passed recently, a comprehensive set of laws on e-commerce is not yet in place.

measures aimed at reviving the banking sector. Foreign banks, for example, were permitted to own a majority stake in selected local banks for a period of 10 years. Consequently, four so-called 'hybrid' banks have emerged in which foreign banks hold more than 50% equity stakes: Bank of Asia, DBS Thai Danu, Standard Chartered Nakornthorn, and UOB Radanasin (Exhibit 1). All four of these relatively small banks had been previously

EXHIBIT 1: FOUR HYBRID BANKS HAVE EMERGED AFTER THE CRISIS



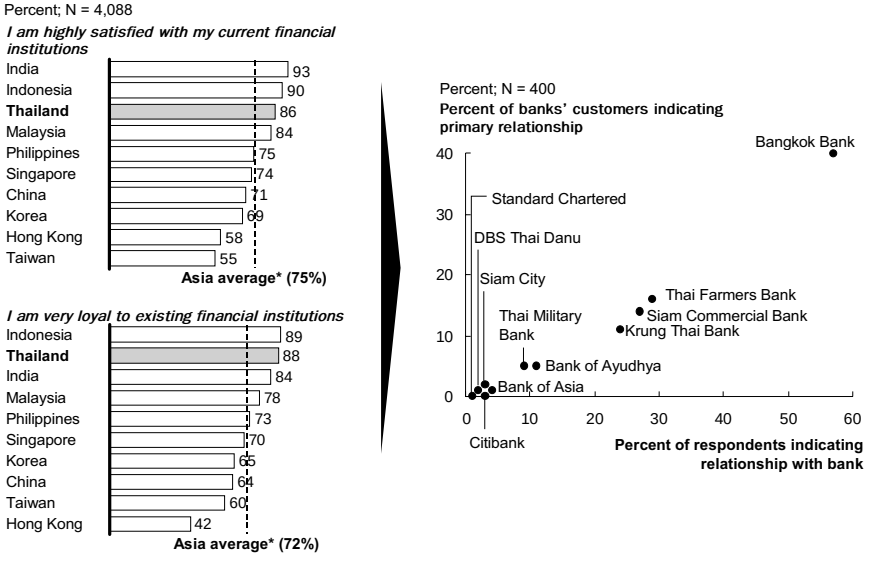
* Foreign equity ownership above 49% allowed for a period of 10 years, after which foreign investors not allowed to purchase more than 49% shareholding.

Source: *Commercial Banks in Thailand 1997,* Bangkok Bank Plc.; *Money & Banking Magazine,* Stock Exchange of Thailand

taken over by the public sector-as they had become insolvent during the crisis-and were then sold off to foreign bidders. This creation of hybrid banks represents the most visible increase in foreign participation in the Thai banking sector since the onset of the financial crisis. At the same time, large Thai banks have secured substantial equity injections from international investors through private placements, but none has taken in a foreign banking partner as a strategic investor.

Beyond these changes in ownership, though, the Thai banking sector has not experienced significant structural change since the crisis. It continues to be dominated by large incumbents that benefit from strong consumer loyalty (Exhibit 2). Given the modest structural change in the industry, there has been limited

EXHIBIT 2: ENTRENCHED RELATIONSHIPS ALLOW LARGE BANKS TO REMAIN DOMINANT



* Arithmetic average of 10 Asian countries surveyed

Source: McKinsey's proprietary PFS 2000 Survey (based on high & middle income customer segments)

sense of urgency among Thai banks to improve efficiency and productivity. Foreign and 'hybrid' banks have, however, started to successfully cherry-pick high-value customers, steadily increasing their market share in the more profitable customer segments and in products that allow more rapid market penetration (e.g. credit cards). Over time, this trend could put more and more pressure on Thai banks to further address productivity issues.

Thai consumers are still underutilizing key retail banking products: payment transactions, deposits, and loans (Exhibit 3). The number of deposits per capita in Thailand, for example, is less than half of the Korean level, and the number of payments is less than a quarter of the comparable Korean figure. The number of loans per head is about the same level as in India, which has a substantially lower GDP per capita.

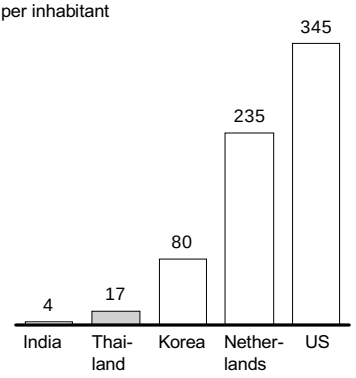
Furthermore, Thai consumers tend to use mainly the basic (and therefore less value added) banking products and services. Some 80% of household savings in Thailand are in the form of low-yield bank deposits, compared to 64% in Korea and 20% in the US where a significant share of savings is channeled into equity and bond markets (Exhibit 4).

EXHIBIT 3: THAI CONSUMERS ARE STILL UNDERUTILIZING KEY RETAIL BANKING PRODUCTS

ESTIMATES

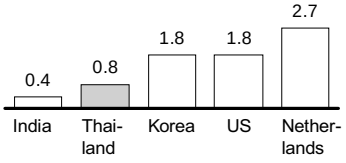
Payment output per capita

Number of payments per year per inhabitant



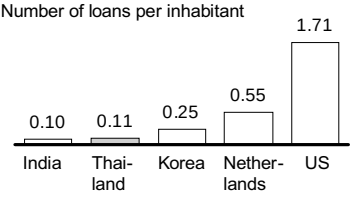
Deposits output per capita

Number of deposits per inhabitant



Loans output per capita

Number of loans per inhabitant

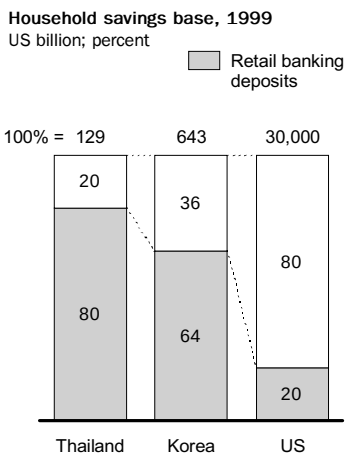


Source: BOT; McKinsey analysis

EXHIBIT 4: THAI CONSUMERS PREFER BASIC BANKING PRODUCTS

Household savings base, 1999

US billion; percent



Source: McKinsey's proprietary PFS 2000 Survey (based on high and middle income customer segments); Bank of Thailand; Bank of Korea; Bernstein research

The following section presents our key findings on productivity in the retail banking sector. While improving productivity in retail operations may not currently sit atop the agenda of many Thai bankers–given the continued financial concerns they face–we have found that there is substantial room for efficiency improvements in Thai retail banking if properly addressed.

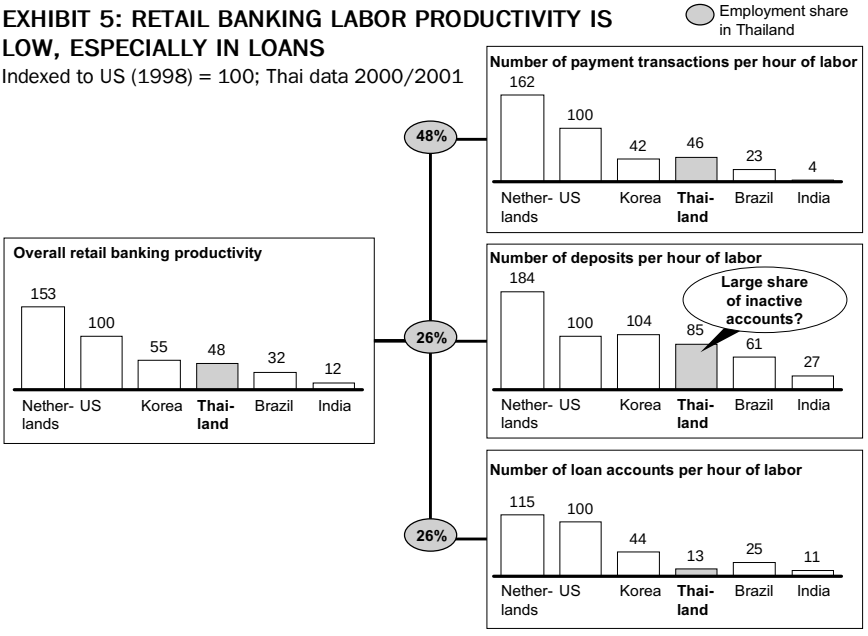
PRODUCTIVITY ASSESSMENT

Our research benchmarked labor productivity of Thai retail banks against banks in both emerging and developed economies. Seven out of Thailand's 16 banks with retail operations participated in our survey by providing us with information to calculate and interpret their productivity performance, including four private banks and three public-sector banks.

We found the overall productivity of Thai banks to be about half of the US level. Productivity turned out to be especially low in the area of loans–the average number of loans processed per hour of labor by a typical Thai bank is only about 13% of that in the US (Exhibit 5). The number of payment transactions processed

EXHIBIT 5: RETAIL BANKING LABOR PRODUCTIVITY IS LOW, ESPECIALLY IN LOANS

Indexed to US (1998) = 100; Thai data 2000/2001



Source: RBI Special Statistics; Interviews; McKinsey analysis

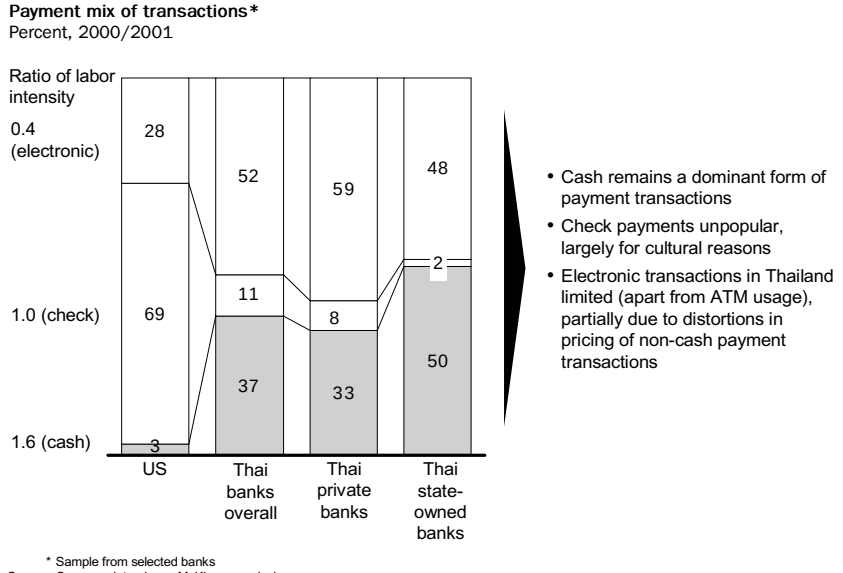
per hour is about half of the US level[2]. In the area of deposits, the productivity difference is less pronounced, although this may be the result of Thai banks carrying a larger share of inactive accounts (which would be included in our output measure). Thai public-sector banks consistently scored lower than Thai private banks in terms of overall productivity.

Operational factors affecting productivity

Our research identified five key operational factors that restrain productivity in Thai retail banking:

Cash-based payments and branch-oriented channel mix: Thai banks still exhibit a high proportion of cash-based transactions, which account for almost 40% of all payment transactions (compared to only 3% in the US, Exhibit 6). Cash transactions tend to be more labor-intensive than other forms of payments, in particular electronic payment systems (e.g. through ATMs or Internet banking). The

EXHIBIT 6: PAYMENT MIX: THAI RETAIL BANKING EXHIBITS A HIGH PROPORTION OF CASH TRANSACTIONS



* Sample from selected banks
Source: Company interviews, McKinsey analysis

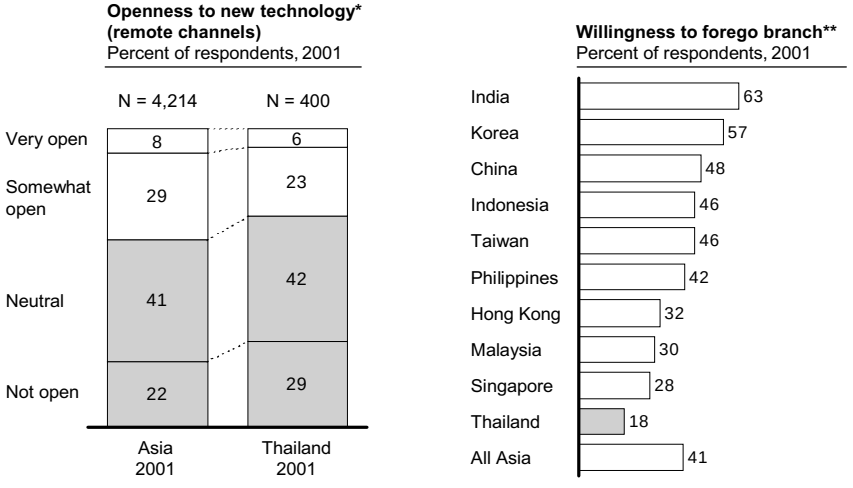
[2] Note that the US is not a best practice case due to the large share of check-based transactions.

slow up-take of electronic payments-other than the use of ATMs-can be partially attributed to pricing distortions in Thai payment services. Recent research by the Thailand Development and Research Institute (TDRI) revealed that Thai banks have been subsidizing off-line payment services (especially checks) by charging high fees for electronic payments.

Also, most Thai banks have yet to develop fully functioning call centers that could transfer branch traffic to a more efficient phone-based system. Hence, transactions such as funds transfers and account inquiries, which could easily be handled by call centers, continue to be serviced by bank tellers in traditional branches.

Interestingly, Thai consumers are extremely reluctant to use non-branch channels, compared to other Asian retail banking customers (Exhibit 7). Less than 20% of Thai custom-

EXHIBIT 7: CHANNEL MIX–THAI CONSUMERS ARE GENERALLY NOT RECEPTIVE TO LOWER COST NON-BRANCH CHANNELS



* Very open (First to try new technology); Somewhat open (Try when there is a short track record); Neutral (Try when widely accepted); Not open (avoid until absolutely necessary)

** I could handle most of my financial needs over the phone and would not used a branch if such a service existed

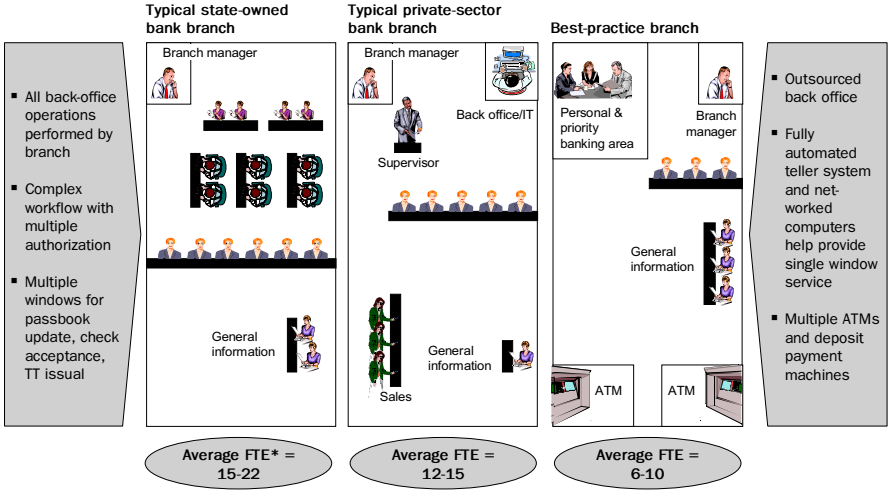
Source: McKinsey Asia Personal Financial Services Survey, 2001

ers are willing to forego the branch as the main conduit for their banking operations, compared to more than 40% of customers in other Asian countries. Also, the percentage of customers open to new, lower-cost technologies like

Internet banking is markedly lower in Thailand than in the rest of Asia.

Inefficient branch design and organization: As noted, the branch will continue to be the primary point of contact for Thai retail banking customers in the foreseeable future. Nonetheless, most Thai banks are not yet capturing the efficiencies offered by modern forms of branch organization and management (Exhibit 8). Branches tend to be over-

EXHIBIT 8: EFFICIENCIES FROM AUTOMATION AND BETTER BRANCH ORGANIZATION NOT YET CAPTURED BY THAI BANKS



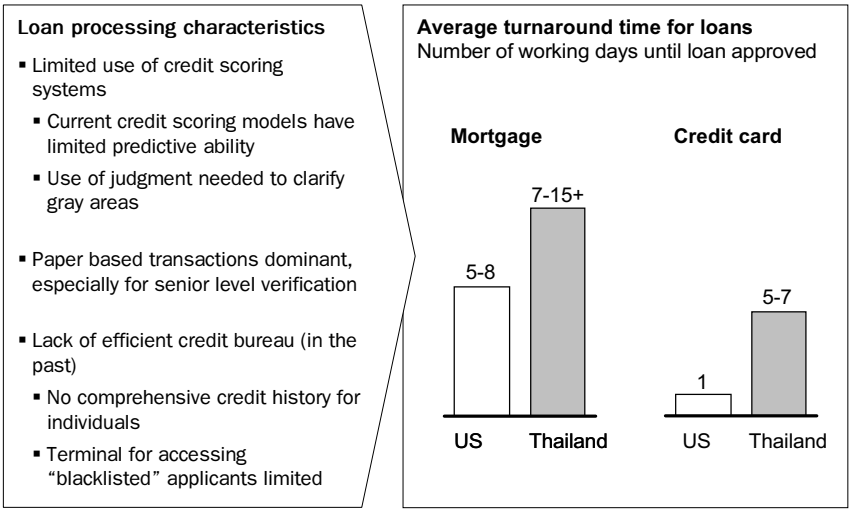
* FTE = full-time equivalent

Source: Interviews; McKinsey analysis

staffed, with the average number of employees per branch far exceeding the staff levels in international best-practice branches. With a few exceptions, the majority of Thai banks continue to perform back-office functions within each branch, rather than through centralized back-office centers. Likewise, workflow and customer interfaces are often complex and inefficient, with multiple windows used for passbook updates, check acceptances, etc. In addition, public sector banks and the large private banks continue to operate a high proportion of low-margin rural branches in roughly the same branch format.

Insufficient automation: Banks in Thailand are not yet reaping the full benefits of automating routine operations. In loan processing, for example, productivity is reduced by paper-based processing, the lack of an efficient credit bureau (in the past), and limited use of sophisticated credit scoring systems. As a result, the average turnaround time for a mortgage approval is on the order of 7-15 days, compared to 5-8 days on average in the US[3] (Exhibit 9).

EXHIBIT 9: INEFFICIENT LOAN PROCESSING LEADS TO LONG TURNAROUND TIME FOR LOAN APPROVAL

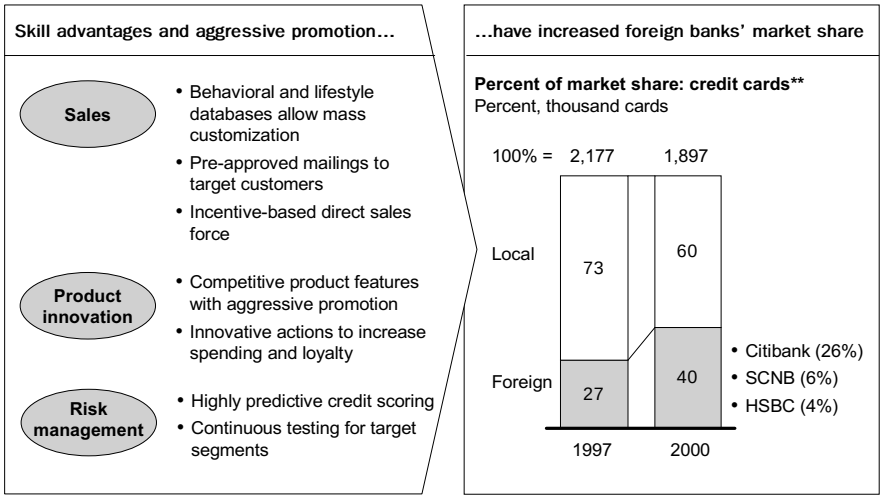


Source: Interviews

Limited marketing and risk management skills: Skill limitations continue to restrain the productivity of domestic incumbent banks. In the area of credit cards, for example, foreign banks have been able to capture significant market share due to skill advantages and aggressive promotion. By actively leveraging skills in sales and marketing, product innovation, and risk management, foreign players have grown their credit card share from 27% in 1997 to 40% in 2000 (Exhibit 10). Active use of customer databases, for example, has allowed foreign banks to focus marketing

[3] Some leading US banks now process mortgage applications within hours.

EXHIBIT 10: STRONG SKILLS HAVE ALLOWED FOREIGN BANKS* TO RAPIDLY CAPTURE MARKET SHARE IN THE CREDIT CARD SECTOR



* Foreign includes foreign-branch banks and foreign-hybrid banks
** Valid and invalid cards
Source: Press clippings

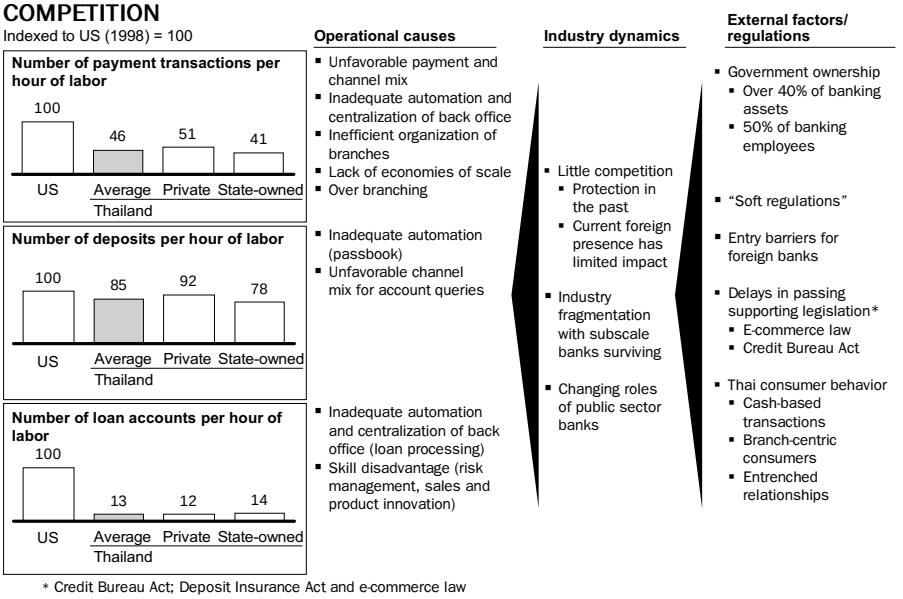
campaigns on the most attractive customer segments. The application of sophisticated risk management in credit scoring, monitoring, and work-outs allows foreign banks to efficiently and effectively pre-select the lowest-risk customer groups and price accordingly. It can also help to maximize loan loss recovery.

Sub-scale operations: Hybrid banks, in particular, are disadvantaged by sub-scale operations, which significantly affect their productivity in payment transactions and deposits. In fact, the labor productivity levels for the hybrid banks included in our research turned out to be significantly lower than those for larger Thai private and even public banks. Operational improvements can partially address this structural disadvantage, for example, through increased automation or (regional) centralization of back office operations. However, the real solution to this structural challenge lies in aggressive growth, which is proving difficult given the entrenched customer relationships enjoyed by the large incumbent banks.

Industry and external factors

The operational deficiencies described above are the result of several industry and regulatory factors, especially constraints on foreign competition, 'soft' regulations, delays in passing supporting banking legislation, excessive government ownership, and Thai consumer behavior (Exhibit 11).

EXHIBIT 11: PRODUCTIVITY ENHANCEMENTS HELD BACK BY GOVERNMENT OWNERSHIP, "SOFT REGULATIONS" AND CONSTRAINTS ON FOREIGN COMPETITION



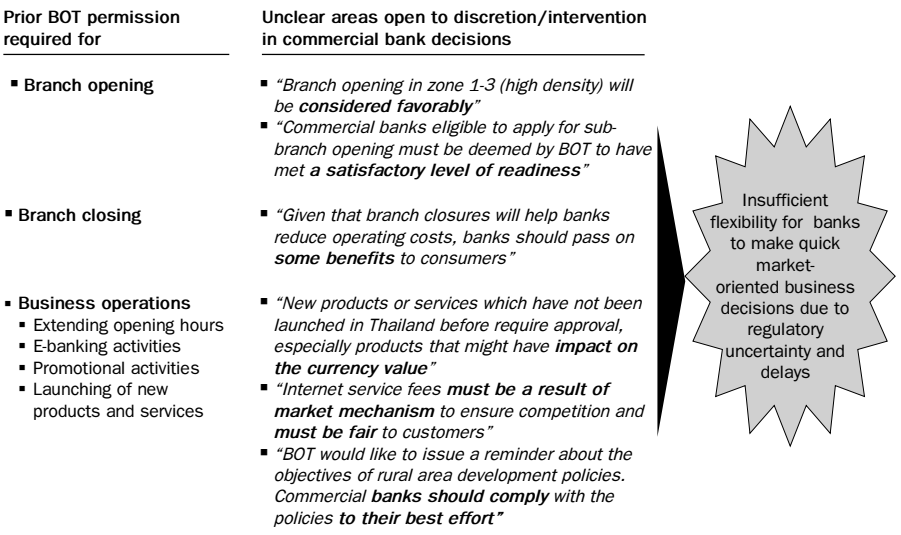
* Credit Bureau Act; Deposit Insurance Act and e-commerce law

Constraints on foreign competition: Thai banks have long enjoyed a significant degree of protection from foreign entry. Even after the post-crisis liberalization, restrictions remain in place: pure foreign banks, for example, can run only one branch in the country. New full banking licenses have not been issued, meaning that foreign banks can make strategic investments (e.g. hold a controlling stake in a Thai bank) only through acquisitions of existing banks. So far, the banks made available for foreign acquisition have been among the smallest and most troubled ones. In 2000, the four hybrid banks held a combined asset share of less than 6%. Their impact on competition has therefore been limited so far.

However, in areas where international competitors-both banks and non-bank financial players such as GE Capital-have started to play a substantial role (e.g. in credit cards or consumer finance) competitive intensity has clearly increased. In credit cards, for example, virtually all major banks now offer fee waivers in order to remain competitive-thus benefiting Thai consumers.

'Soft regulations': A number of unclear and discretionary regulations reduce the flexibility of bank managers in Thailand to take and implement business decisions quickly and flexibly in response to market needs and opportunities (Exhibit 12). These so-called 'soft regulations' concern

EXHIBIT 12: "SOFT REGULATIONS" RESTRICT BANKS' FLEXIBILITY IN PLANNING AND DECISION MAKING



areas such as branch openings and closures, as well as operational issues such as the introduction of new banking products, the pricing of e-banking services, and operating hours. Introducing innovative products, for example, often requires a months-long approval process that slows product innovation in the Thai banking sector. Branch openings and closures have traditionally required approval by the Bank of Thailand. And the regulatory language on

the pricing of Internet services seems vague and difficult to interpret.

Delays in passing supporting legislation: While some steps have been taken to introduce key enabling legislation that can support efficiency improvements in retail banking, overall progress in this area has been slow. For example, an important step in streamlining loan approvals is the establishment of a centralized database of credit histories of borrowers. While two such institutions were set up recently-the Central Credit Information Service and the Thai Credit Bureau-provisions in the Thai commercial banking law require customer consent before information can be disclosed to such centralized database providers. In addition, access to the files of law enforcement agencies (e.g. court judgments, tax liens) also requires customer consent. Such practices contrast with the operations in other countries where defaulted borrowers, after a specified period of time, are automatically reported to the credit bureau. Other pending legislation that could facilitate productivity enhancements in banking includes the Deposit Insurance Bill and a comprehensive electronic commerce law.

Government ownership: Over 40% of domestic bank assets continue to be state-owned, representing 50% of total banking employment in Thailand. Typically, government ownership reduces the flexibility of bank management to streamline their operations and workforce, for example by investing in automation technologies. Furthermore, executives of state-owned banks generally are less motivated to enhance productivity, as they tend to lack the financial incentives that encourage private-sector management to increase efficiency and profits; also, they are generally well aware that they could rely on the government's support if they were to encounter financial difficulties. Finally, the mission and role of state-owned banks tends to be unclear as they are often used to pursue government policies rather than seeking to maximize profits. Consequently, it is difficult for their managers to focus on long-term rationalization of their business operations.

Our benchmarks appear to confirm the negative impact of government ownership on productivity: in our study, Thai state-owned banks have, on average, under-performed private-sector banks in terms of their labor productivity.

Thai consumer behavior: A final productivity barrier, which may prove particularly hard to overcome, is the 'stickiness' of Thai consumers: their strong preference for cash-based, branch-centric transactions. To increase usage of lower cost channels, banks will need to be more proactive in educating their customers regarding new products and service channels and encourage behavioral changes that allow banks to serve customers more efficiently.

POLICY RECOMMENDATIONS

What policy changes can be made to improve productivity in the Thai retail banking sector? We identified three key areas for policy action:

Developing a financial sector master plan: We recommend that a master plan be developed that provides a clear vision for the Thai financial sector and actionable guidelines for policy-makers going forward. In addition to the planned privatizations of state-owned banks, this master plan should include a vision of the desired 'endgame' for Thai banking, and should address issues such as the role of foreign banks, the number and role of local players, and targets for efficiency improvements.

We recommend that a master plan be developed that provides a clear vision for the Thai financial sector.

One important issue is the level of foreign competition in the banking sector, which currently seems sub-optimal. Allowing a greater degree of foreign entry would help introduce international best practices into the domestic banking sector to the benefit of Thai consumers and the economy as a whole. Our research in other countries has

shown that increased participation of foreign banks helps to intensify competition and reduce inefficiencies in the domestic banking sector. Increasing competition among local banks alone will not achieve the same impact, since these banks typically have limited exposure to managerial best practices and the latest technologies. Product, service, and marketing innovations initiated by foreign banks will also contribute to further developing Thai consumer behavior by, for example, using sophisticated marketing techniques to migrate customers to lower-cost channels and/or educate customers regarding higher value-added products.

Increased foreign participation in Thai banking does not necessarily mean the take-over of domestic banks by international competitors. Strategic alliances or joint ventures between local and foreign players are another way of leveraging international know-how and increasing competition in the domestic market-without losing control over domestic financial institutions to foreign companies. The credit card and consumer finance joint venture between Bank of Ayudhya and GE Capital or the consumer finance collaboration between Thai Farmers Bank and Cetelem/BNP Paribas are recent examples of such Thai-international partnerships in the retail banking sector.

Finally, efficiency can also be enhanced through increased scale in the Thai banking sector. Hence, options for industry consolidation should also be considered in drawing up a forward-looking master plan for the Thai financial sector. Consolidation can refer both to the merger of entire banks or the combination of specific functions or services only (for example, establishing joint back-office processing facilities while keeping the banks' customer-facing, front-office operations separate).

Efficiency can also be enhanced through increased scale in the Thai banking sector.

Ensuring clear and efficient regulations: Current regulations require approval by the Bank of Thailand for a number of

routine operational decisions, while often leaving too much scope for interpretation and regulatory discretion. We recommend a shift away from a conduct-driven regulatory regime towards a performance-driven approach that reduces the need for the regulator to get involved in the micro-management of routine banking activities. In addition, the criteria and response time for administering regulations should be specified more clearly so as to avoid delays and reduce managerial uncertainty on the part of banks.

Speeding up supporting legislation: Three areas where new legislation is expected to lead to further advances in productivity include the establishment of a Credit Bureau Act, which would provide for automatic inclusion of defaulting creditors in a centralized database, the Deposit Insurance Bill, which will protect retail depositors and allow regulators to move to a more output-oriented regulatory regime, and a comprehensive electronic commerce law, which would facilitate electronic banking and payment transactions.

While the above policy changes can help facilitate and promote productivity improvements, the actual efficiency gains will need to be implemented by the banks themselves. In our experience, some of the key levers that Thai banks can pull to systematically improve productivity include the following:

Improving operational set-up: Typically, 15-20% of back-office expenses can be saved by centralizing certain back-office functions and optimizing branch layout and workflows.

Rationalizing distribution networks: A careful value analysis of the branch network can allow banks to streamline their distribution system. Strengthening alternative channels such as phone banking and making customers migrate to such lower-cost channels will help to reduce both operating costs and the customer attrition that will result from the closure of sub-scale branches.

Streamlining organizational design: By flattening organizational hierarchies and simplifying structures, total headcount can typically be reduced significantly, often leading to a 20% reduction in cost. Competitive benchmarking will help to determine best practices in different organizational areas.

Beyond these cost-oriented measures (which focus on better management of the input side of productivity), our experience shows that there are also tremendous opportunities for Thai banks to better leverage existing revenue opportunities (i.e. focusing on the output side of productivity). Potential revenue-enhancing efforts include the following:

Systematically stimulating sales efforts: Disciplined, well-structured programs to generate additional sales by combining (1) innovative sales approaches (e.g. direct sales, pre-approval of credit cards or consumer loans, etc.), and (2) optimized customer information, with (3) improved sales tools and support (sales scripts and manuals, on-the-job training, optimized time allocation schemes), typically allow revenue increases on the order of 20-30%, which can be rapidly tested on a pilot basis and then systematically rolled out and institutionalized across the entire organization.

Well-structured programs to generate additional sales can allow revenue increases on the order of 20-30%.

Enhancing marketing effectiveness: Many banks do not allocate their marketing spend systematically against key customer segments and critical customer decision points. Prioritizing and reallocating marketing efforts in the most effective way typically leads to significant sales growth.

Applying tactical CRM tools: Tactical Customer Relationship Management offers an opportunity to use existing customer information–often by aggregating data across unlinked databases–to quickly drive revenue and profitability enhancement (e.g. through targeted cross-selling initia-

tives), often leading to substantial revenue increases in a short period of time.

* * *

We believe that a combination of policy changes and bank-led improvements can lead to a rapid and significant increase in the productivity and efficiency of Thai banks. Such gains will be critical to enabling banks to better fulfill their important intermediation function in the Thai economy.

Telecommunications

Telecommunications

CHAPTER ABSTRACT

- Thailand's telecommunications industry is comparatively small and underdeveloped. Overall, fixed and mobile line penetration rates are below those in countries at similar levels of development (although substantial disparities exist between Thai urban and upcountry areas).
- Productivity gaps are most pronounced in the fixed line segment, which remains heavily regulated. In mobile, increased foreign participation has allowed operators to make marked increases in both penetration and productivity levels.
- At the operational level, low productivity is the result of (1) overstaffing, particularly within the state-owned incumbents, (2) poor operations management, which has forgone many viable productivity improvements, and (3) ineffective marketing, which has left many lines unsubscribed and led to slow adoption of value-added services.
- At the industry and regulatory level, the main causes of low productivity are (1) the high proportion of government ownership, and (2) unclear industry regulations that limit competition among operators and create distortions in industry behavior. Regulatory ambiguity results largely from the fact that the government has not established a clear set of policy objectives for the sector.
- To help boost productivity in the industry, the government should (1) establish and communicate clear telecom policy objectives, (2) develop a detailed roadmap for industry deregulation, and (3) ensure effective privatization of the state-owned incumbents.

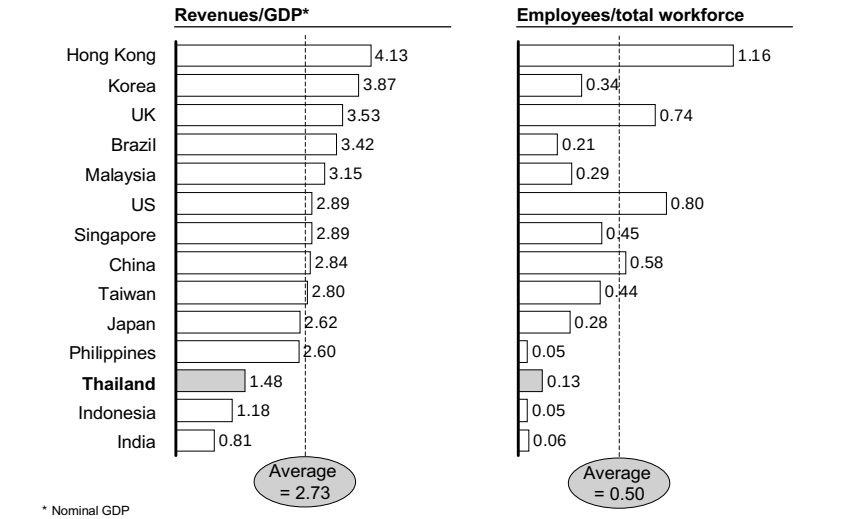
INDUSTRY OVERVIEW

Thailand's telecommunications industry is relatively small and underdeveloped. Its share of GDP as of 1999 was only around 1.5%, roughly half the level of several comparable Asian economies (Exhibit 1). The telecommunications industry accounts for

EXHIBIT 1: THAILAND'S TELECOM SECTOR IS RELATIVELY SMALL
Percent

Telecom share of national economy, 1999

ESTIMATES



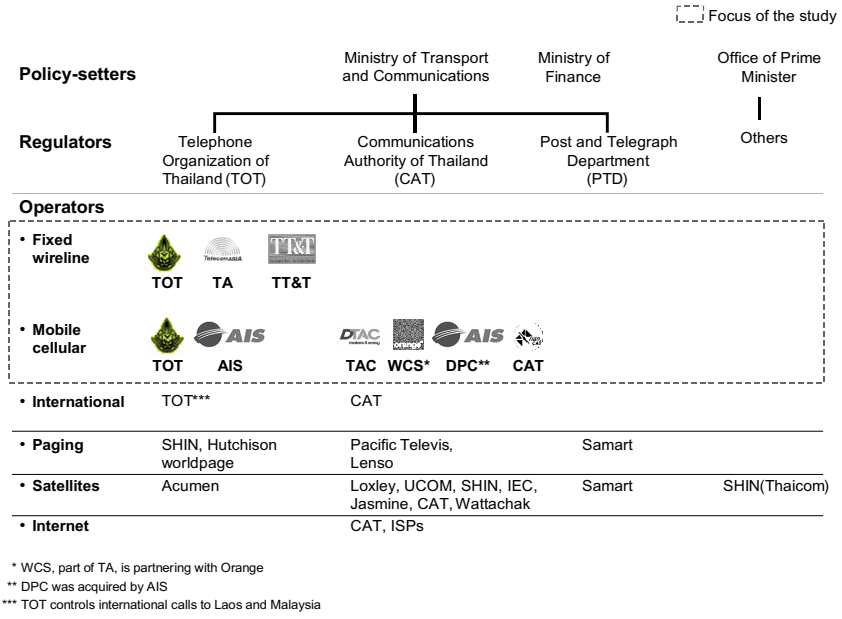
* Nominal GDP

Source: ITU; ILO Bureau of Statistics

only 0.13% of total employment in Thailand, one of the lowest levels among Asian economies. Exhibit 2 provides an overview of the major players in the industry.

Our research focused on fixed-line and wireless (mobile) telecommunications, as these are the largest segments of the industry. In the fixed-line sector, the state-owned incumbent, Telephone Organization of Thailand (TOT), has roughly 2.8 million lines in operation. In the early 1990s, in an effort to increase line penetration amidst budgetary constraints, TOT granted revenue-sharing concessions on a Build-Transfer-Operate (BTO) basis to two private sector operators. Telecom Asia received a concession to install 2.6 million phone lines in the greater Bangkok area, while Thai Telephone and Telecommunication Plc (TT&T) was granted a concession to install 1.5 million lines in the rest of the

EXHIBIT 2: THAI TELECOMMUNICATIONS INDUSTRY OVERVIEW



country. As of 2000, Telecom Asia had around 1.5 million subscribed lines, while TT&T had 1.2 million subscribed lines, giving each operator roughly 50% market share in its respective area of operation.

TOT currently acts as both the industry regulator as well as an operator. A new regulator (the National Telecommunications Commission) is expected to be set up shortly to take over TOT's regulatory role.

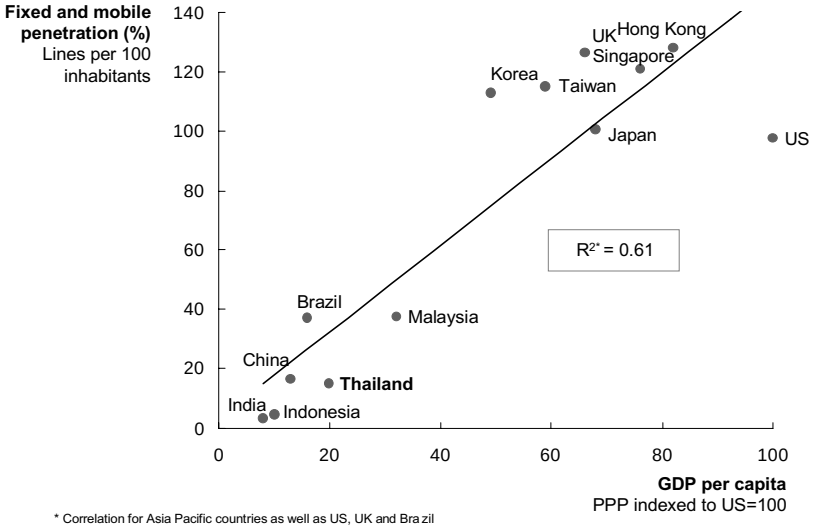
In the mobile sector, two providers currently dominate the market: Advanced Information Services (AIS) with some 54% market share[1], and Total Access Communications (TAC) with roughly 35% market share. AIS and TAC operate both analog (NMT900 and AMP800) and digital (GSM900 and 1800) cellular services nationwide. A new operator, WCS Orange, is expected to roll out its digital 2.5G system using the GPRS network at 1800 MHz by early 2002. As in the fixed line segment, Thai mobile companies operate under revenue-sharing concession schemes based on a BTO agreement.

[1] After consolidation of AIS's recent acquisition of DPC.

As of 2000, line penetration in both the fixed and wireless sectors was substantially below benchmark countries at a comparable level of economic development (Exhibit 3). Fixed-line penetration is only around 10-12% of total population, similar to the level in China (whose PPP-indexed GDP per capita is 30% lower than Thailand's) and roughly half the level in Malaysia. In the wireless sector, penetration is even lower at around 5%, roughly one-third the level of Malaysia or Brazil.

EXHIBIT 3: COMPARED TO BENCHMARK COUNTRIES, THAILAND HAS LOWER LINE PENETRATION RELATIVE TO GDP LEVEL

Line penetration vs. GDP per capita – 2000



* Correlation for Asia Pacific countries as well as US, UK and Brazil

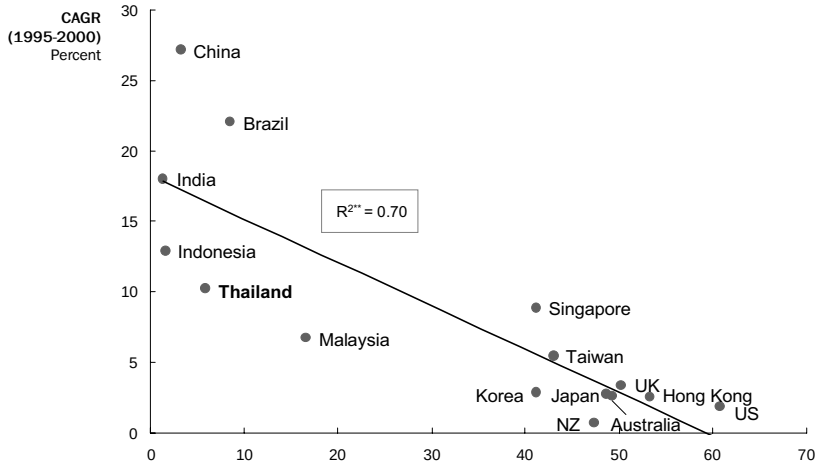
Source: ITU; DRI Economics

Penetration growth has been slower than in other benchmark countries, especially in the area of fixed-line services (Exhibit 4). Growth in fixed-line has been hampered by a lack of new investment after the 1997 financial crisis. Poor network planning has also played a role: the subscription rate for Telecom Asia's installed lines, for example, is only around 58%.

A different growth scenario is observed in wireless. While pre-2001 growth was slowed by the financial difficulties confronting most operators, the recent entry of foreign players through strategic investments in the major incumbent providers (Singapore Telecom in AIS; Telenor in TAC; Orange in WCS) has been

EXHIBIT 4: FURTHERMORE, GROWTH IN FIXED LINE PENETRATION IN THAILAND HAS BEEN SLOW

Fixed line penetration* vs. CAGR of penetration



* Subscribed lines

** Correlation of 14 countries in Asia Pacific as well as US, UK and Brazil

Source: ITUS; Yearbook of Statistics 2001; EIU Pyramid research; Anatel

driving network development and rapidly expanding the mobile subscriber base.

Beyond fixed line and wireless, the other Thai telecom segments have seen much slower development. Internet penetration significantly lags behind other countries: in Thailand only 2% of households have Internet access, compared to 7% in Malaysia and 26% in Singapore. The up-take of other new technologies has also been slow: the process for awarding 3G mobile licenses has not begun, and broadband subscribers in the country number less than 1,000.

PRODUCTIVITY ASSESSMENT

Our research measured labor and capital productivity levels of Thai telecom operators against benchmark countries. The final output measure we use is call minutes. Using this measure normalizes differences in economic wealth and fee structures between countries. Labor productivity is thus defined as call minutes per full-time employee and capital productivity as call minutes per investment or dollar of capital service.

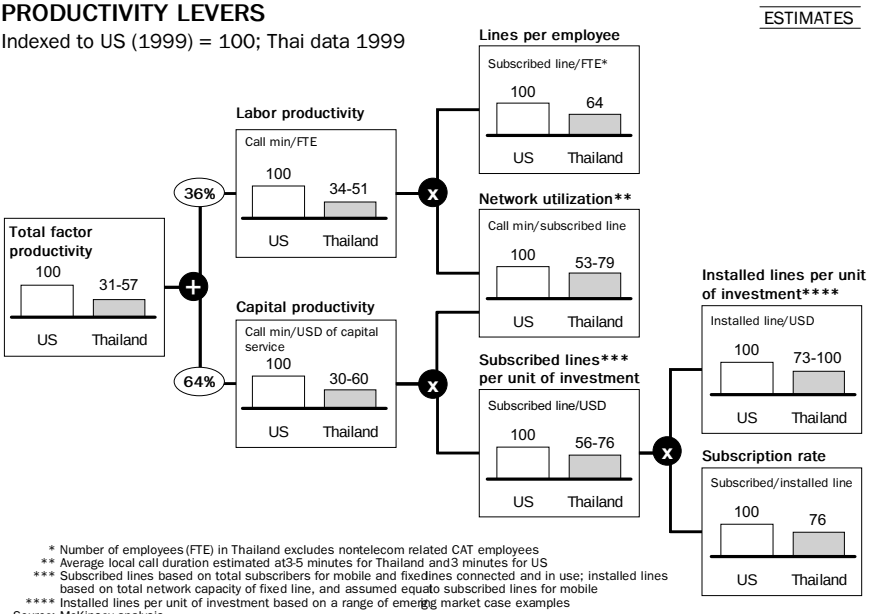
Productivity levels in Thailand's telecommunications sector are 30-60% of US levels (depending on the specific data and assumptions used), with labor productivity at around 35-50% and capital productivity around 30-60% of comparable data available for the US.

Compared with benchmark countries, Thailand has substantial gaps across all key productivity levers: (1) lines per employee; (2) network utilization; and (3) subscribed lines per unit of investment (Exhibit 5). The number of lines per employee, is only at

EXHIBIT 5: THAILAND IS UNDERPERFORMING ACROSS KEY TELECOM PRODUCTIVITY LEVERS

ESTIMATES

Indexed to US (1999) = 100; Thai data 1999

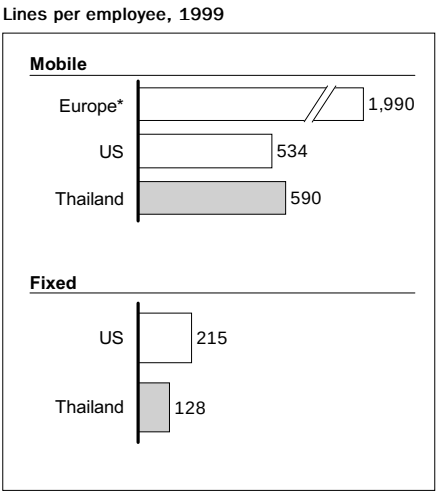


* Number of employees (FTE) in Thailand excludes non-telecom related CAT employees
** Average local call duration estimated at 3-5 minutes for Thailand and 3 minutes for US
*** Subscribed lines based on total subscribers for mobile and fixed-lines connected and in use; installed lines based on total network capacity of fixed line, and assumed equal to subscribed lines for mobile
**** Installed lines per unit of investment based on a range of emerging market case examples
Source: McKinsey analysis

64% of the US level[2]. As Exhibit 6 reveals, the gap is mainly in the fixed-line segment: mobile operators are actually near US benchmarks on this metric, although still lagging behind global best-practice companies in Europe.

[2] Including both fixed and wireless.

EXHIBIT 6: GAP IN LINES PER EMPLOYEE IS MOST PRONOUNCED IN FIXED-LINE



* European average of 12 operators in France, Germany, Italy, Spain and UK
Source: TOT annual report; OECD; press clippings; FCC; Strategis Group; ITU

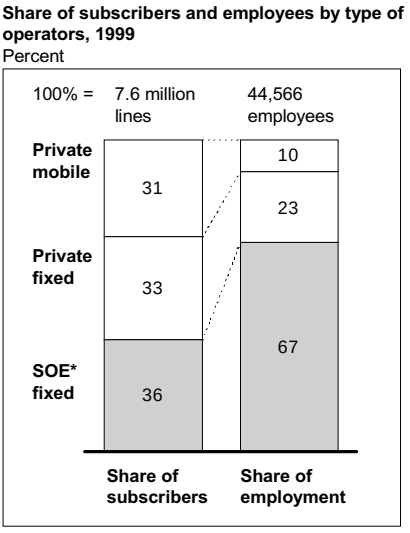
Operational factors affecting productivity

What explains this overall low level of productivity? We identified three key operational reasons for the low productivity in the Thai telecommunications industry:

Overstaffing: As reflected in the number of lines per employee, Thai operators tend to be overstaffed compared to US and European companies. Overstaffing is particularly pronounced in state-owned companies, which account for 67% of total employment in the telecom sector but provide only 36% of the lines (Exhibit 7). While TOT's staff levels are somewhat inflated by its obligation to perform some network and maintenance services for other operators, there is still ample opportunity to redeploy staff to improve efficiency.

Poor operations management: Cost and time overruns, as well as bureaucratic procurement practices, characterize the state-owned enterprises (SOEs). Furthermore, private and public companies alike have been slow to pursue automation and process improvements.

EXHIBIT 7: MOST EXCESS LABOR IN STATE-OWNED ENTERPRISES



* Not including non-telecom CAT or PTD staff
Source: TOT annual report; OECD; press clippings; FCC; Strategis Group; ITU

Labor productivity could increase substantially if economically viable investments in network fault management were undertaken. As in other developing countries, the productivity of maintenance personnel, who typically account for a large proportion of the total workforce, can be greatly enhanced by investing in automation of network fault management. Moreover, these investments can also strengthen the quality of service provided to customers, further increasing value added and productivity. Although TOT has put in place a 24-hour problem reporting hotline for all networks, it should introduce further improvements, including:

- Automated initial test procedure to localize the fault.
- Automated scheduling system to dispatch maintenance personnel to fix the fault.
- Automated escalation procedure to notify senior management if a problem was not fixed in a reasonable amount of time.
- Automated final test procedure to verify that the fault has indeed been fixed.

Other examples of currently viable improvements include upgrades of maintenance and repair toolkits, and the replacement of aerial wires with underground cables.

Ineffective marketing in fixed line: Idle phone lines have not been actively and effectively marketed by TOT to potential subscribers. In addition, the fixed-line companies have been slow to introduce value-added services, a potential revenue-enhancer for operators, and there has been an overall lack of 'telephone promotion' (e.g., services such as toll-free numbers that encourage telephone utilization[3]). Finally, high prices for international and long-distance calls reduce the duration and frequency of use.

Industry and external factors

The current dynamics of the telecommunications sector are not conducive to competition and productivity, particularly in fixed line. Although fixed-line deregulation began over a decade ago, policy objectives to guide the sector's development have apparently not been clearly defined and prioritized. The absence of clear policy objectives has contributed to a slow-down in investment and penetration growth in fixed line over the past five years.

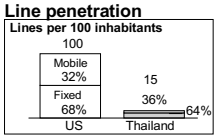
Although deregulation began over a decade ago, policy objectives have apparently not been clearly defined and prioritized.

In the mobile segment, competition has intensified recently, following years of dominance by the major incumbents. However, sectoral regulations-particularly the concession terms-continue to limit the potential level of competition and productivity.

The key industry and regulatory constraints to productivity can be summarized as follows (Exhibit 8).

[3] For example, TOT's recently introduced voice-over IP service has-at least initially-met with weak demand, according to company statements, mainly due to 'poor marketing'.

EXHIBIT 8: PERFORMANCE GAP DRIVEN BY TELECOM SECTOR REGULATION AND GOVERNMENT OWNERSHIP



Operational causes

- No significant new investments in fixed
- Uneconomic handset prices
- Speculative network planning
- Excess labor
- Poor performance ethic
- Viable investments not undertaken
- Poor marketing
- Uneconomic pricing in long distance and international
- Overspending
- Low capacity utilization
- Rural "penalty"

Industry dynamics

- Little competition
  - Monopoly in ISP & international calls
  - "De facto" monopoly in fixed
  - Duopoly in mobile
  - Duopoly in mobile handset
- Non-level playing field

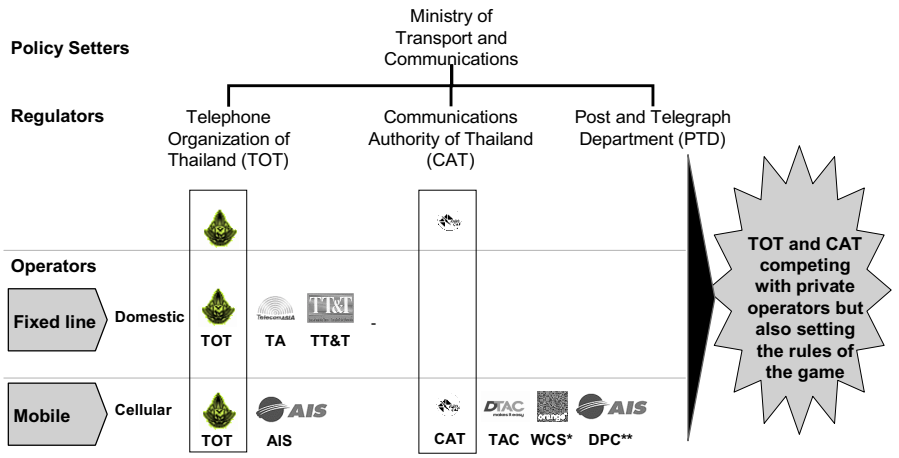
External factors

- **Telecom sector regulation: lack of clear objectives**
  - Dual regulator/ operator role creating conflicts of interests
  - Regulated entry for fixed line, ISP, international calls
  - Current concession terms leading to uneconomic industry behaviors
- **Government ownership**
  - Stringent SOE labor law & union
  - Budget/procurement processes

Source: Interviews, McKinsey analysis

EXHIBIT 9: DUAL REGULATOR/OPERATOR ROLE BY TOT & CAT CREATES CONFLICTS OF INTEREST

Telecommunication industry structure in Thailand



Source: McKinsey analysis

Government ownership: Thailand has been slow to embrace the worldwide trend of privatizing state-owned telecommunications providers. While privatization of these state-owned entities has been under discussion for many years, both TOT and CAT remain part of the state sector and have not even been corporatized.

The overstaffing and low productivity that characterize the state-owned incumbents pull down overall productivity in the Thai telecommunications industry. This trend is observed in virtually every economy around the world where state-owned telecom operators have not been privatized.

Lack of clear regulatory policies: TOT and CAT act both as operators and regulators for the telecommunications industry. The dual role creates potential for conflicts of interest (Exhibit 9). For example, new services proposed by the concessionaires require TOT's approval, as do changes to certain pricing policies. These regulations restrict competition and curtail the ability of the concessionaires to increase their efficiency and productivity.

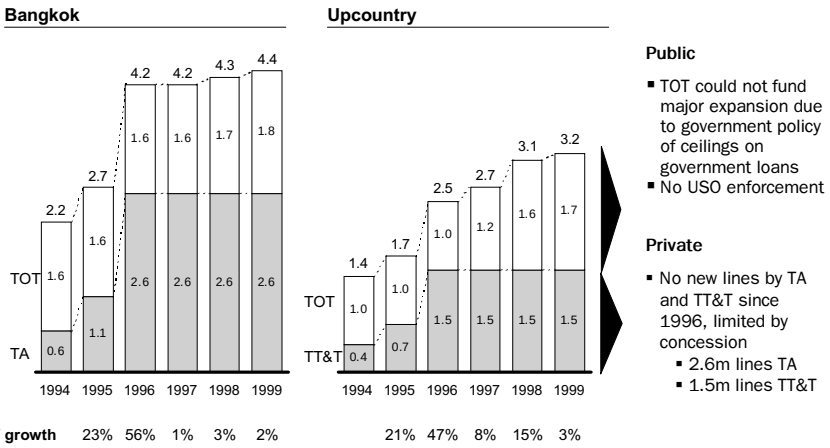
In addition, regulatory objectives are not clearly defined: the current regulations serve mainly to preserve monopoly profits of state-owned entities by restricting entry into the fixed-line, Internet, and international call segments. This policy artificially preserves high prices while keeping usage, penetration, and new investment low. For example, since 1996 the fixed-line concessionaires have installed no new lines, having already reached the maximum number of lines allowed under their concession terms[4] (Exhibit 10).

Poorly-designed concessions: There are a number of weaknesses with the current design of Thailand's telecommunications concessions (Exhibit 11). For example, the BTO concessions granted to TA and TT&T forced the concessionaires to complete the build-out of all lines within a specified time period. This requirement resulted in speculative network planning (attempting to anticipate future demand), and a significant number of lines were installed in

[4] Obviously, the economic crisis has played a role here as well.

EXHIBIT 10: REGULATION OF ENTRY/ EXPANSION BY PRIVATE PLAYERS LIMITS INFRASTRUCTURE INVESTMENT

Total fixed lines installed
Million lines



Public

- TOT could not fund major expansion due to government policy of ceilings on government loans
- No USO enforcement

Private

- No new lines by TA and TT&T since 1996, limited by concession
  - 2.6m lines TA
  - 1.5m lines TT&T

YOY growth in number of lines	1995	1996	1997	1998	1999
	23%	56%	1%	3%	2%
	21%	47%	8%	15%	3%

Source: TOT; interviews

EXHIBIT 11: CURRENT CONCESSION TERMS HAVE NEGATIVE IMPACT ON GROWTH

	Concession terms & elements	Impact on industry behavior
Fixed	▪ Build-Transfer-Operate within a specific timeframe	▪ Speculative network rollout
	▪ New services need TOT approval	▪ Slow rollout of value-added services
	▪ Long distance tariffs fixed in concession terms by TOT	▪ Price competition limited

Mobile	▪ Mobile handset
	  ▪ Exclusive distribution rights to AIS and TAC
	  ▪ Handset revenues excluded from revenue sharing agreement with TOT and CAT
		▪ Uneconomic pricing of handsets stunted mobile penetration growth historically

	▪ Revenue sharing based on gross revenue (airtime fee)	▪ Less incentive to deploy network; marginal value of additional customers for paid upfront license fee is greater
	▪ Fixed monthly interconnect fee (CAT concessionaires) of THB 200	▪ Higher marginal cost of service, leading to high prices ▪ No incentive to penetrate 'light' user segment – slow growth of prepaids, which has been key driver to penetration growth

Source: TOT; press clippings; interviews

real estate developments that were never completed after the financial crisis. Consequently, both concessionaires now have a high proportion of unsubscribed lines.

Another shortcoming of the current concession terms is the requirement to seek TOT's approval before introducing new products or modifying pricing policies. Such requirements restrict concessionaires' speed and flexibility in executing important business decisions.

In the mobile sector, the concessionaires have to share their gross revenues with the two state-owned enterprises that issued the concessions, TOT and CAT. This inflates variable costs, reducing the incentive to penetrate less profitable but potentially viable 'light' user segments. It also reduces the incentive for operators to rapidly rollout their network[5]. Finally, the concessionaires enjoy an effective duopoly for handset distribution. This has kept handset prices comparatively high, creating an entry barrier to many new users and lowering overall penetration in the mobile segment.

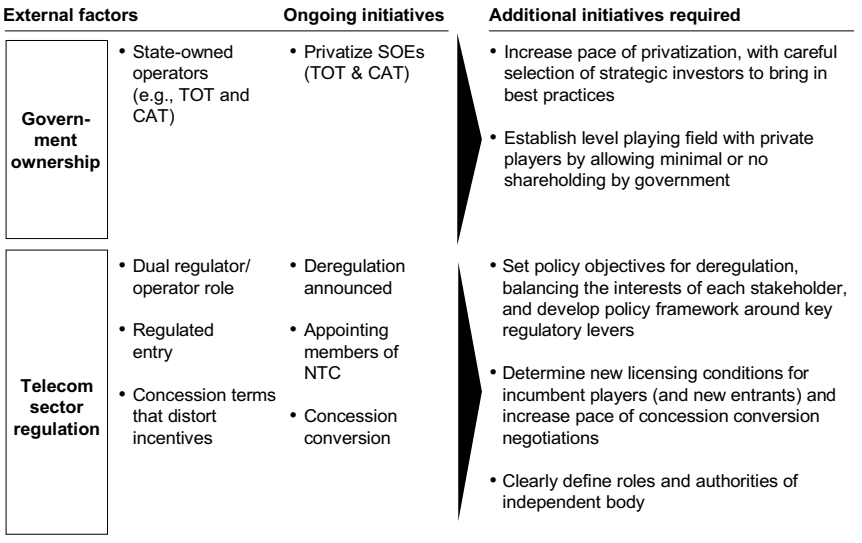
POLICY RECOMMENDATIONS

The telecommunications industry is expected to undergo rapid change over the coming years. As Thailand has committed to abide by WTO rules on telecommunications services by the year 2006, a substantial liberalization drive needs to be implemented. This will involve (1) clearly defining policy objectives for the sector, (2) setting up an independent regulatory agency, a framework, and a detailed roadmap to pursue these objectives, and (3) effectively privatizing state-owned enterprises in the sector (Exhibit 12).

Setting clear policy objectives: Any effective regulatory regime must be built around clearly defined policy objectives. Policy-setting needs to take account of the concerns of various stakeholders such as consumers, operators,

[5] In many other countries, mobile license fees are paid up-front to the government, which encourages operators to rapidly expand operations and customer base in order to quickly recoup this initial investment.

EXHIBIT 12: POLICY CONSIDERATIONS FOR THAILAND'S TELECOM SECTOR



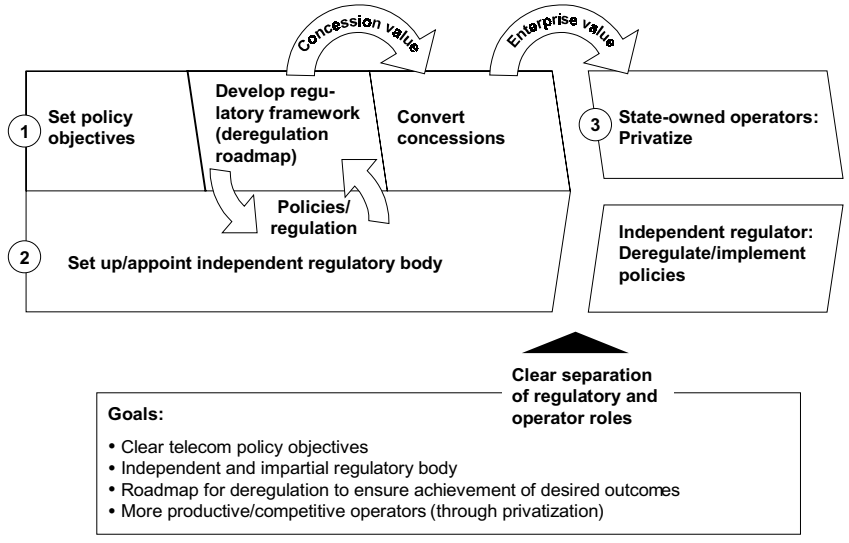
Source: McKinsey analysis

employees, and the government. Policies should be explicit about the primary goals of regulation (e.g. achieving the lowest prices for consumers, increasing penetration to accomplish near-universal service, encouraging the building of new infrastructure, and so forth). While policymakers may support all these goals in principle, they will have to make implicit or explicit tradeoffs that could affect the cost and quality of service and the speed at which improvements are made.

It is important to acknowledge that objectives may differ for the various telecommunications segments (e.g., fixed line, mobile, broadband, etc.), geographies (Bangkok and upcountry), or even components of the value chain (access/ network provider, service provider). Further studies focusing on each of these segments are recommended to clearly and specifically determine an appropriate set of policy objectives for Thailand.

Setting the regulatory framework: Once the policy objectives are clearly defined, a roadmap for developing the regulatory framework should be established (Exhibit 13).

EXHIBIT 13: THREE RELATED BUT SEPARATE INITIATIVES TO BE UNDERTAKEN BY THE THAI TELECOM SECTOR



Source: McKinsey analysis

EXHIBIT 14: OVERVIEW OF KEY REGULATORY LEVERS

	Regulatory levers	Description
Regulatory economic levers		
Industry structure	• Number of competitors • Speed of liberalization • Licensing fees	• Number of competitors allowed by field of business • Rate at which competition is introduced • Price new entrant has to pay for license
Pricing structure	• Price caps • Tariff rebalancing • De-averaging	• Overall or product-specific price ceilings • Extent to which monthly access fees can be increased • Ability to differentiate pricing for different geographical areas and/or customer groups
Interconnect terms	• Interconnect charges • Process of setting/negotiating interconnect charges • Establishing physical interconnection and/or co-location	• Level of payment for using competitor network • Process of determining interconnect charges (e.g., commercial negotiation, price-setting by regulator) • Ease of making the physical connection between the networks (e.g., regulator may prescribe co-location)
Equal access policies	• Length and ease of prefix • Pre-subscription mechanism • Number portability	• Number and ease of digits dialed to get access to operator • Ease of subscribing to competitors (e.g., balloting) • Ability to keep old telephone number
Deficit subsidization	• Access deficit compensation • Universal service obligation funding	• Compensation for difference in revenue from access and cost of providing access • Compensation for cost of serving unprofitable customers

This will involve defining the terms of reference for a new regulatory agency and regulatory reforms that will address each of the five key regulatory levers (Exhibit 14). The regulator will play a key role in the deregulation process, as it will set the rules for issues such as speed of liberalization, future pricing structure, interconnection arrangements, concession terms, provisions on ensuring equal access and implementation of the universal service obligation.

Effectively privatizing SOEs: The two major SOEs, TOT and CAT need to be first corporatized and then put on the path towards privatization. In the privatization process, a number of objectives need to be carefully weighed: one such objective could be to ensure widespread placement of the newly issued shares amongst the population to promote an equity culture in Thailand. Another could be to ensure that a significant share of the company is bid out to a foreign strategic investor who would transfer international expertise and know-how to the firm. Yet another objective would be to maximize total revenues earned by the government in the process or to ensure that employees get to participate in the share placement process. Of course, these privatization objectives should be fully aligned with the overall telecom sector policy objectives.

The future role of the state-owned enterprises needs to be carefully reviewed prior to privatization. TOT currently owns most of the backbone of the telecommunications infrastructure, and may continue to do so even after liberalization. CAT's potential future role, however, seems limited given that its current business position derives largely from its monopoly status. International call traffic is the easiest segment to attack, and as this market segment will be deregulated, CAT's operating revenues are likely to shrink dramatically. Policymakers may therefore wish to consider merging the two state-owned entities prior to privatization.

The future role of state-owned enterprises needs to be carefully reviewed before privatization.

We recommend that the privatization process aim at creating a level playing field amongst all operators, with the government gradually minimizing its stake in order to reduce potential conflicts of interest.

* * *

Like virtually every country worldwide, Thailand's telecommunications industry has developed under heavy regulation and with a high level of government ownership. Thailand has been comparatively slow to deregulate telecommunications, and the persistence of cumbersome regulations and government ownership are currently the major impediment to higher productivity.

Ample international examples are now available of both successful and unsuccessful efforts to liberalize telecommunications. By carefully studying these examples, Thailand can develop a master plan for deregulation that maximizes the industry's productivity

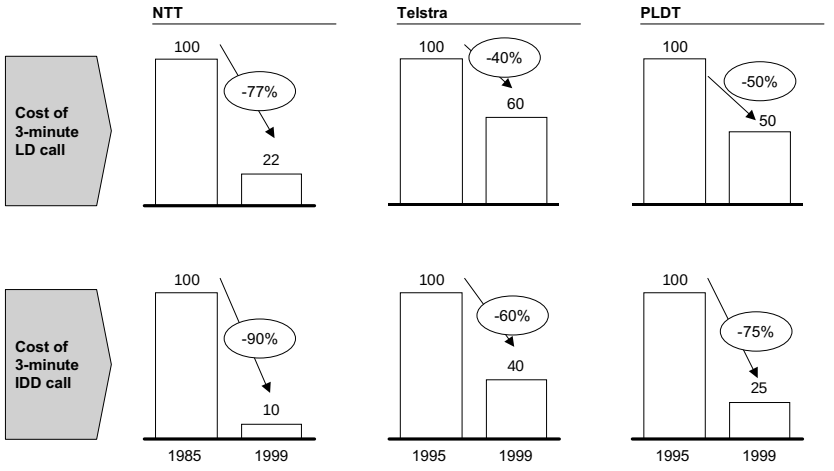
Box 1. Benefits of telecom liberalization

Liberalization of Thailand's telecom sector is expected to lead to significantly lower prices for consumers, as our analysis of deregulation in a number of countries shows (Exhibit 15). We have found that international and long-distance prices fall dramatically after new entry into the sector is allowed. The intensity of price competition largely depends on the regulatory regime, as local regulators determine the number of competitors by deciding how many new entrants (and which ones) receive licenses. Pricing is also heavily influenced by the regulations governing interconnection charges as well as potential use of price caps.

We have found that liberalization typically leads to a significant increase in new infrastructure. This trend is already apparent in Thailand's mobile sector, which was recently opened to increased foreign participation. As TAC has undergone financial restructuring and taken in a strategic foreign investor, its marketing and pricing strategy has become more aggressive, aimed at gaining market share. As a result, new infrastructure was built and prices have fallen substantially. Overall penetration has increased dramatically: over four million new mobile subscribers were forecast in 2001 alone, roughly doubling the total penetration level. The expected entry of a third major player in early 2002, WCS Orange, is expected to further intensify competition, to the benefit of consumers.

EXHIBIT 15: DEREGULATION HAS LED TO SUBSTANTIAL PRICE REDUCTIONS FOR CONSUMERS

Percent



and benefits consumers and telecom operators alike (see Box 1). Given the need to comply with WTO regulations, as well as the strategic importance of telecommunications to the broader economy, we believe that telecom regulatory reform should be among the government's highest policy priorities.

Cement

Cement

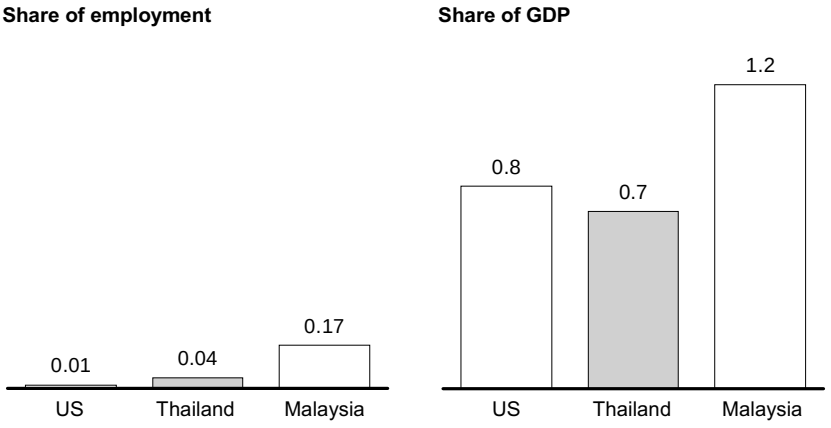
CHAPTER ABSTRACT

- Large-scale production facilities, advanced technology, and the adoption of managerial best practices have allowed Thailand's cement industry to achieve relatively high labor productivity: around 70% of the US level. However, the industry could still reach higher levels of performance.
- The primary factor constraining productivity in the Thai cement industry is the low level of capacity utilization: 70% versus 95% for the US benchmark. Excess capacity is the legacy of speculative overbuilding during the 1990s property boom and the sharp decline in construction during the economic crisis. Industry consolidation has not occurred as a series of industry-wide price increases have allowed cement producers to remain viable despite low utilization. Failure to quickly resolve the TPI bankruptcy case has also postponed consolidation.
- Another area where the industry could substantially enhance performance is the optimized usage of fuels in cement production. Coal, coke and oil still account for 98% of fuels used to manufacture cement in Thailand, while the use of lower-cost alternative fuels remains rare.
- At this point, the most effective way to further enhance productivity of the Thai cement industry will be to reduce excess capacity. To do this, the government should (1) dismantle barriers to industry consolidation, and (2) fully liberalize the import of cement and cement products in order to further increase competitive pressure in the industry. In addition, the government should also seek to facilitate a more liquid market for low-cost, alternative fuels such as recycled oil or dried sludge.

INDUSTRY OVERVIEW

The cement sector accounts for 0.7% of Thailand's GDP and 0.04% of total employment. While the industry is an important economic contributor, it is substantially smaller than Malaysia's cement industry, for example, which contributes 1.2% of GDP and 0.17% of employment (Exhibit 1). Eight cement plants operate in Thailand, employing roughly 11,000 full-time workers.

EXHIBIT 1: CONTRIBUTION OF THE CEMENT SECTOR TO NATIONAL EMPLOYMENT AND GDP
Percent, 1999

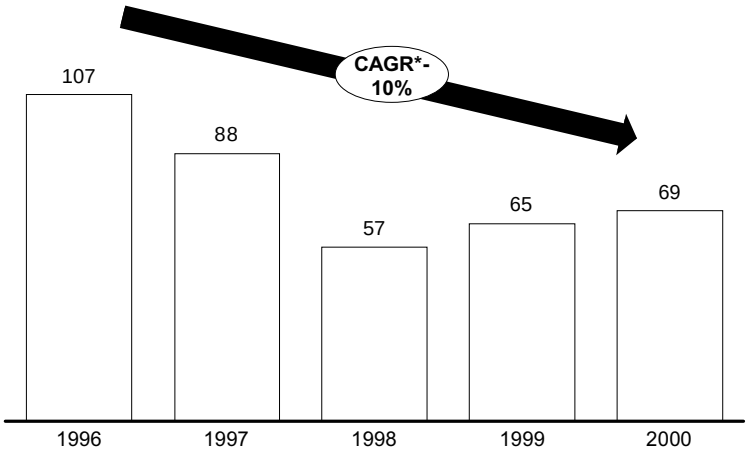


Source: NESDB

The Thai cement industry is structurally an oligopoly, with the three largest players controlling 84% of total capacity. Further consolidation may be imminent, as one of the major players appears to be poised for a buy-out.

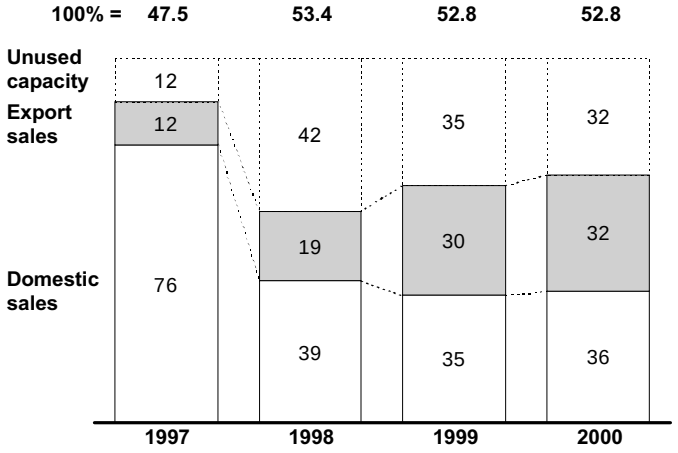
Thai cement producers are still feeling the fallout from the economic crisis, during which many infrastructure and property projects were rescheduled or cancelled. The capacity utilization of cement producers plummeted from 107% in 1996 to 57% in 1998, before recovering slightly to 69% in 2000 (Exhibit 2). There is a considerable disparity in utilization levels across com-

EXHIBIT 2: THAI CEMENT INDUSTRY CAPACITY UTILIZATION RATES
Percent



* CAGR = compound annual growth rate
Source: Analyst reports

EXHIBIT 3: CAPACITY USAGE BY LOCAL CEMENT PRODUCERS
Percent, million tons pa.



Source: Analyst reports

panies, with some players achieving utilization as high as 85% and others operating below 25% of capacity.

The slight recovery in utilization since 1998 has been driven mainly by an increase in exports, as domestic consumption continued to stagnate. Exports now account for 32% of capacity utilization versus 12% before the crisis (Exhibit 3). However, the prospects for further exports may be limited: other Southeast Asian countries have excess capacity and are seeking export opportunities as well (Exhibit 4). Aggregate excess clinker capacity in the region is now around 70 million tons, or approximately 3.5 times Thailand's cement consumption in 2000.

Domestic consumption of cement is currently dominated by the public sector. Civil projects now account for more than 70% of construction in Thailand versus roughly 40% in pre-crisis years (Exhibit 5). The larger share of public sector projects reflects the decline in private sector construction since the onset of the economic crisis. Private construction now stands at just 20% of 1996 peak levels.

PRODUCTIVITY ASSESSMENT

Two performance measures were analyzed in the cement case study: labor productivity and energy efficiency. These represent the two largest cost components in cement production, contributing roughly 10% and 60% of total cash cost respectively. Labor productivity is defined as tons of cement per employee[1]. Energy efficiency is measured as energy cost in US dollars per ton of cement produced.

Of all the Thai industries we surveyed in this study, the cement sector has achieved the highest level of labor productivity: 68% of the US and more than twice the level in Malaysia (Exhibit 6). Energy efficiency is also comparatively high: energy costs per unit of cement produced in Thailand are almost 25% lower than those in the US (Exhibit 7)[2].

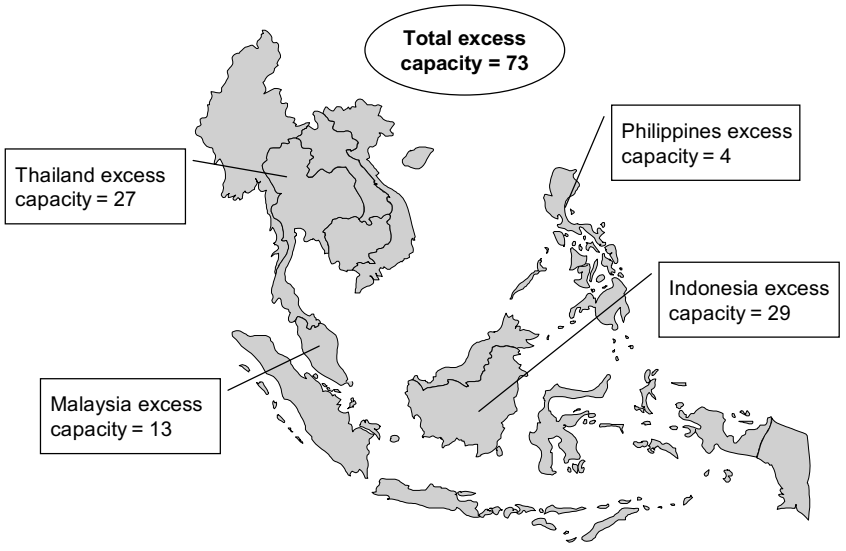
---

[1] A physical productivity measure is appropriate in this case due to the commodity nature of cement.

[2] Please note that the US cement industry is comparatively fragmented, with relatively small-scale production plants, and therefore does not represent international best practice.

EXHIBIT 4: ESTIMATED EXCESS CLINKER* CAPACITY IN ASIA

Million tons, 2000



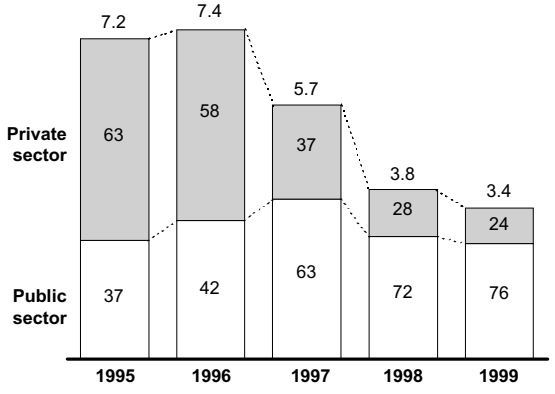
* Intermediate product in cement production; constitutes majority of exports from Thailand

Source: SBC Warburg Dillion Read Asia

EXHIBIT 5: PRIVATE AND PUBLIC SECTOR SHARE OF CONSTRUCTION

Share of construction as proportion of GDP

Percent



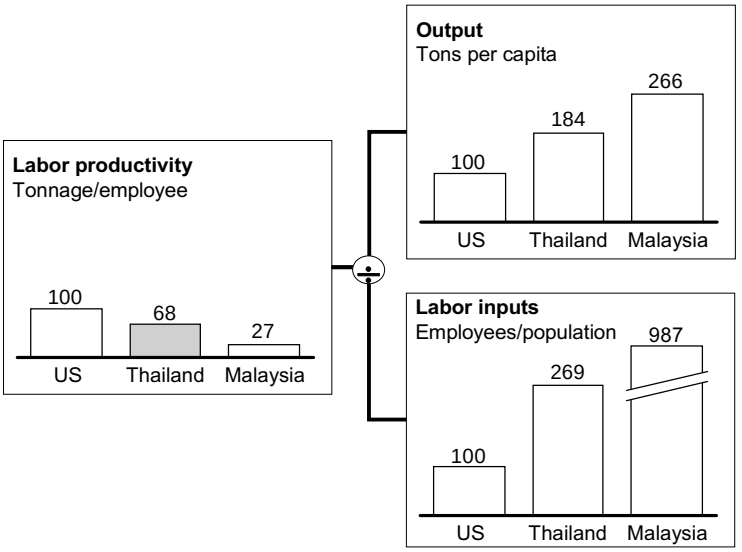
Employment in construction
Percent of overall employment

1995	1996	1997	1998	1999
7	9	8	5	5

Source: NESDB

EXHIBIT 6: COMPARATIVELY HIGH LABOR PRODUCTIVITY

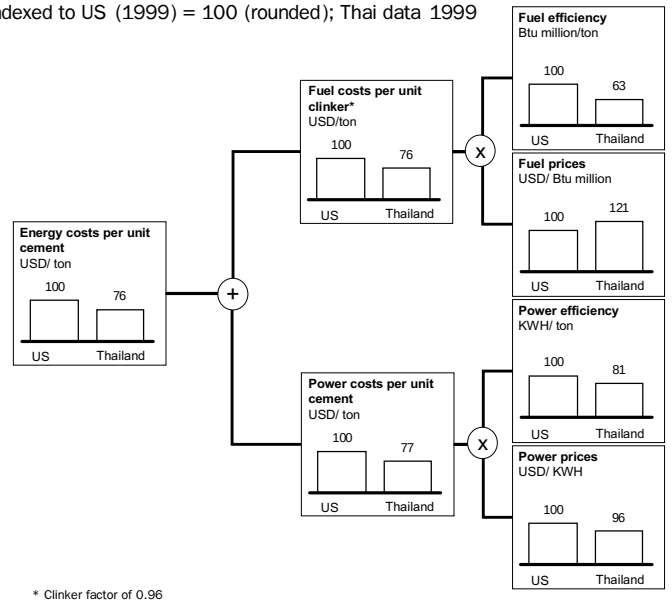
Indexed to US (1999) = 100; Thai data 1999



Source: Analyst reports

EXHIBIT 7: COMPARATIVELY HIGH ENERGY EFFICIENCY

Indexed to US (1999) = 100 (rounded); Thai data 1999

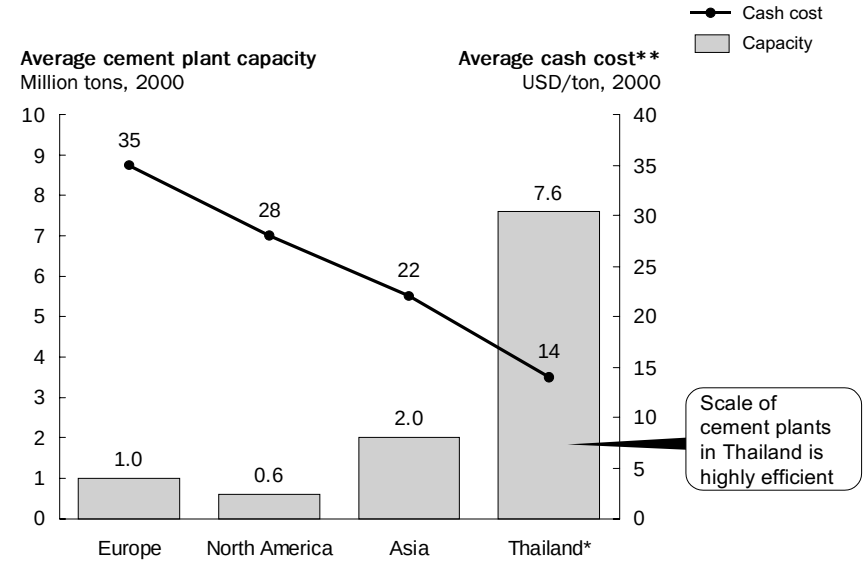


* Clinker factor of 0.96

Source: USGS 1999; US and Canadian Labor – Energy Input Survey

The comparatively high level of productivity can be attributed to Thailand's relatively large-scale production facilities, as well as success in introducing advanced production technologies and adopting managerial best practices. In addition, while most cement-producing countries employ both wet-process and dry-process plants, Thailand has only the more efficient dry-process facilities. A combination of high productivity and low labor costs has made Thailand's ex-factory production costs for cement among the lowest in the world: US$11-15 per ton versus an average of $22 for Asia as a whole and $28 for North America (Exhibit 8).

EXHIBIT 8: EX-FACTORY PRODUCTION COSTS BY GEOGRAPHY



* Does not include packing costs for comparability
** Exchange rate adjusted
Source: Analyst reports

Despite these strengths, several barriers prevent Thailand from achieving still higher levels of performance in cement production.

Operational factors affecting productivity

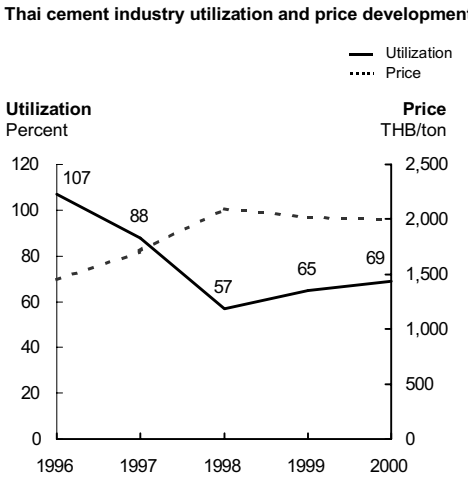
A number of operational issues impede further performance gains in Thailand's cement industry.

Low capacity utilization: The primary factor restraining productivity is the low level of capacity utilization (roughly 70%) in the industry. We estimate that increasing utilization to 95% (the US benchmark level) would raise Thailand's cement industry productivity from the current 68% to 83% of US productivity.

Low utilization is the result of overbuilding of industry capacity during the mid-1990s property boom. During this period, the Thai government apparently encouraged local producers to aggressively build up capacity to ensure national self-sufficiency. Cement capacity continued to expand until 1998 while consumption had already collapsed following the economic crisis. Capacity has remained flat since 1998 as no industry consolidation has occurred and no plants have been shut down or meaningfully downsized.

Thai cement producers have not felt financial pressure fully reflecting the excess capacity situation, as successive price hikes–following increases in the official price caps (see explanation below)–have helped to shore up cement revenues despite the drop in sales volumes (Exhibit 9).

EXHIBIT 9: PRICE INCREASES HAVE HELPED TO PARTIALLY OFFSET DECLINING SALES



Source: Annual reports

Organizational 'slack': Despite both low capacity utilization and opportunities for further organizational streamlining, Thai cement companies have been slow to shed redundant workers. Between 1997 and 2000, total employment in the industry declined only modestly, while capacity utilization dropped dramatically.

The significant number of redundant workers reduces the sector's overall labor productivity. We estimate that improvements in the organization of functions and tasks in Thai cement companies could–by reducing excess labor–add another 9% to Thailand's cement industry productivity vis-à-vis the US level. This would be in addition to the 83% level that could be achieved through increased capacity utilization, as mentioned above.

Thus, Thailand's cement industry could reach 92% of the US labor productivity level–at current Thai factor costs–by optimizing organization structures and processes and achieving close-to-full capacity utilization.

Limited automation of production processes: Additional automation of cement production processes can result in substantial labor cost savings. Although Thai cement producers have introduced a number of the latest technologies, many important processes are still only partially automated. For example, most cement packing is done manually–an area where labor cost savings of up to 80% could be achieved through automation. Communications management between subsystems (e.g. kiln operations, energy control, etc.) is also still largely conducted manually, rather than through integrated computer systems.

Additional automation of cement production processes could result in substantial labor cost savings.

Implementing additional state-of-the-art automation technologies across the Thai cement industry could potentially add 26% to Thai labor productivity in the cement sector,

mainly through improvements in sourcing, process monitoring and packing. However, it is important to note such further automation may not yet be economically viable for Thai cement companies at current factor cost.

High fuel prices: The fuels used for cement production in Thailand are comparatively high cost. Coal, coke[3] and oil still account for 98% of fuel used to manufacture cement in Thailand, while the use of cheaper alternative fuels like recycled oil and dried sludge remains rare. By contrast, alternative fuels account for 10% of the fuel mix in Malaysia's cement industry and 26% in France (Exhibit 10).

Alternative fuels remain underutilized in Thailand because informal fuel vendor arrangements hinder the development of an efficient and liquid resale market. Furthermore, the country's grey market has historically channeled alternative fuels like recycled oil into industries other than cement. In addition, plant employees and neighboring communities have often opposed the introduction of alternative fuels due to (largely unfounded) concerns about harmful environmental effects.

Industry and external factors

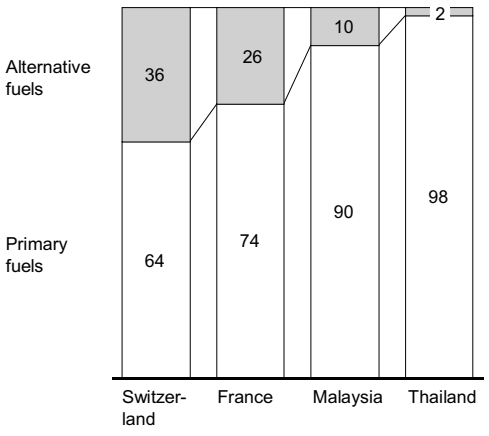
Thailand's cement industry regulations are generally conducive to productivity enhancement, as the current industry performance seems to prove. However, there are a handful of industry and regulatory issues, which–in addition to the needed industry consolidation that could help to more effectively deal with the excess capacity problem–could eventually help drive the Thai cement industry towards even higher levels of performance:

Bag-bulk product mix: About 80% of cement in Thailand is still sold in bags, which require on average ten times more labor in packing than bulk cement (such as ready-mix). In more mature markets, the bag-bulk ratio is the

[3] Most coal and coke used in Thailand is imported, which adds to the already high cost of these fuels.

EXHIBIT 10: ALTERNATIVE FUEL USAGE IN CEMENT PRODUCTION
Percent, 2000/2001

ESTIMATES



Source: Interviews

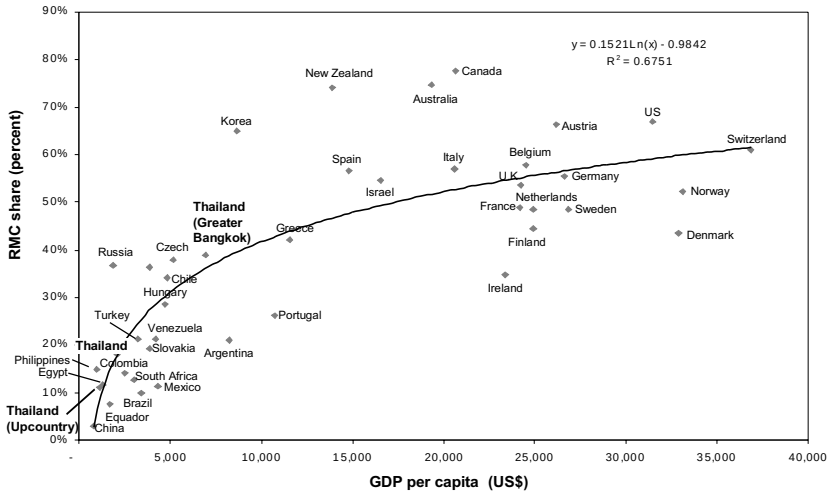
inverse of Thailand's. In these markets, most cement is delivered in the form of ready-mixed concrete directly to construction sites. Until the ready-mix market develops further in Thailand, cement producers will continue to pack and sell most of their output in bags (Exhibit 11).

Tariffs and non-tariff barriers to imports: In the past, the Thai government used protection against imports to encourage local producers to build capacity ahead of demand in order to ensure national self-sufficiency. Such barriers create an artificial cost advantage for domestic producers.

Pricing practices: The Thai government regulates cement prices, requiring producers to seek authorization before raising the price of domestically marketed cement. Since the crisis, the large producers have successfully petitioned the government to raise official price caps several times, despite declining domestic demand. As a consequence, list prices for cement have risen by more than 40% from the 1997 levels (Exhibit 12). The officially published 'list prices' of the major players have largely converged, suggesting a degree of price coordination within the industry. In

EXHIBIT 11: GDP PER CAPITA VS. READY-MIXED CONCRETE SHARE

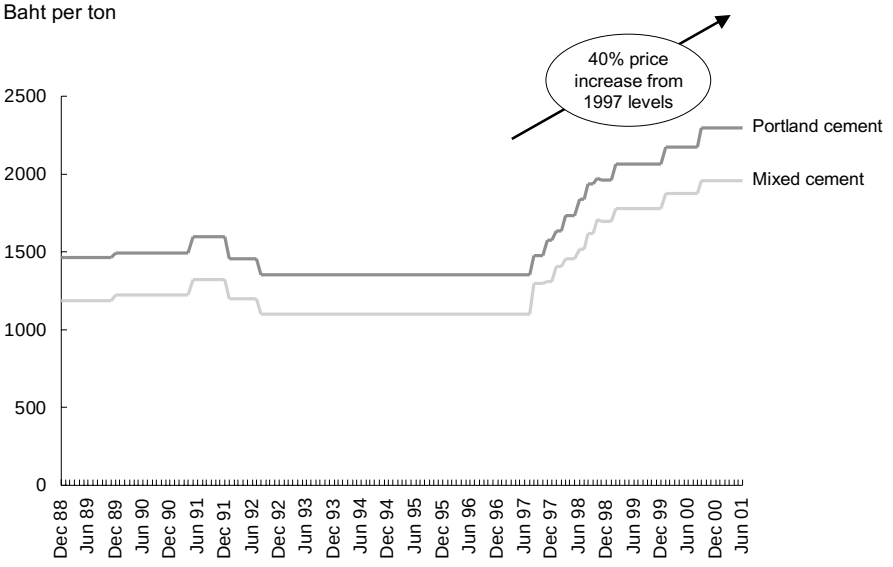
2000/2001



Source: EIU, McKinsey, HMC

EXHIBIT 12: DEVELOPMENT OF DOMESTIC THAI CEMENT LIST PRICES*

Baht per ton



* The prices shown are the prices quoted by Siam Cement Plc., the market leader

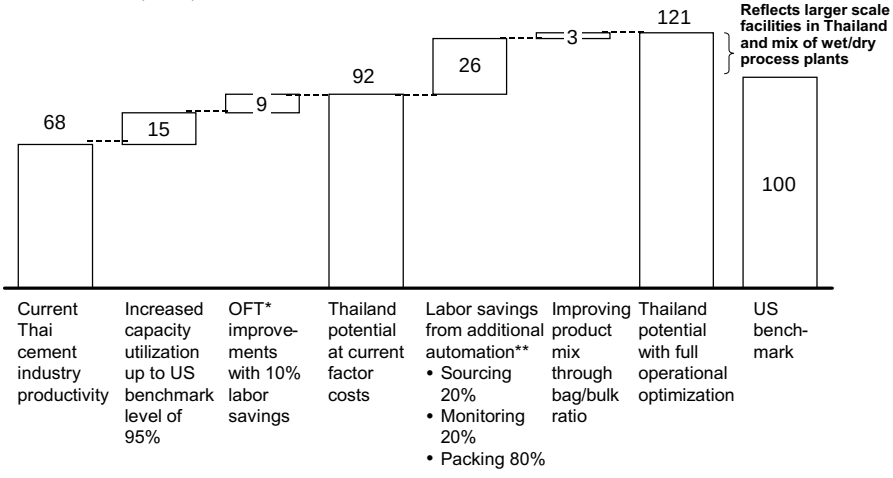
Source: Siam Cement Plc.

practice, however, cement producers discount these prices in order to effectively compete for contracts.

If all the above issues could be overcome, we estimate that Thailand's cement industry could potentially even exceed the productivity level of the US by roughly 20%. This high level of productivity could be possible due the above-mentioned scale advantage of Thai producers and their consistent use of more efficient dry-process facilities (Exhibit 13).

EXHIBIT 13: ESTIMATED IMPROVEMENT POTENTIAL FOR LABOR PRODUCTIVITY IN THE THAI CEMENT INDUSTRY

Indexed to US (1999) = 100; Thai data 1999



* Organization of functions and tasks

** Automation technologies include communications management between subsystems (e.g., kiln optimization, energy control etc.), fully automated packers, and more efficient sourcing equipment and vehicles

Source: Interviews, McKinsey analysis

POLICY RECOMMENDATIONS

To help Thailand's cement industry achieve its full performance potential, the government should pursue the following policy initiatives:

Dismantling barriers to effective industry consolidation: The well-publicized, multi-year delays in resolving the high-profile TPI bankruptcy case have contributed to the post-

ponement of a potential consolidation of the Thai cement sector, which could help to more effectively deal with the issue of industry-wide excess capacity. While takeover negotiations for the TPI cement subsidiary, the third largest Thai cement producer, are now underway, the extended and ongoing process delays have clearly shown the need for more effective legislation and resolution of such a bankruptcy case. In addition to establishing the legal framework for more rapidly processing bankruptcy cases, the government also needs to ensure that a potentially more concentrated industry will not engage in anti-competitive conduct with negative implications for the Thai consumer.

Overall, the Thai cement industry has performed comparatively well by international standards.

Creating a free import-export market for cement and cement products: As a mature sector that has had decades to develop, the Thai cement industry does not require special protection. The government should fully liberalize cement imports in order to ensure a certain level of competitive pressure within the industry. This would entail the removal of tariffs and non-tariff barriers to cement trade. With these barriers dismantled, import parity price levels would serve as an ultimate 'natural' price cap for the industry[4].

Promoting the use of low cost alternative fuels: The Ministry of Industry, the Federation of Thai Industries, or an equivalent body should help create a more tradable and liquid market for industrial wastes and by-products that can be used as low-cost, environmentally friendly fuels in cement production.

* * *

Overall, the Thai cement industry has performed comparatively well by international standards. Still, as outlined above, even in

[4] As long as there is 'healthy' domestic competition, the import parity price level may not be an effective price cap, though, due to the high transportation cost for cement imports.

the cement sector the Thai government can take additional measures to help further strengthen industry performance.

Beer

Beer

CHAPTER ABSTRACT

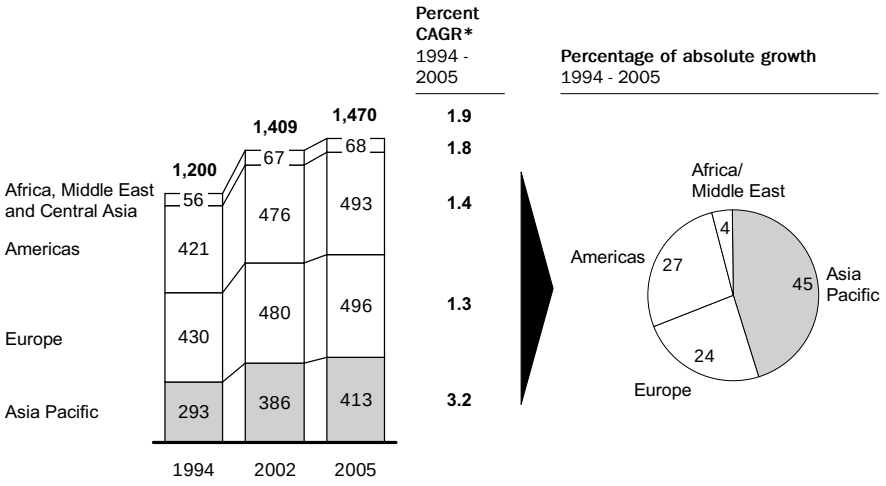
- For the last ten years, the Thai beer industry has been undergoing a significant structural change that was set in motion by the entry of Carlsberg in 1989. Competition has intensified, resulting in dramatic shifts in market shares and clearer segmentation between mass and premium brands
- Overall sector productivity currently stands at about one-third of the US benchmark, largely due to low capacity utilization. The rapid buildup of new capacity, along with aggressive marketing-including market-distorting product bundling practices-by Carlsberg/Beer Thai, has dramatically reduced utilization levels among the major incumbents
- Despite the creation of overcapacity, the entry of Carlsberg/Beer Thai and the resulting competitive dynamics have been beneficial to Thai consumers, bringing lower prices and wider product variety. As less successful players will reduce capacity or exit the market over time, industry utilization will likely increase, enabling productivity to rise
- To help boost productivity, the Government should ensure continued competitive pressures in the industry by: (1) more rigorously monitoring and policing anti-competitive behavior, and (2) relaxing import tax and duties on beer

INDUSTRY OVERVIEW

Asia is an important market for the beer industry, accounting for around half of all sales growth in emerging markets over the past decade (Exhibit 1). Growth in beer consumption has been especially rapid in the Thai market, which has had historical growth rates of around 12% per annum (Exhibit 2). In response to

EXHIBIT 1: STRONG PROJECTED BEER MARKET GROWTH IN ASIA

Million hL



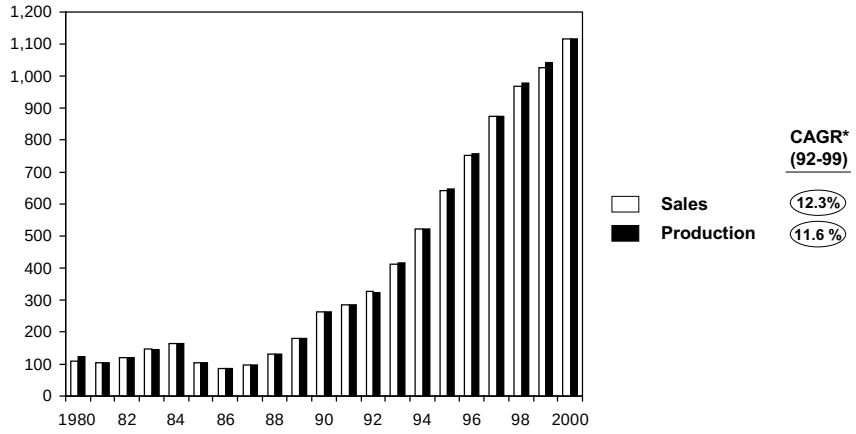
* CAGR = compound annual growth rate

Source: Canadean 2000 World Beer Report

EXHIBIT 2: GROWTH OF THAILAND'S BEER INDUSTRY HAS BEEN RAPID

Thailand's beer production and sales, 1980-2000

Million liters



* CAGR = Compound annual growth rate

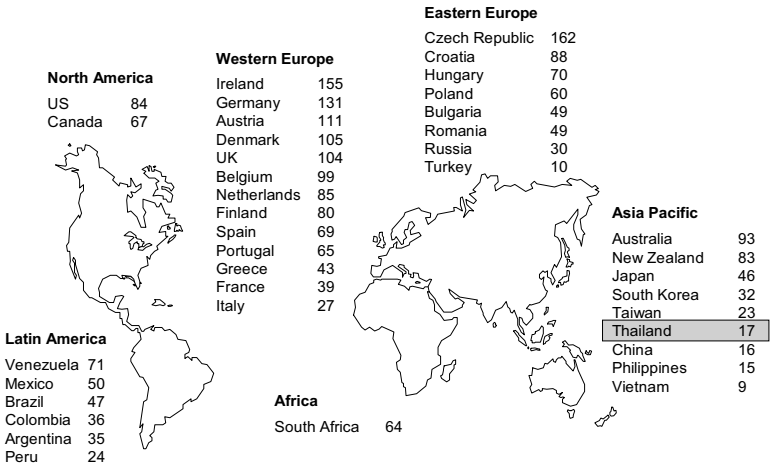
Source: Bank of Thailand

growing demand, beer production in the Kingdom more than quadrupled between 1990 and 2000.

Despite recent growth, per capita consumption of beer in Thailand still lags significantly behind that of other countries: the average Thai consumer drinks 17 liters of beer per year, roughly the same level as Chinese or Filipino consumers, but substantially below levels in other international markets, including Asian countries such as South Korea or Japan (Exhibit 3).

EXHIBIT 3: CONSUMPTION PER CAPITA IN THAILAND IS STILL COMPARATIVELY LOW

Annual consumption, liters per capita



Source: Canadean 2000 World Beer Report

The Thai beer industry was born in 1931 when the Bhirom Bhakdi family opened the Boon Rawd Brewery, the first in the country. Its brand, Singha Beer, quickly edged out foreign competitors because of its low production cost and the high tariffs on imported brands. The company held a virtual monopoly until the mid-1960s when Thai Amarit Brewery (TAB) entered the market. Even with the entry of TAB, though, Boon Rawd remained dominant.

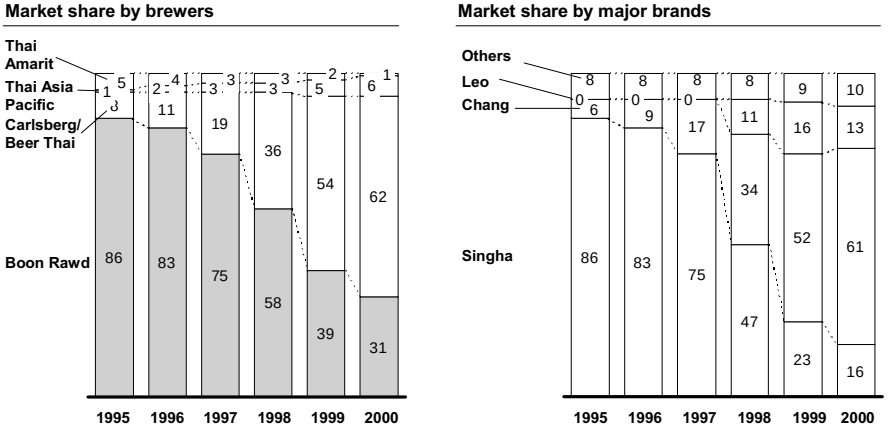
For the last ten years, however, the Thai beer industry has been undergoing a significant structural change that began with the entry of Carlsberg in 1989. Since then, competition has in-

creased, resulting in dramatic shifts in market shares and clearer segmentation and positioning of mass brands vis-à-vis premium brands.

In 1989 Carlsberg was granted a joint-venture brewing license with the Charoen Group. The jointly owned Beer Thai started production in 1993 with a combined capacity of 200 million liters and introduced the low-priced Chang beer brand in the same year. Chang quickly captured significant market share and within five years accounted for about half of the country's total beer market. The former leader, Singha, which in 1995 had a dominant 86% market share, lost more than half of its share to the new entrant (Exhibit 4). By 1999, four players accounted for virtually the entire national production capacity[1] (Exhibit 5). Market share is even more concentrated than production capacity: Carlsberg/Beer Thai and Boon Rawd currently control over 90% of total market share, while imports contribute a mere 0.1% of the national beer supply.

EXHIBIT 4: BOON RAWD HAS LOST SIGNIFICANT MARKET SHARE

Percent

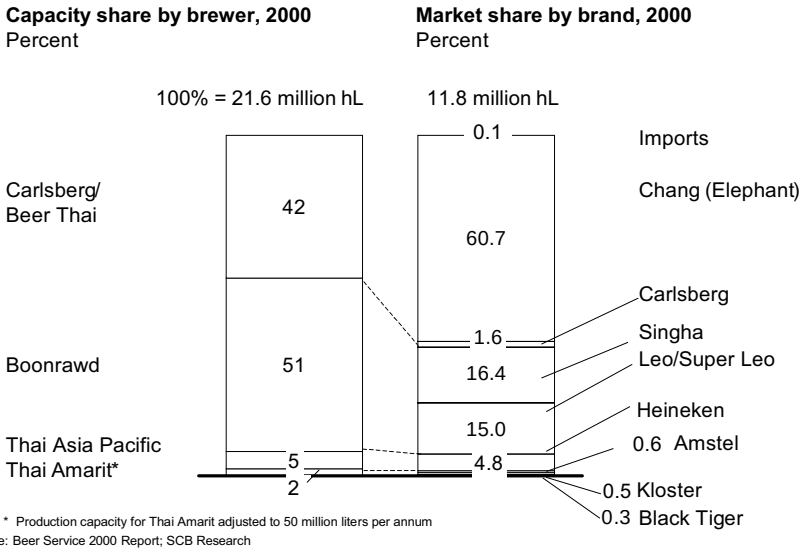


Brands by brewers
Boon Rawd: Singha, Leo
Carlsberg/Beer Thai: Carlsberg, Chang
Thai Amarit: Kloster, Amarit
Thai Asia Pacific: Heineken

Source: Profound, Industrial Finance Corporation of Thailand, and Minist ry of Finance

[1] This oligopolistic industry structure is characteristic of most beer markets around the world, where competition is typically between a relatively small number of players.

EXHIBIT 5: FOUR MAJOR PLAYERS ACCOUNT FOR ALMOST ALL PRODUCTION CAPACITY

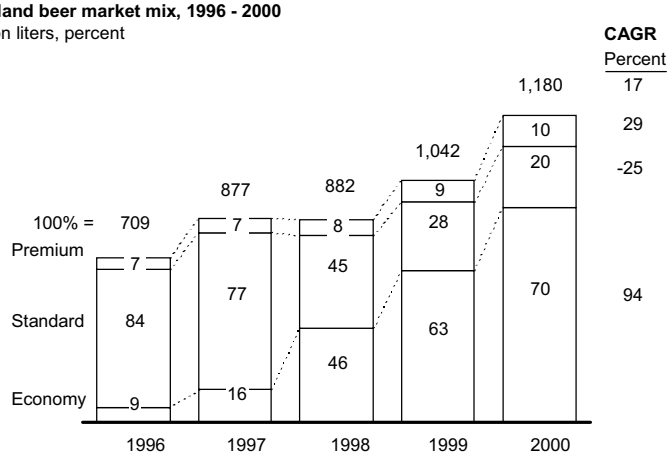


* Production capacity for Thai Amarit adjusted to 50 million liters per annum

Source: Beer Service 2000 Report; SCB Research

EXHIBIT 6: CLEAR SEGMENTATION OF CONSUMER PREFERENCES HAS EMERGED

Thailand beer market mix, 1996 - 2000
Million liters, percent



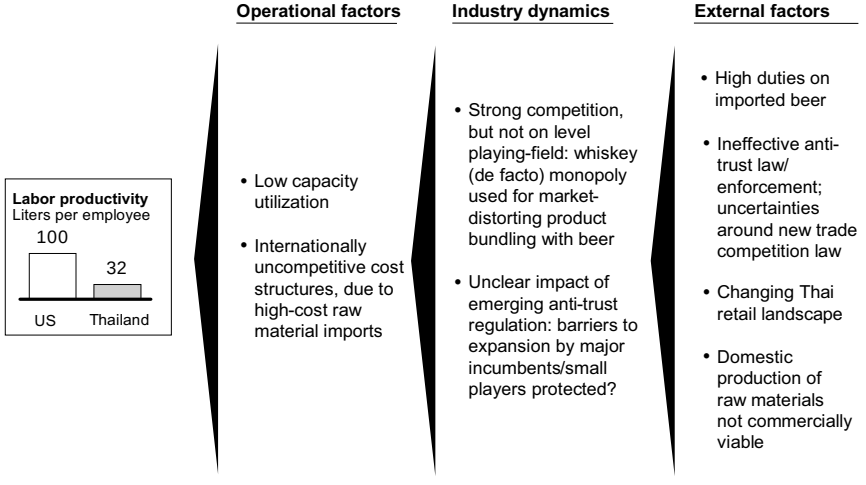
Source: Ministry of Commerce, press clippings, interviews

As a result of Carlsberg's/Beer Thai's entry into the market, consumer tastes have become more varied, with low-priced brands such as Chang and Boon Rawd's Leo catering to mass customer segments while several premium brands target more affluent consumers. Market segments are now clearly delineated across the different brands and price ranges (Exhibit 6).

PRODUCTIVITY ASSESSMENT

Labor productivity in the Thai beer industry (defined as liters produced per employee) stands at around 32% of the US level (Exhibit 7). Low sector productivity is attributable mainly to

EXHIBIT 7: COMPARATIVELY LOW LABOR PRODUCTIVITY IN THE THAI BEER INDUSTRY MAINLY DUE TO LOW CAPACITY UTILIZATION
Indexed to US (1999) = 100; Thai data 1999



Source: US Department of Commerce; SCB research; MGI; Business Online; US Census Bureau

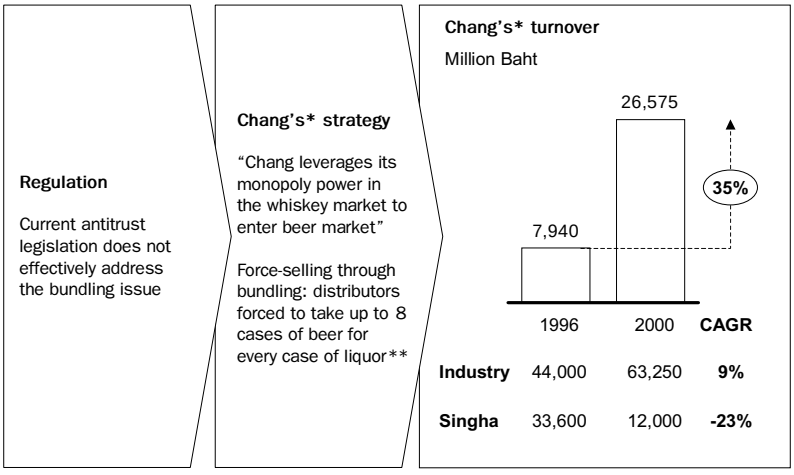
low capacity utilization. The industry previously ran at close to full capacity in the 1980s and early 1990s, but is now operating at less than 55% of installed capacity. The two key causes of underutilization can be summarized as follows:

Capacity displacements by aggressive new entry: With the entry of Carlsberg/Beer Thai and its attacker Chang brand

into the Thai beer market in 1993, overall industry capacity utilization plummeted from levels of over 100% in the early 1990s to a low of 43% in 1997 before recovering slightly.

Carlsberg's joint-venture partner, the Charoen Group, holds a virtual monopoly in the domestic whiskey market with an

EXHIBIT 8: BEER THAI/CHAROEN GROUP HAS GAINED MARKET SHARE BY BUNDLING BEER AND LIQUOR SALES



* Beer Thai/Charoen Group
** More recently, also bundling drinking water and soda with liquor sales
Source: Press clippings, interviews, Ministry of Commerce

estimated 95% market share of domestic production. Carlsberg/Beer Thai has been able to exploit this dominant position in the liquor market by bundling sales of its beer brand to liquor sales. Distributors seeking to buy liquor from the Charoen Group are forced to buy several cases of Chang beer at the same time (Exhibit 8). Distributors, in turn, force bundled sales on retailers. The resulting excess supply of Chang compels distributors and retailers to offer price discounts on the brand, allowing it to quickly build market share (Exhibit 9).

Carlsberg's/Beer Thai's success in rapidly capturing market share–based on advantages gained through product bundling–has caused the incumbents' capacity utilization to suffer: the industry's aggregate utilization now stands at

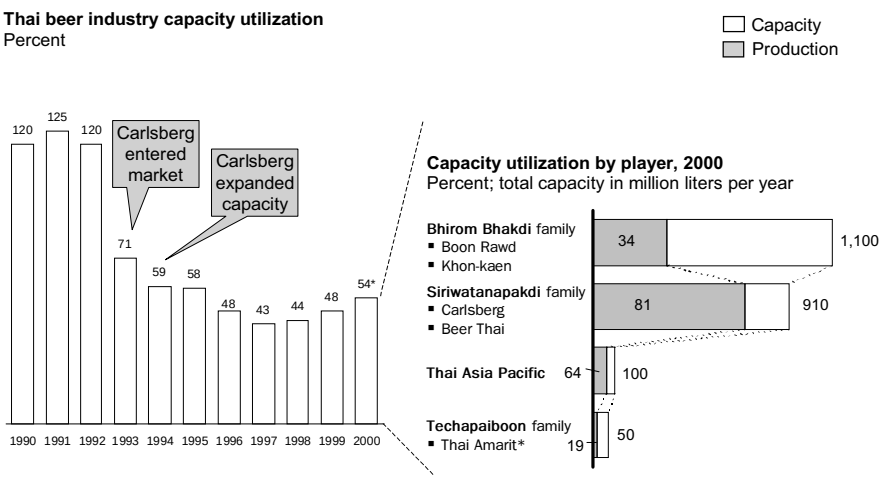
EXHIBIT 9: BEER BUNDLING IS FORCED ON LARGE DISTRIBUTORS AND THEIR CUSTOMERS

	Large distributor	Retail shop	TOPS supermarket	Restaurant
Terms of bundling offer	• Forced to buy up to 8 cases of Chang for every case of liquor	• 3 cases of Chang per case of Whiskey	• Not affected because of high bargaining power	• Bundling not usually enforced for on-premise
Excess inventory of Chang beer?	• Yes	• Yes	• No	• No
Response strategy	• Enforce bundling offer to smaller retail liquor shops	• Reduce prices for Chang beer (sometimes below cost) to reduce excess stock	• Prepared to switch distributors	• Stocks mainly Chang because of deep discounts from distributors

Source: Interviews

EXHIBIT 10: BEER INDUSTRY CAPACITY UTILIZATION LEVELS DROPPED WITH CARLSBERG'S ENTRY AND EXPANSION

Thai beer industry capacity utilization
Percent



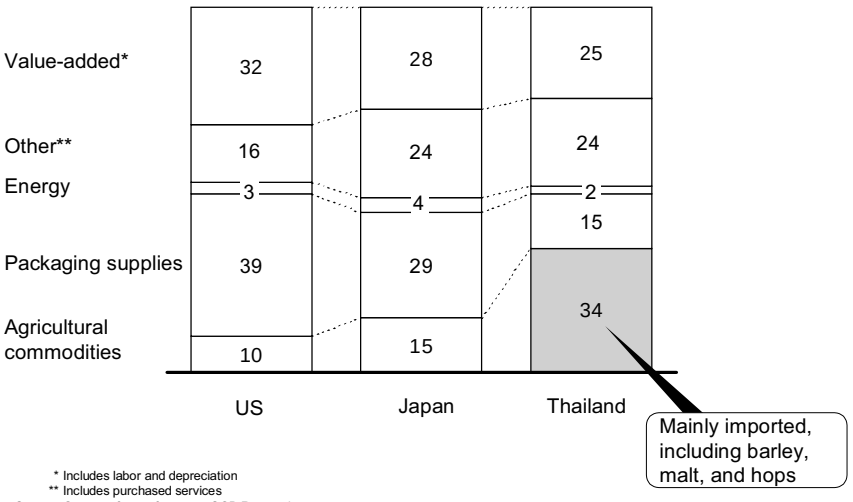
* Production capacity for Thai Amarit adjusted to 50 million liters per annum
Source: SCB Research; BoT

52%, compared to Carlsberg/Beer Thai's roughly 80% utilization (Exhibit 10).

Limited exports due to uncompetitive cost structure: Thai beer producers have to use high-cost imported raw materials such as barley, malt, and hops, which are not readily available in the domestic market. As a result, raw material inputs account for 34% of total beer sales value in Thailand, compared to only 10-15% in the US and Japan,

EXHIBIT 11: HIGH RAW MATERIAL COST FOR THAI BEER PRODUCTION

Structure of inputs
Sales value = 100%



* Includes labor and depreciation
** Includes purchased services
Source: Census of manufacturers; SCB Research

respectively (Exhibit 11). These high input costs reduce competitiveness and export opportunities for Thai-made beers. Hence, exports account for just 1.5% of total beer production in Thailand. Consequently, unlike in other industries such as cement[2], Thai beer producers cannot rely on export sales to absorb their excess capacity.

By unseating a long-time incumbent, Carlsberg's entry into the beer market has increased competitive intensity in the industry in a way that has ultimately benefited consumers. The introduction of the attacker Chang brand has led to the creation of a new,

[2] Since the onset of the economic crisis, cement producers have been able to increase exports to absorb some of their excess capacity (see chapter on the cement sector in this report).

lower price segment. As a result, average beer prices have declined, selection has increased, and new brands have emerged to serve different market segments.

Nonetheless, Carlsberg's/Beer Thai's use of a related industry advantage (the de facto whiskey monopoly of the Charoen Group) represents anti-competitive behavior that can ultimately prove harmful to industry players and consumers alike. Steps are therefore needed to move the sector further in the direction of true fair competition.

POLICY RECOMMENDATIONS

In order to support greater productivity among beer producers, the government should ensure a high level of competitive pressure within the industry. Increased competition will lead to industry consolidation, which will eliminate much of the current excess capacity and will compel less-productive players to boost their efficiency or exit the market. Two key policy measures should be undertaken: (1) strengthen monitoring of anti-competitive behavior, and (2) relax import tax/duties on beer:

Strengthen monitoring of anti-competitive behavior: Anti-competitive practices such as sales bundling and uneconomic pricing should be systematically monitored in order to prevent incumbents from abusing their dominant position. Currently, the most obvious example of anti-competitive behavior is the Charoen Group's use of its de facto liquor monopoly to compel customers to purchase its Chang beer. Complaints against these practices have been filed with the Trade Competition Board, but to date no concrete action has been forthcoming[3]. Stronger government policing of the beer sector is

Anti-competitive practices should be systematically monitored.

[3] Boon Rawd has for years been seeking regulatory approval to establish a white spirits distillery that would produce whiskey (among other products) and allow the company to challenge the Charoen Group's monopoly. This move suggests that Boon Rawd has lost faith in its ability to challenge Beer Thai's/the Charoen Group's practices through the legal system.

therefore needed in order to prevent anti-competitive behavior.

A Trade Competition Law has been discussed to help police anti-competitive behavior. While the current draft of the law has many favorable features, there is a risk, that the market share threshold proposed under the law could serve to protect sub-scale and inefficient players at the expense of stronger companies, and could prevent major players from achieving the scale needed to maximize productivity. If the leading players would not be able to win substantial market shares, then smaller, less productive players would not be consolidated or forced to exit the market. Therefore, rather than introducing market share caps, the beer industry should be kept 'contestable' (i.e. policy makers should ensure that entry barriers are kept low). This would compel all players to improve productivity or exit the industry. Also, the risk of anti-competitive behavior can be reduced by encouraging the development of strong modern retail trade and distribution systems, which can increase retailers' bargaining power in relation to beer manufacturers. The Big C hypermarket chain is a good example: the company recently introduced its own beer brand, Champ, which is manufactured using Thai Amarit Brewery's production facilities.

Relax import tax and duties on beer: The Thai beer industry has had several decades to achieve scale and efficiency and should not be viewed as an 'infant industry' that requires protective trade barriers. Yet, import tariffs continue to be levied at a high rate of 60-66% of CIF[4] prices. In addition, foreign companies are not allowed to hold a majority stake in local breweries. Phasing out such trade barriers over time would encourage domestic players to further improve their productivity. Improving productivity would benefit manufacturers, consumers, and the economy as a whole.

[4] CIF = Cost Insurance Freight

* * *

Beer represents a sector where the competitive dynamics conducive to high productivity have begun to take root in Thailand. Carlsberg's/Beer Thai's aggressive entry has compelled the major incumbents to rethink branding and pricing strategies and to address operational performance issues. If regulations to police anti-competitive behavior can now be put in place–and effectively enforced–Thailand's beer industry can enjoy substantial productivity gains in the future.

Chicken Processing

Chicken Processing

CHAPTER ABSTRACT

- Chicken processing is an important export industry in which Thailand has enjoyed considerable growth over the past decade. While Thailand is reputed to be efficient in chicken processing, our research showed actual labor productivity levels to be low compared with international best practices. Thailand's poultry industry has remained competitive mainly due to its low labor costs. However, inexpensive processed chicken exports from countries with even lower labor cost such as China are creating new competition, and Thai producers will need to further increase productivity and move into higher value-added products in order to fend off this competition.
- Four large poultry integrators in Thailand dominate all segments of the industry value chain–from feed to processing–and are focused on export markets. Domestic sales have thus far been protected against competition from imports, allowing local players to keep domestic prices of chicken meat relatively high. High meat prices have slowed the development of downstream businesses such as further processing.
- Physical and value-added productivity in the industry are comparatively low: 31% and 21% respectively of the US level when adjusted for product differences. Four key operational factors explain these productivity gaps: (1) use of small chicken breeds yielding less meat per bird; (2) a high proportion of labor-intensive special or small cuts; (3) low levels of automation in processing plants; and (4) high live broiler costs resulting from high feedstock prices.
- Two industry and regulatory factors contribute to the operational productivity gaps. First, the dominance of the large poultry integrators and barriers to chicken meat imports limit competitive intensity within the industry, reducing the pressure

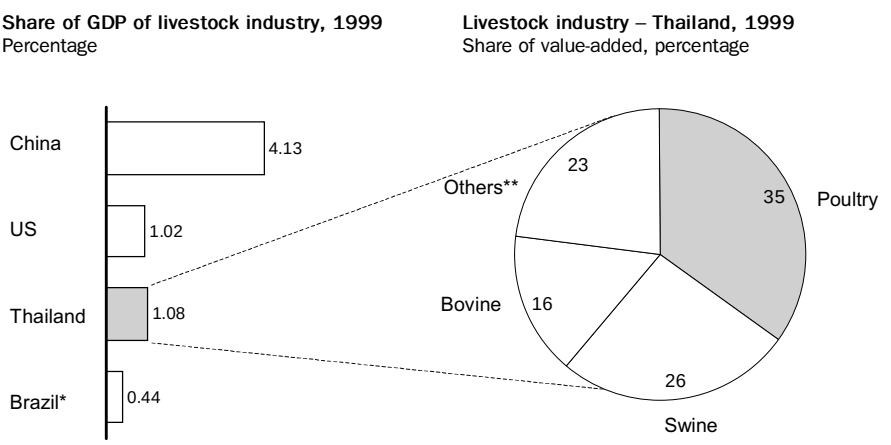
on companies to further boost efficiency. Second, the high price of chicken feed inflates costs and squeezes margins throughout the poultry value chain.

- To achieve higher productivity in chicken processing, the government should consider two policy changes. First, it should ease import restrictions on chicken meat. Second, it should seek to reduce the price of chicken feed, for example, by relaxing import restrictions on raw materials, encouraging research aimed at boosting agricultural yields, or facilitating more efficient trading of feed inputs.

INDUSTRY OVERVIEW

Poultry is Thailand's largest and most important livestock industry. Chicken processing accounts for 35% of value-added in the overall livestock industry, which itself accounts for roughly 1% of national GDP (Exhibit 1).

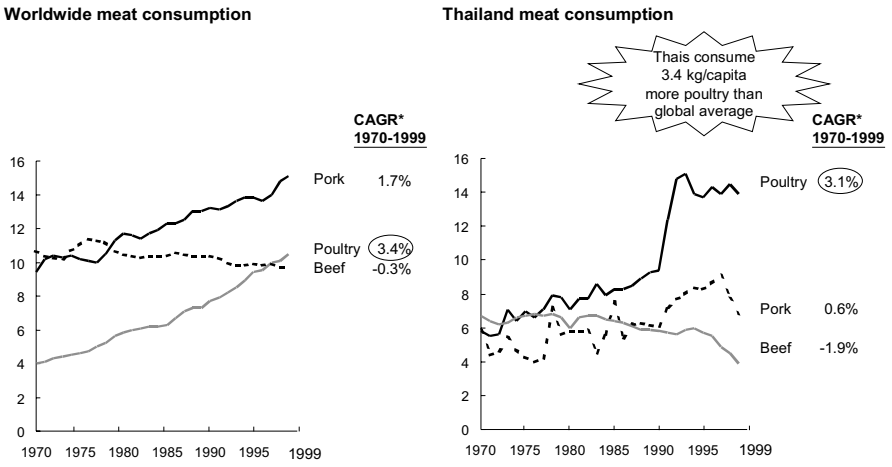
EXHIBIT 1: SIGNIFICANCE OF POULTRY IN THE THAI ECONOMY



* GDP of meat slaughtering
** Includes poultry products (e.g., eggs)
Source: Office of Agricultural Economics; National Income of Thailand (1999); China Statistical Yearbook of Food Industry, 1999; US Annual Survey of Manufacturing

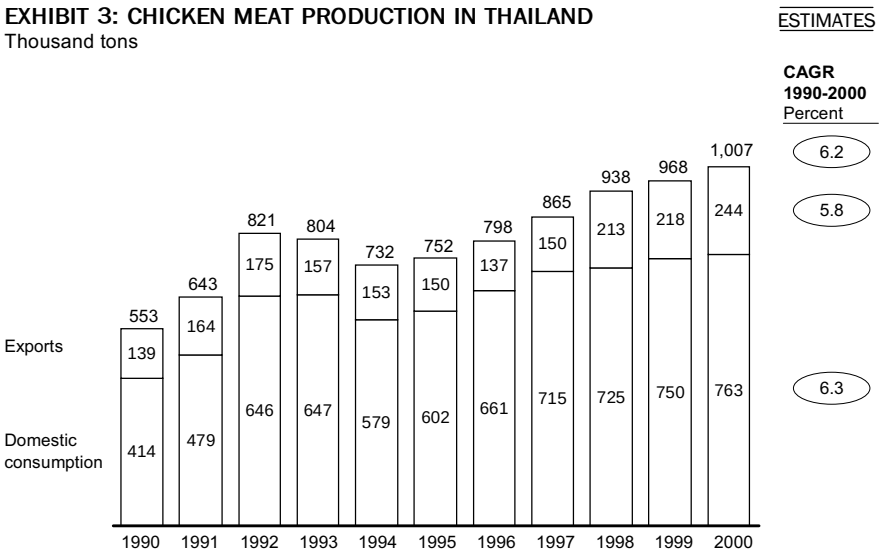
Industry growth has been driven by rising chicken consumption both in Thailand and worldwide. From 1970-1999, consumption of poultry in Thailand expanded at an average of 3.1% per annum, while worldwide consumption grew at a yearly average

EXHIBIT 2: MEAT CONSUMPTION TRENDS WORLDWIDE AND IN THAILAND
Kilogram per capita



* CAGR = Compound annual growth rate
Source: Food and Agricultural Organization

EXHIBIT 3: CHICKEN MEAT PRODUCTION IN THAILAND
Thousand tons



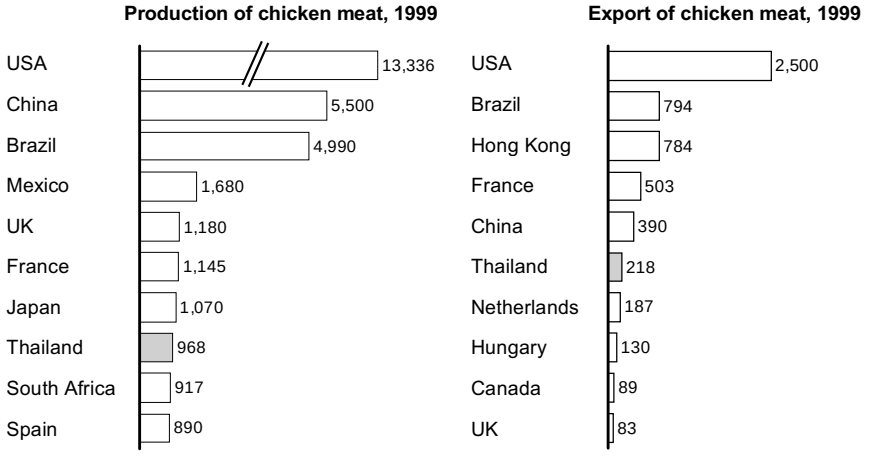
Source: Bank of Thailand; Office of Agriculture Economics

of 3.4%. Domestically and globally, growth in chicken consumption has outpaced other meat products such as beef and pork (Exhibit 2).

Domestic production of chicken meat in Thailand has expanded steadily over the past decade, with yearly growth averaging over 6% (as measured by volume). Production for domestic consumption has grown at a yearly average of 6.3%, slightly faster than export-directed production, which grew at an average of 5.8% (Exhibit 3).

Such sustained growth has established Thailand as a world leader in chicken processing: the country produced about one million tons of chicken meat in 1999 and in 2000, exceeding the volumes in more developed countries like Spain or South Africa and barely trailing economic giants like Japan and France (Exhibit 4).

EXHIBIT 4: THAILAND'S WORLDWIDE POSITION IN CHICKEN MEAT PRODUCTION AND EXPORTS
Thousand tons

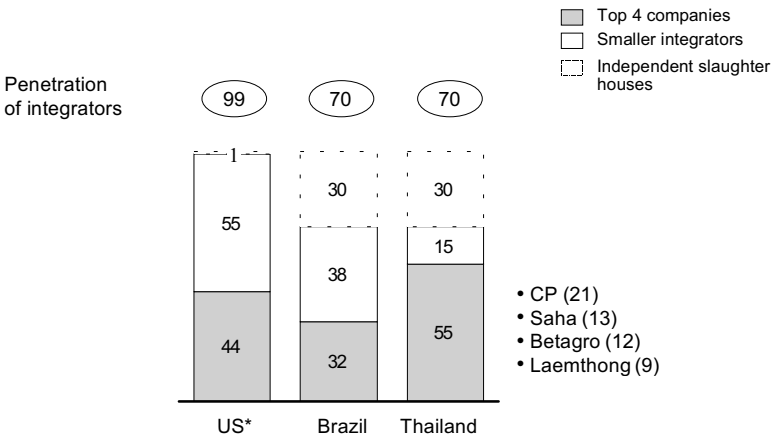


Source: FAS Post Report; Official statistics; InterAgency Analysis; PJB Publications (February 2001)

In line with global trends, Thailand's poultry industry has experienced consolidation and vertical integration and is now dominated by a handful of large players. The four largest companies–CP Group, Saha, Betagro, and Laemthong–account for 55% of total production (as measured by volume). Globally and in Thailand, vertical integration brings a host of benefits to larger

EXHIBIT 5: PENETRATION OF INTEGRATORS IN THAI CHICKEN PROCESSING

Percent of production in 1999, 100% = total chicken production volume in the country



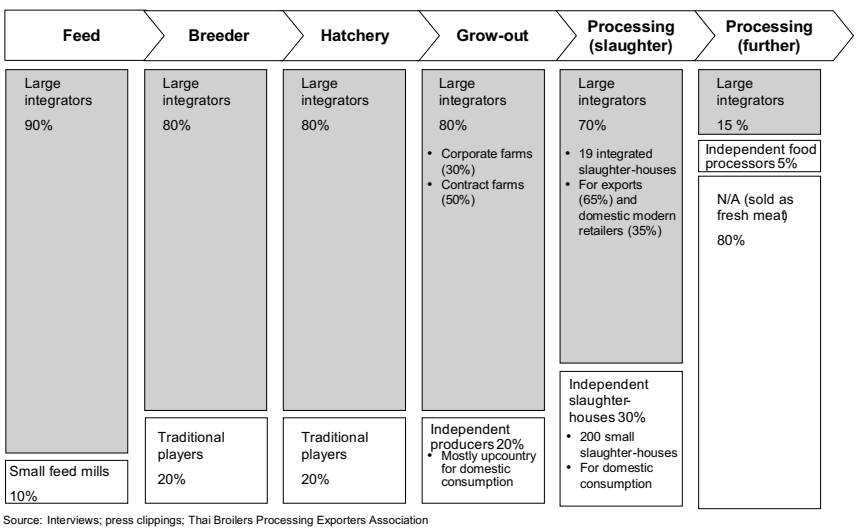
* By value, 1997

Source: National Chicken Council; Abef; Agroanalysis; Thai Broiler Processing Exporters Association

EXHIBIT 6: LEVEL OF INTEGRATION IN THAI CHICKEN PROCESSING

Percentage by production of whole birds

ESTIMATES



Source: Interviews; press clippings; Thai Broilers Processing Exporters Association

players. Their scale allows them to invest in breed genetics research that increases the feed conversion ratio of live birds and reduces mortality rates. Several international players have also been able to invest in building successful brands: for example, Purdue and Tyson are well-known processed poultry brands among American consumers. Finally, scale advantages and lower costs enable large players to export within a relatively short period of time after entering the poultry market. In Thailand, such advantages have proven particularly powerful in allowing the large poultry companies to become dominant throughout the value chain, from feed production, where they account for 90% of activity, through to processing, where they control 70% (Exhibits 5 and 6).

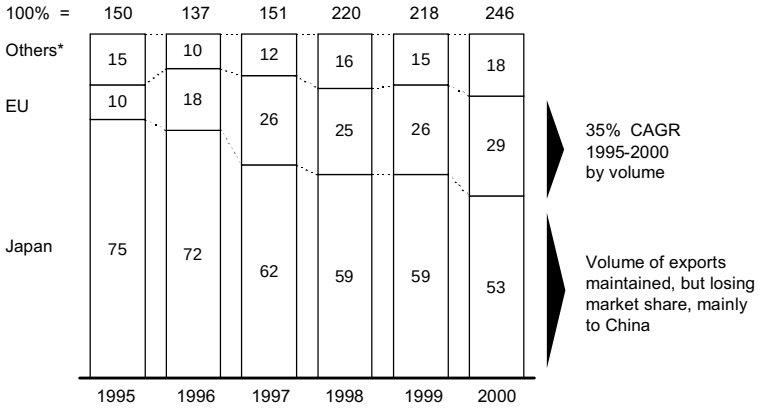
The majority of chicken processed in Thailand's licensed chicken slaughterhouses is exported, although an increasing share is sold through domestic supermarkets and hypermarkets. Chicken exporters have recently sought to move into 'further processed' products[1] in an effort to increase value added and compete with new, low-cost producers from China. However, as will be discussed, several barriers have slowed the move into further processing activities.

Japan is Thailand's largest export market for chicken products, accounting for over half of poultry exports. Although the volume of exports to Japan has remained constant, Thailand is losing market share as cheaper products from China are introduced. Thailand's other major poultry market is the European Union (EU), where exports grew by an average of 35% per annum from 1995-2000. However, in order to remain competitive in both of these markets, Thailand will need to increase its share of 'further processed' chicken products, which are less subject to commoditization in the marketplace (Exhibits 7 and 8).

[1] 'Further processed' refers to partially or fully cooked and seasoned products such as yakitori sticks, chicken strips and nuggets, etc.

EXHIBIT 7: THAILAND'S MAIN EXPORT MARKETS – FROZEN FOWL

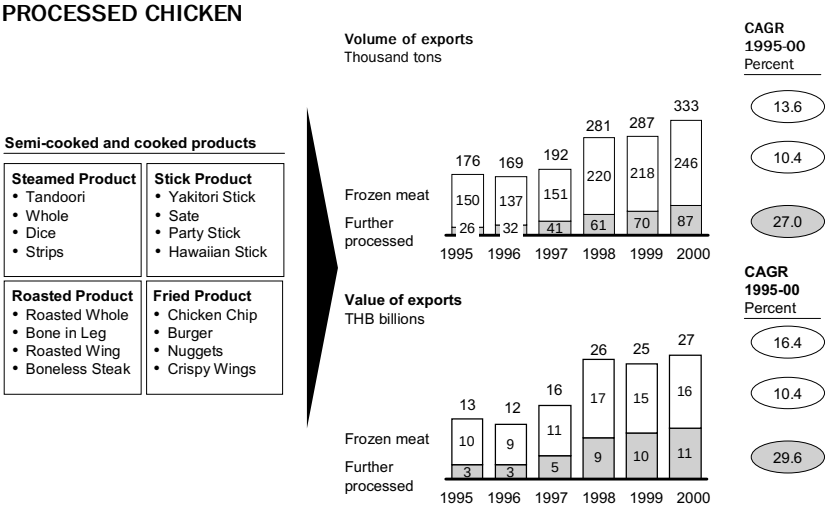
Percent, thousand tons



* Others include ASEAN, Hong Kong, South Africa, Middle East, Canada, Korea

Source: Bank of Thailand; Thai Broiler Processing Exporters' Association

EXHIBIT 8: INCREASING EMPHASIS ON HIGHER VALUE-ADDED FURTHER PROCESSED CHICKEN



Source: Company websites; Thai Broiler Processing Exporters Association

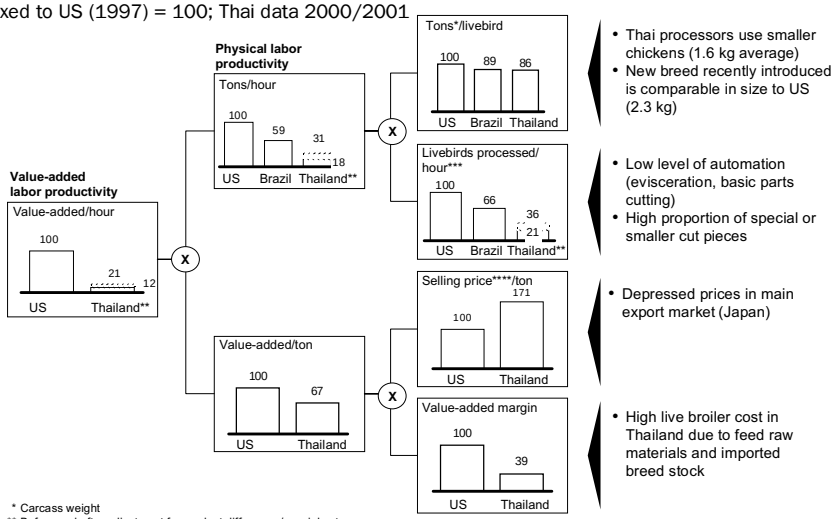
Thailand's domestic poultry market does not experience the same competitive intensity as the international market. Domestic chicken meat sales are protected against competition from imports, allowing local players to keep prices relatively high and control the development of downstream businesses such as further processing and food processing.

PRODUCTIVITY ASSESSMENT

In this case study, we focus on productivity levels of the 'processing' stage of the poultry value chain and exclude other activities such as breeding, farming, and further processing. We analyze physical productivity (measured as tons of chickens processed per hour of labor) of Thai poultry companies compared to US processors. Because chicken products are not a commodity, we also analyze value-added productivity (measured as value added per hour of labor) in order to account for product/quality differences.

Our research team surveyed seven out of the total 19 modern chicken processors in Thailand. Our analysis included company-level research to pinpoint productivity barriers at the operational

EXHIBIT 9: LABOR PRODUCTIVITY IN MODERN CHICKEN PROCESSING
Indexed to US (1997) = 100; Thai data 2000/2001



* Carcass weight
** Before and after adjustment for product differences/special cuts
*** Sample of 7 of 19 modern slaughterhouses in Thailand
**** Comparison of selling price to Japan; most popular products(US: Chicken legs with bone, Thailand: Chicken meat and edible offal, cut in pieces)
Source: Food Agricultural Organization; US Census Bureau; National Chicken Council; Interviews

level. We also interviewed senior industry executives to test, confirm, and refine the findings of our research.

Although Thailand is reputed to be efficient in chicken processing, our research revealed substantial productivity gaps vis-à-vis benchmark countries. Physical productivity in Thailand is just 31% of the US level, and value-added productivity is lower still at 21% of US levels. Both of these figures adjust for product differences, i.e. special and small cuts provided by Thai processors (Exhibit 9).

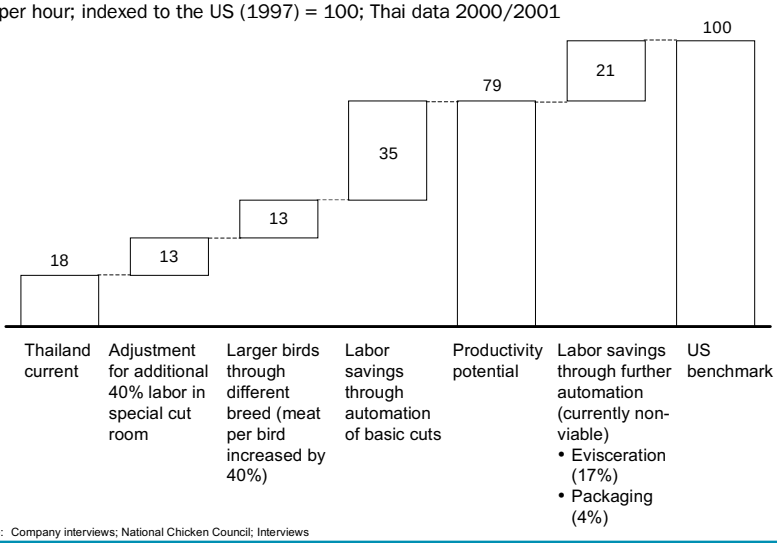
Operational factors affecting productivity

Four operational issues underlie these productivity gaps (Exhibit 10):

High proportion of special or small cuts: Due to labor-cost and skill advantages, Thailand has been serving a special niche, predominantly Japanese food companies that demand tailored products in specific shapes and sizes. These special cuts are labor-intensive to prepare and therefore reduce physical labor productivity. We estimate that they reduce the overall productivity level of the Thai poultry

EXHIBIT 10: ESTIMATED IMPACT OF OPERATIONAL FACTORS ON PHYSICAL LABOR PRODUCTIVITY

Tons per hour; indexed to the US (1997) = 100; Thai data 2000/2001

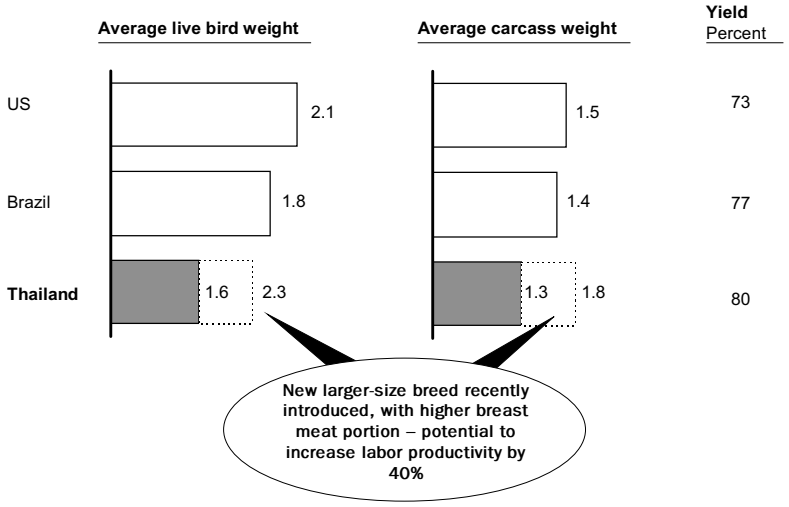


Source: Company interviews; National Chicken Council; Interviews

industry by some 13%. Automating the respective processes is unlikely to be feasible given the high level of customization and the delicacies required for special retail cuts.

Use of smaller chicken breeds: Thai chickens are generally smaller in size than US breeds: on average, 1.6 kg per live bird versus 2.1 kg in the US. Recently, though, local processors have begun switching to a breed similar to those used in the US. This new breed yields 40% more meat per live bird, and is expected to reduce the productivity gap arising from breed selection (Exhibit 11).

EXHIBIT 11: AVERAGE LIVE BIRD AND CARCASS WEIGHT COMPARISON
Kilogram per bird

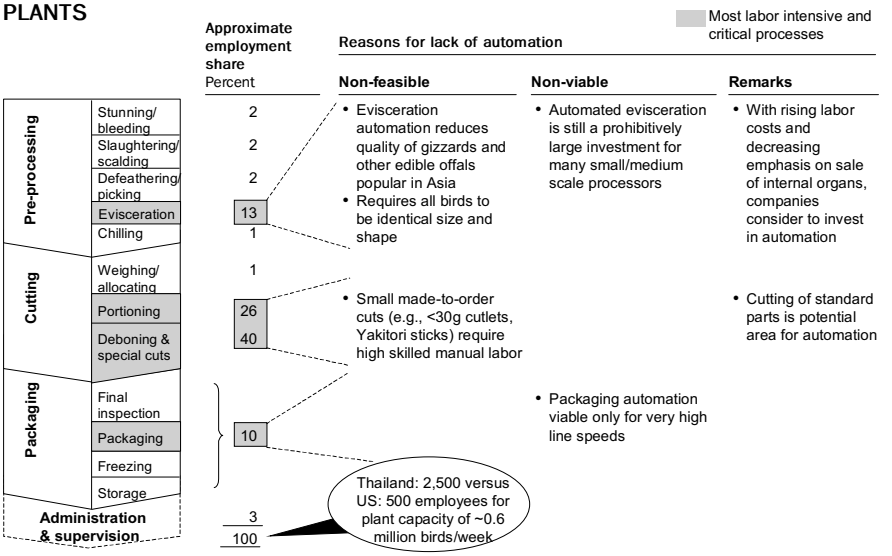


Source: Food and Agricultural Organization, interviews

Low levels of automation: In Thai chicken plants many processes continue to be performed manually. A mid-size Thai plant has on average five times more employees than a similar operation in the US (2,500 vs. 500 employees, respectively). Low labor costs have allowed Thai producers to remain cost competitive despite limited levels of automation. Moreover, the desire to preserve internal chicken organs, which in Thailand are saleable as by-products, adds roughly 300 employees to the workforce per plant.

While some forms of automation may not be viable at current factor costs, especially for smaller and medium-sized companies, our interviews revealed that rising labor costs are now prompting many companies to consider more investments in automation. For example, many companies are exploring ways to automate the evisceration process because the additional income from organ by-products no longer justifies the large number of additional staff required. The move towards automation is, however, still limited to the larger producer-exporters (Exhibit 12).

EXHIBIT 12: PERSPECTIVES ON AUTOMATION IN CHICKEN PROCESSING PLANTS

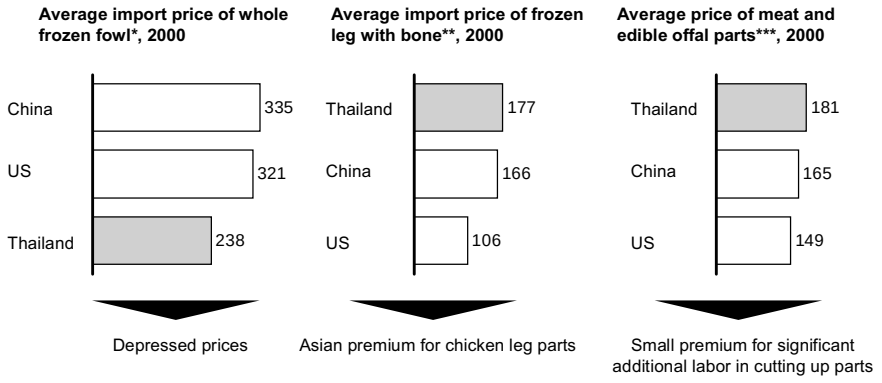


Source: Interviews with National Chicken Council (US), Thai companies and experts

Low margins especially due to high feedstock prices: Thai companies are currently earning low margins on sales of processed poultry. One reason is the high domestic price of chicken feed, which inflates costs and squeezes margins throughout the poultry value chain. In addition, prices of Thai chicken exports have been depressed in the major overseas markets. Even on special cut chicken parts, which are significantly more labor intensive, Thailand is earning only a slight premium over China and the US (Exhibit 13).

Despite these productivity gaps, low labor costs have allowed Thai chicken exports to remain competitive compared to the US and several other major producers. The cost of broilers exported

EXHIBIT 13: COMPARATIVE PRICES FOR CHICKEN MEAT PRODUCTS SOLD IN JAPAN BY ORIGIN
Thousand yen per ton



* Harmonized code 0207.12
** Harmonized code 0207.14-210
*** Harmonized code 0207.14-200
Source: JETRO; Japan Tariff Association; Japan Exports & Imports; Commodity by country

from Thailand is US$0.59/kg, only slightly higher than the US cost of US$0.54 (1999 figures). In effect, Thailand's low labor costs subsidize the inefficiencies in the industry (Exhibit 14). As noted, however, competing on labor costs is not a sustainable proposition. As labor costs in Thailand continue to rise and new lower-cost producers emerge, Thai chicken processors will need to more aggressively address productivity issues in order to remain internationally competitive.

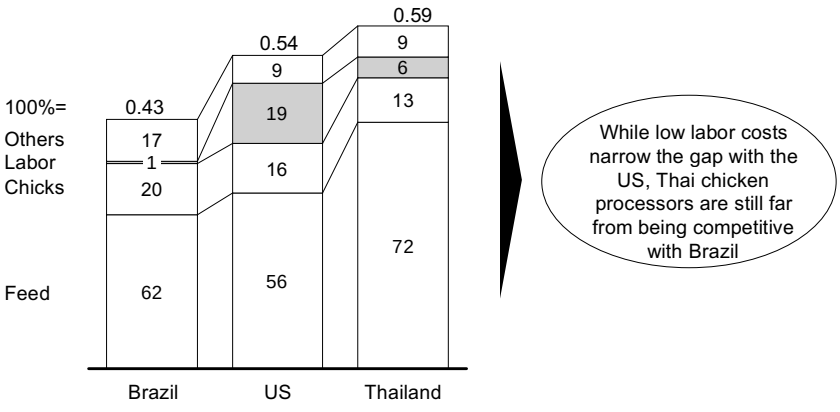
Industry and external factors

Two external factors contribute to the operational productivity barriers described above: (1) barriers to competition and (2) protectionism of upstream industries.

Barriers to competition: Due to the limited competitive pressure in the domestic poultry industry, Thai companies have been slow to address many productivity issues, such as the need to increase automation and to move into higher value-added products. Competition is limited by both the dominance of a small number of large poultry integrators and barriers to chicken meat imports.

EXHIBIT 14: LIVE BROILER COST COMPARISON

Cost of a live broiler, 1999
USD/kg of broiler



Source: North Carolina Chicken Council; FNP; interviews; USDA; SCB research; Brazilian Union of Poultry

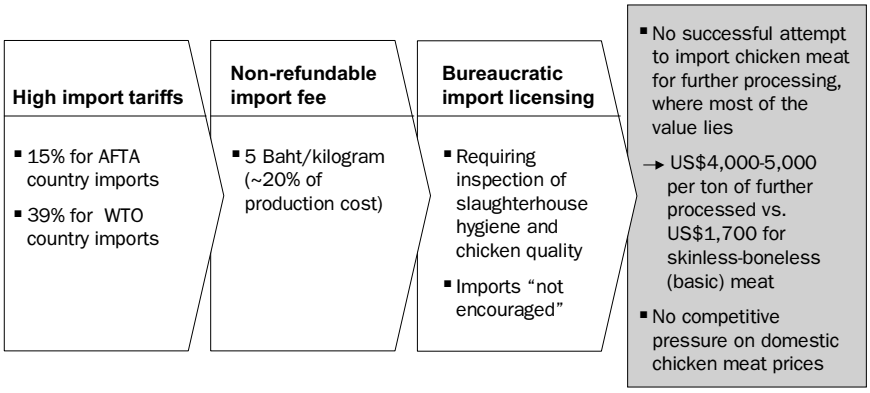
Dominance of large integrators: As noted, four large integrators account for over half of all poultry production in Thailand. These integrators sell primarily into export markets, where they enjoy a competitive advantage due to Thailand's low labor costs and its effectiveness in producing premium and small cuts. These advantages have allowed the large integrators to remain internationally competitive without needing to further boost productivity.

The scale achieved from years of export sales has allowed these integrators to dominate domestic chicken production. They now hold significant market share in most stages in the poultry value chain (up to and including slaughter). This limits the level of competition across the industry, reducing the pressure to enhance productivity. Although independent processors continue to operate, their presence has not substantially increased competition in the industry. Almost all independents purchase their chicks from one of the integrators. Consequently, there is very little differentiation in the types and quality of products these independents can offer. This situation

could change dramatically if imports of chicken products were liberalized.

High domestic meat prices impeding the move into higher value-added products: As noted, the high price of chicken feed, combined with other inefficiencies, inflates the domestic price of chicken meat in Thailand. At the same time, tariff and non-tariff barriers to chicken meat imports prevent cheaper foreign products from driving down domestic prices (Exhibit 15). The high price of chicken meat in turn limits the

EXHIBIT 15: CHICKEN MEAT IMPORT TARIFFS AND REGULATIONS



Source: Customs Department; Foreign Trade Department; interviews

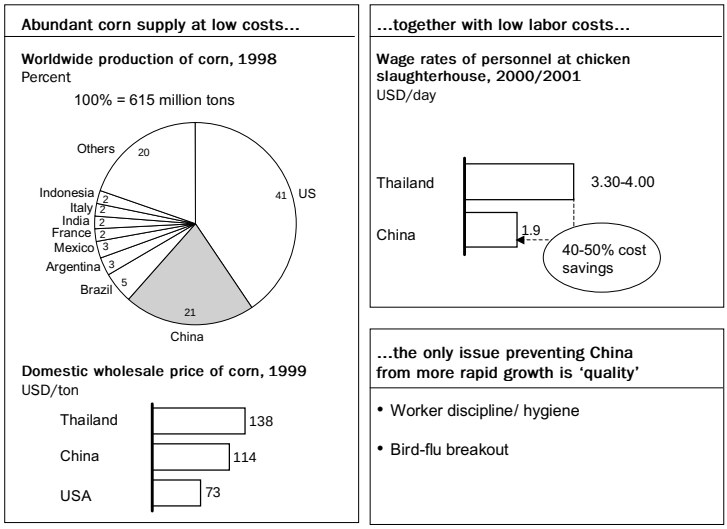
prospects for moving more aggressively into higher value-added activities such as further processing[2].

To date, only a handful of further processing plants have been established in Thailand. However, the move into further processing is becoming increasingly important as Chinese exports pose a rising threat to existing Thai poultry exports. China enjoys a more productive upstream industry–largely due to the lower

[2] Further processing involves on average US$4,000-5000 in value added per ton versus roughly US$1,700 per ton for basic (skinless-boneless) meat.

feed prices that result from a large domestic corn supply–as well as lower labor costs. As noted, Chinese chicken exports have been gaining market share in Japan, threatening Thailand's principal overseas market. Assuming Chinese producers can overcome certain quality and hygiene issues, they are also expected to begin exporting extensively to EU countries in the near future (Exhibit 16).

EXHIBIT 16: THREATS FROM CHINA-BASED PRODUCERS

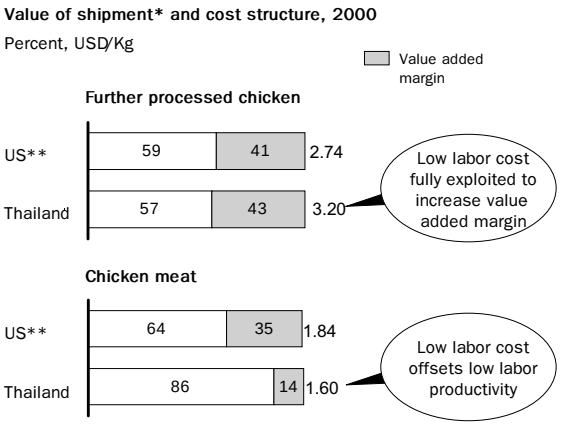


Source: China Infobank; Reuters; Commerce Department of Thailand

In further processing, though, Thai workers are highly skilled vis-à-vis their labor cost (Exhibit 17). Thailand is therefore able to enjoy a sustainable competitive advantage in these products, assuming barriers such as high chicken meat cost can be eliminated.

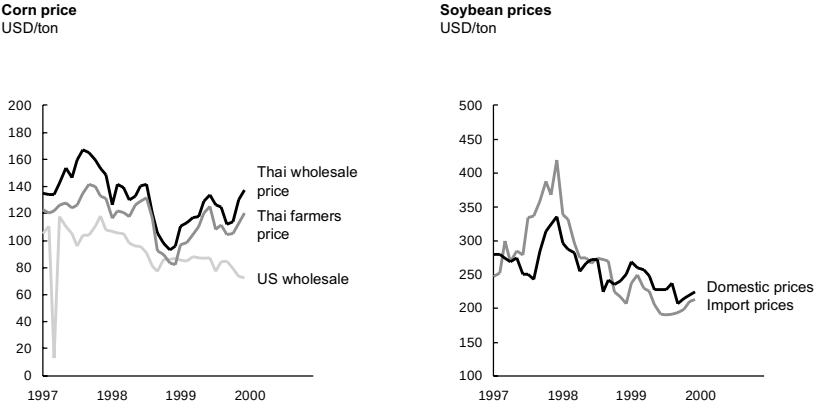
Protectionism and high prices in upstream activities: The high price of chicken feed inputs–which sit at the very front of the poultry value chain–reduces the potential margins of virtually all poultry processing activities. Feed prices are high because corn and soybean–the two principal inputs for chicken feed–are expensive in Thailand by international standards. In 2000, for example, Thailand's wholesale price for corn was about 75% higher than the respective US wholesale price (Exhibit 18). Thailand lacks a large domes-

EXHIBIT 17: VALUE-ADDED MARGIN FURTHER VS. BASIC PROCESSED CHICKEN MEAT



* Value of shipment for Thailand taken as export value/ton
** 1997 US Census data
Source: USDA; US Census Bureau; Thai Broiler Processing Exporters Association

EXHIBIT 18: FEED RAW MATERIAL PRICE COMPARISONS: THAILAND VS. US

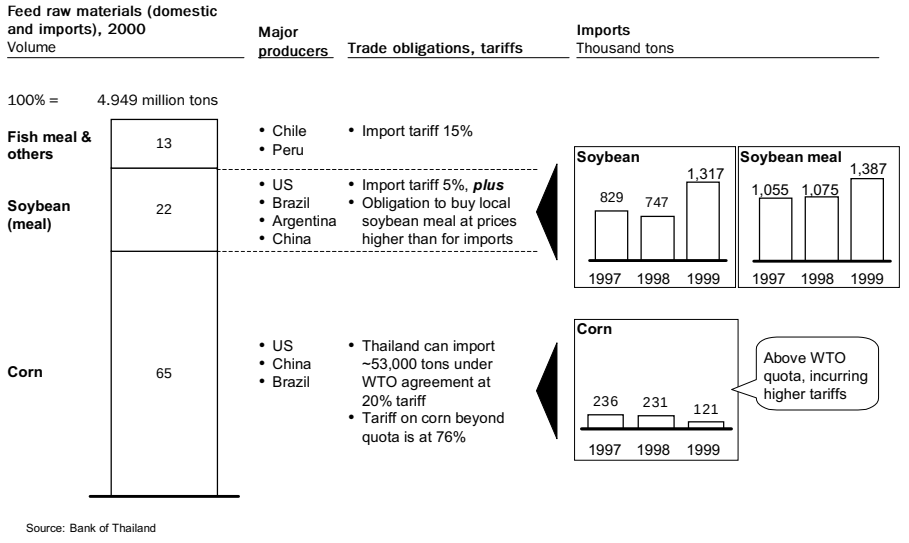


Source: USDA; Ministry of Commerce; Ministry of Agriculture

tic corn belt, and import tariffs on corn prevent cheaper imports from pushing down domestic prices. Under a WTO agreement, Thailand can import up to 53,000 tons of corn yearly at an import tariff of 20%. For the last four years, however, import volumes have substantially exceeded the quota, and all imports beyond the quota incur a tariff of 76%, as dictated by the WTO agreement.

Tariffs on soybeans are much lower (5%), and consequently the volume of imports is several times higher than corn imports. However, domestic soybean prices remain comparatively high because a government quota system requires all companies buying imported soybeans to also purchase a certain amount of domestic soybeans from local suppliers (at domestic prices). Consequently, soybean prices in Thailand remain roughly 40% more expensive than prices

EXHIBIT 19: PROTECTIONISTIC MEASURES IN THAI AGRICULTURE



Source: Bank of Thailand

on the Chicago futures market. Exhibit 19 summarizes the protectionist measures imposed on feed raw materials imports in Thailand.

A final factor pushing up feed prices is the dominance of the large integrators, which account for 90% of feed production. These companies hold considerable influence over

pricing and are able to keep domestic prices high. Most independent contract farmers have formal or informal ties to one of the integrators, from whom they agree to buy feed. Such ties further reduce the level of competition in the feed market, making it unlikely that prices will decline in the near future.

POLICY RECOMMENDATIONS

Several regulatory changes could help to further enhance the productivity in Thailand's chicken processing industry. These changes would need to focus on both upstream and downstream barriers to productivity.

The primary upstream objective should be to reduce the cost of chicken feed. As noted, the high cost of feed inflates prices throughout the value chain, reducing poultry producers' margins and rendering many activities economically unviable. To address this situation, the following steps should be taken.

Removing import barriers and local protection on feed raw materials: Such liberalization will reduce the domestic prices of feed products and in turn drive down costs in almost all poultry processing activities. Of the three raw materials, soybean imports may be the most difficult to liberalize. In addition to official tariffs, soybean imports are subject to several non-tariff barriers including the quota requirement to buy a matching amount of domestic product for all imports.

Encouraging private investments in R&D efforts to improve agricultural yield of feed raw materials: Expanding the domestic supply of feed inputs will naturally lead to lower prices. Further studies are recommended to understand agricultural productivity performance and identify opportunities to increase yields of feed raw materials.

Establishing trading infrastructure: Improved trading infrastructure-such as on-line marketplaces, risk management systems, and logistics networks-can enhance the efficiency of procurement and trade of feed raw materials. Such

infrastructure can increase bargaining power of purchasers and reduce the transaction costs associated with purchasing feed inputs.

Downstream objectives should focus on increasing the viability of further processing activities by reducing the cost of basic chicken meat.

Removing import barriers on chicken meat and parts: As discussed, further processing–the highest value-added aspect of chicken processing–has not yet sufficiently taken off in Thailand because import barriers help keep the cost of basic chicken meat at a relatively high level. Reducing or eliminating these barriers will allow cheaper chicken meat to be imported, making further processing economically viable and encouraging investment in such activities.

Downstream objectives should focus on increasing the viability of 'further processing' by reducing the cost of basic chicken meat.

* * *

Thailand has enjoyed a long history of success in chicken processing–building a competitive export industry while supplying a growing domestic market. However, Thailand's competitiveness remains tied to relatively low labor costs, which are fast disappearing. To remain competitive, Thailand must eliminate the barriers that currently prevent poultry companies from becoming more productive and moving into higher value-added activities such as further processing. If these barriers can be dismantled, Thai poultry processors can look forward to many years of continued growth and successful development.

Computer and Electronics

Computer and Electronics

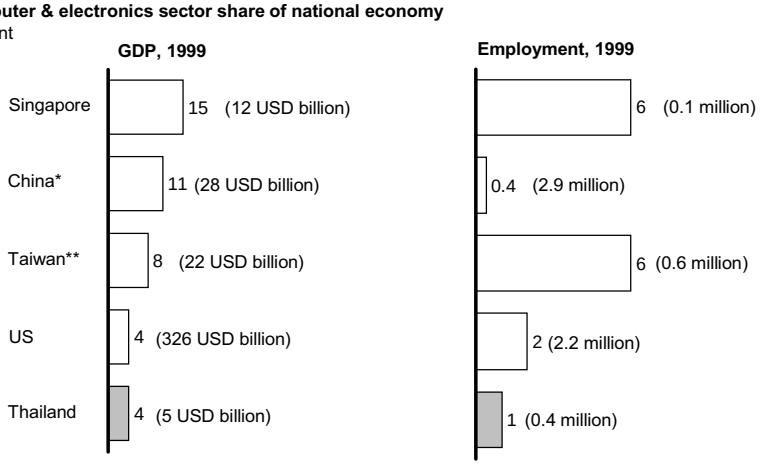
CHAPTER ABSTRACT

- The computer and electronics industry is an important sector in the Thai economy–it has experienced rapid growth in recent years and now accounts for 4% of GDP, 20% of foreign direct investment and nearly 40% of exports.
- Physical productivity (measured as units per employee) is relatively close to the levels of competitor countries when measured on a product-to-product basis. However, overall value-added productivity remains low by international standards: 8% of the US level and just 11% of Singapore's value-added productivity.
- The primary reason for these gaps is the low value-added nature of computer and electronics manufacturing in Thailand. Thai companies have been unable to move 'up the value chain' into more sophisticated products (such as servers) and processes (such as research and product design). This has placed Thailand on an unsustainable 'middle ground' between lower-wage countries such as China and higher-skill economies such as Singapore and Taiwan.
- Policy recommendations include increasing investment in R&D and training through public-private partnerships, further improving incentives for FDI, and facilitating collaborative linkages between industry, government, and academia. Steps should also be taken to foster growth of a domestic market for computer and electronic goods, which would accelerate the sector's development. Finally, as a member of ASEAN, Thailand should help promote regional high-tech clusters by eliminating tariffs, creating common technical standards, and promoting efficient transport links.

INDUSTRY OVERVIEW

The computer and electronics industry[1] accounts for roughly 4% of Thai GDP and about 1% of total employment (Exhibit 1). Yet these statistics understate the sector's significance for the Thai economy: computer and electronics products have become Thailand's biggest export category, accounting for almost 40% of total exports in 2000 and contributing US$6.2 billion to the country's trade balance (Exhibit 2).

EXHIBIT 1: THE COMPUTER AND ELECTRONICS SECTOR ACCOUNTS FOR A COMPARATIVELY SMALL SHARE OF THE THAI ECONOMY



* Only includes companies with over USD 600,000 in annual revenues
** Calculated based on 1996 census data and 1999 manufacturing production index
Source: Thailand National Statistics Office; Thailand Board of Investments; US Census Bureau; Directorate-General of Budget, Accounting and Statistics, Executive Yuan, Republic of China; Singapore Economic Development Board; SingStat; China Electronics Industry Yearbook; McKinsey analysis

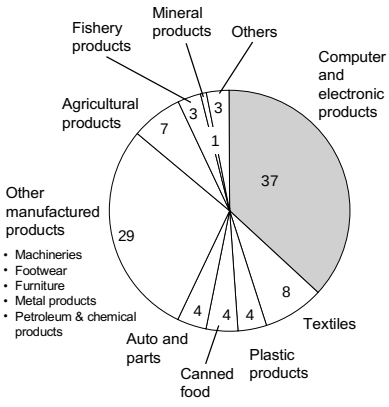
The sector is also a major destination for foreign direct investment into Thailand, representing 20% of FDI inflows in the year 2000. Foreign companies have long been attracted by Thailand's factor cost advantages and have invested heavily in assembly operations in the country. Foreign electronics firms first started entering Thailand in the 1970s, attracted by low labor costs. Since then, the industry has grown rapidly, expanding at roughly 9% per annum over the last decade, outpacing GDP growth

[1] The computer and electronic parts sector comprises personal computers, electronic parts, and consumer electronics/appliances, as well as telecom and office equipment.

EXHIBIT 2: THE SECTOR IS THAILAND'S BIGGEST EXPORT EARNER

Percent

Exports of Thailand, 2000

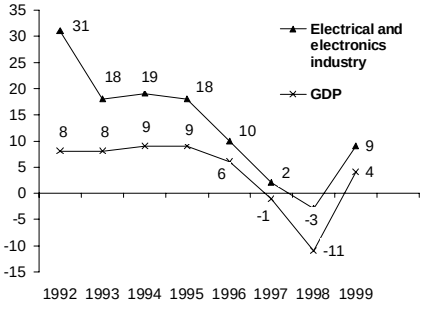


- Computer and electronic exports contribute US$6.2 billion (net) to Thailand's trade balance (before capital expenditures)
- 91% of production is exported

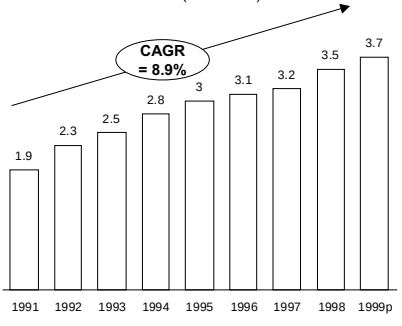
Source: Bank of Thailand; Thailand Board of Investments

EXHIBIT 3: COMPUTER AND ELECTRONICS SECTOR GROWTH CONSISTENTLY OUTPERFORMING GDP

Real GDP and sector growth, 1994-99
Percent change on previous year



Computer and electronics industry
Percent of total real GDP (1988 THB)



Computer and electronics industry includes:

1. Computer and peripherals (e.g., computer, hard disk drive, printer, monitor)
2. Electronic components and parts (e.g., semiconductor, capacitor, printed circuit board)
3. Consumer electronics (e.g., TV, VCR, radio, microwave, camera)
4. Telecom and office equipment (e.g., fax machine, telephone, photocopier, calculator)
5. Electrical household appliances (e.g., air conditioner, washing machine, refrigerator)
6. Industrial electrical products (e.g., transformer, generator, cable)
7. Other electrical parts (e.g., lamp, battery, thermostat)

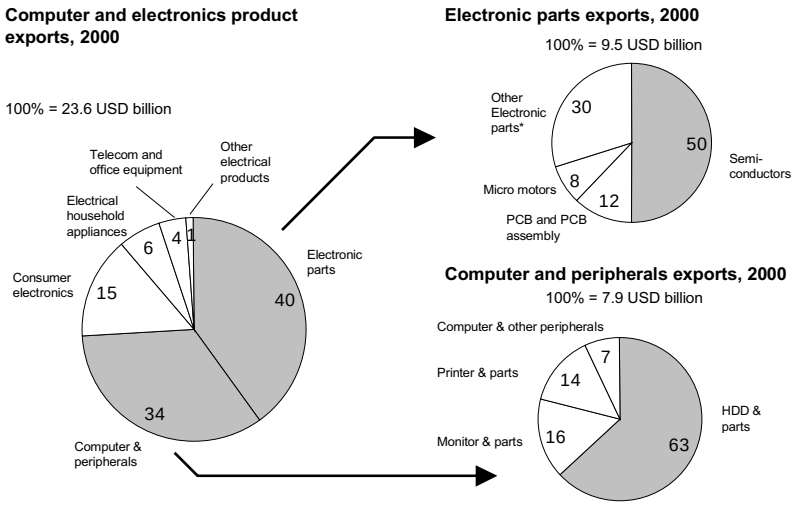
Focus of study

Source: NESDB

every year (Exhibit 3). The government has actively encouraged FDI in the sector by lowering import tariffs on production machinery to 5% and on key components to as low as 1%. As a result, 84% of companies in the computer and electronics sector are either foreign owned or joint ventures between Thai and foreign companies.

Our research focused on the two most important sub-sectors of the computer and electronics industry in Thailand: computers/peripherals (e.g. hard disk drives, printers and monitors) and electronics parts (e.g. semiconductors and printer circuit boards). These two sub-sectors account for 74% of total exports in Thailand's computer and electronics sector (Exhibit 4).

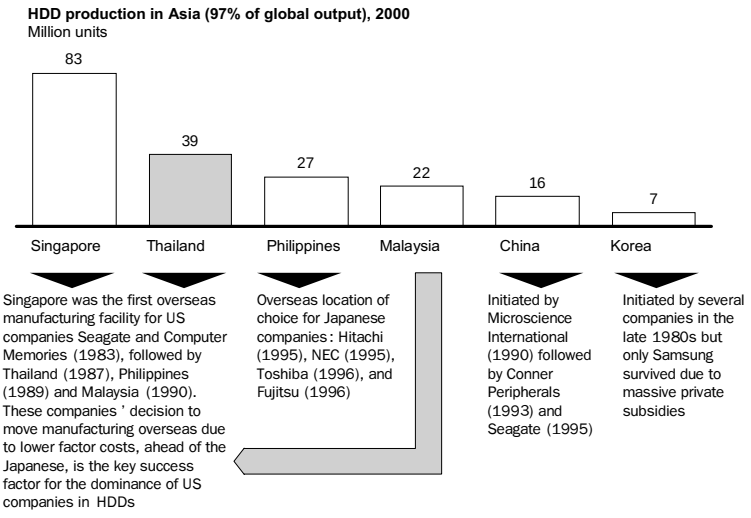
EXHIBIT 4: COMPUTER & ELECTRONICS SECTOR DOMINATED BY HARD DISK DRIVES (HDD) AND SEMICONDUCTORS
Percent



* Includes resistors, transistors, capacitors, ball bearings, pow er cords, connectors, and switches
Source: Thailand Board of Investment

Within the computers/peripherals sub-sector, we focused on hard disk drives (HDD), which account for 63% of the sub-sector's exports. Following Singapore, Thailand is the world's second-largest HDD producer, accounting for almost 20% of total global output (Exhibit 5). Three of the top-five hard disk drive producers in the world (Seagate, IBM and Fujitsu) have manufacturing facilities in Thailand. Yet Thai HDD companies have not

EXHIBIT 5: THAILAND IS THE SECOND LARGEST HARD DISK DRIVE PRODUCER IN THE WORLD



Source: Thailand Board of Investment (Electronics Industrial Assn. of Japan); McKendrick, Richard, et al. "From Silicon Valley to Singapore"

EXHIBIT 6: MANY TOP HDD PRODUCERS HAVE PLANTS IN THAILAND BUT RESEARCH & PRODUCT DEVELOPMENT IS LARGELY IN THE US

Product development and manufacturing locations, 1999

Quantum drives are manufactured by sub-contractor Mitsubishi-Kobuku who utilizes highly automated ("lights out") assembly lines

Major portion of R&D in Japan

		Research & product development				Assembly & testing									
Company	Market Share	US	Japan	S. Korea	Singapore	China	Japan	Philippines	Malaysia	S. Korea	Singapore	Thailand	US	Hungary	Ireland
Seagate	22%	X			X	X			X		X	X*	X		
Quantum	17%	X					X				X				X**
IBM	14%	X	X								X	X		X	
Maxtor	13%	X									X				
Fujitsu	12%	X	X				X	X				X			
Western Digital	11%	X							X		X				
Toshiba	5%		X				X	X							
Samsung	4%	X		X						X					
Other	2%														
Total	32.4 USD billion														

* Seagate has the largest hard disk assembly in Thailand; units are shipped to Singapore for final assembly

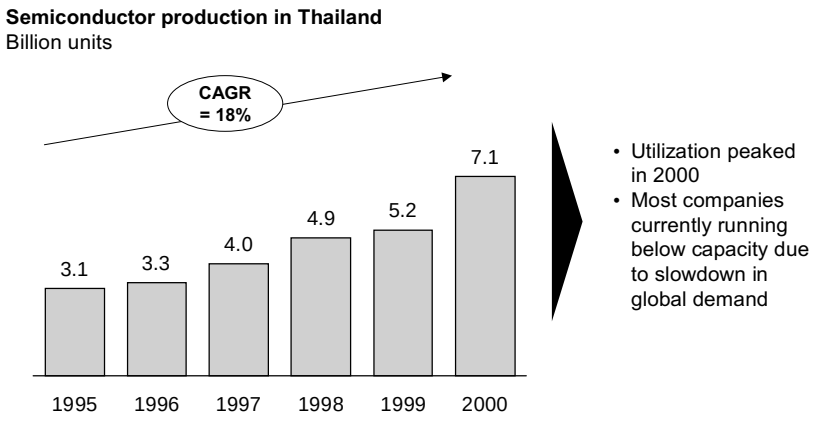
** Quantum closed its Ireland plant in 2000

Source: Morgan Stanley Dean Witter; McKendrick, Richard, et al. "From Silicon Valley to Singapore"

been able to move into higher value-added activities, such as research or product development, which continue to be conducted offshore (Exhibit 6).

In the electronics parts sub-sector, our research focused on semiconductors (specifically, integrated circuits or ICs), which account for 50% of exports in the sub-sector. Thailand's semiconductor industry has expanded rapidly over the last 5 years, achieving an average annual growth rate of 18% (Exhibit 7).

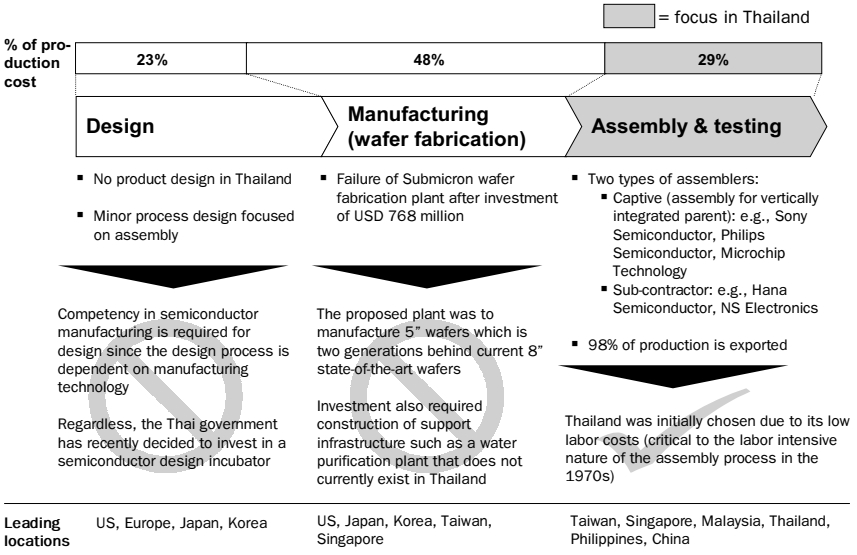
EXHIBIT 7: THAILAND'S SEMICONDUCTOR PRODUCTION HAS BEEN GROWING IN LINE WITH GLOBAL DEMAND



Source: Economic and Financial Statistics, Mar. 2001, Bank of Thailand; Solomon Smith Barney

Yet, similar to the HDD sector, Thailand has not been able to build up skills and capabilities across the entire value chain, and remains focused on lower value-added activities such as assembly and testing (Exhibit 8). While most assemblers in the country are foreign owned and operated, there have also been home-grown success stories. Companies such as Hana Semiconductor and NS Electronics that specialize in sub-contracting for large electronics firms have successfully captured substantial share in the assembly market.

EXHIBIT 8: THAILAND'S ROLE IN THE SEMICONDUCTOR INDUSTRY IS LIMITED TO ASSEMBLY AND TESTING FOR EXPORTS



Source: Economic and Financial Statistics, Mar. 2001, Bank of Thailand

PRODUCTIVITY ASSESSMENT

In the computer and electronics sector, we analyzed Thailand's productivity level by calculating both value-added productivity at the sector level and physical productivity for the selected products (ICs in the electronic parts sub-sector and hard-disk drive products in the computer/peripherals sub-sector). For the physical product-by-product comparisons, we chose as our benchmark countries Singapore (for hard disk drives) and Taiwan (for IC assembly), as the US has largely ceased to assemble the components Thailand specializes in.

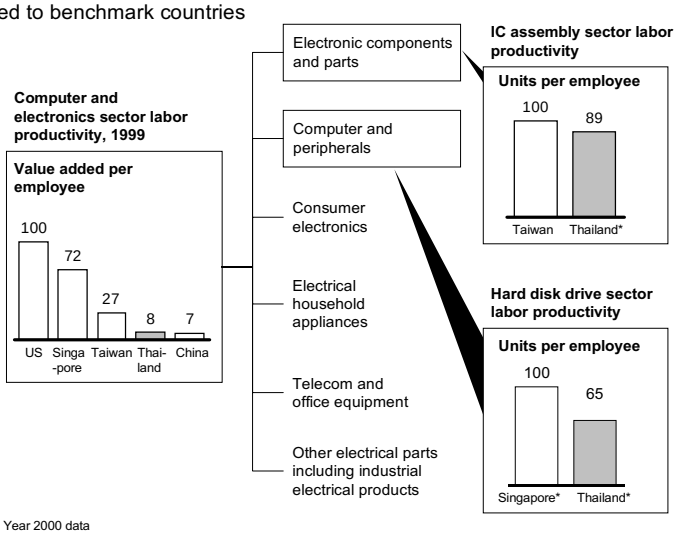
With respect to the two selected products, Thailand's performance in terms of physical productivity is relatively close to its Asian competitors, especially in the case of ICs. In IC assembly, Thailand's productivity is around 90% of that of Taiwan, while productivity in hard disk drive assembly is about 65% of the level of Singapore. Company interviews confirmed that labor productivity in these two sub-sectors in Thailand is similar to that of other Asian economies. This is largely because these heavily traded sub-sectors are dominated by multinationals that can easily switch production from one country to another if

significant disparities in productivity emerge.

However, an analysis of Thailand's aggregate value-added productivity in the computer and electronics sector shows a more disappointing picture. In fact, Thailand is estimated to be at only around 8% of the US level, 11% of Singapore, and 30% of Taiwan in terms of value-added productivity (Exhibit 9). Where

EXHIBIT 9: DESPITE LOW VALUE-ADDED PRODUCTIVITY, PHYSICAL PRODUCT-BY-PRODUCT COMPARISONS SHOW A MORE MODEST GAP

Indexed to benchmark countries



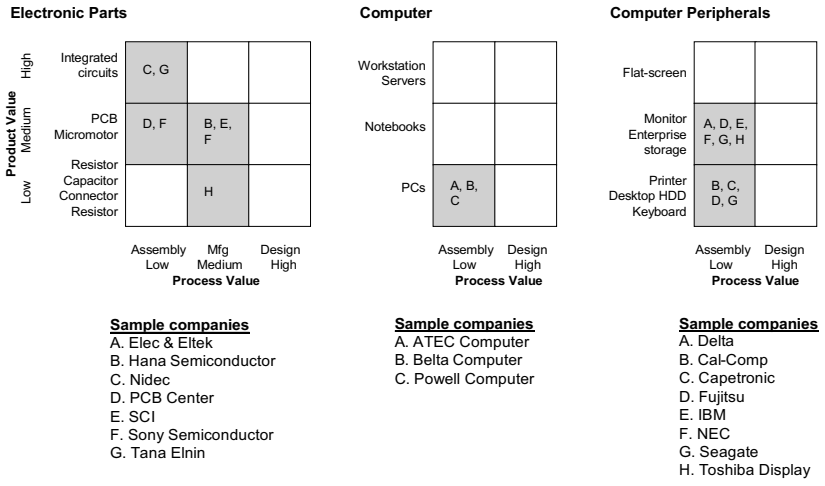
* Year 2000 data

Source: Thailand National Statistics Office; Thailand Board of Investments; US Census Bureau; Directorate-General of Budget, Accounting and Statistics, Executive Yuan, Republic of China; Singapore Economic Development Board; SingStat; China Electronics Industry Yearbook; McKinsey analysis; Company interviews; Dataquest

does this difference in relative productivity levels between physical product-by-product comparisons and sector-wide value added productivity come from? The answer is Thailand's low value-added product mix.

Low value-added product mix. Most of the value-added productivity gap can be explained by the low value-added nature of the computer and electronics products produced in Thailand (Exhibit 10). Thai process value and product value are both comparatively low, consisting primarily of simple assembly operations that exploit the country's labor cost advantage. Unlike Singapore, Thailand has so far been unable to move 'up the value chain' toward, for example, semiconductor manufacturing (wafer fabrication) or high value-added design competencies.

EXHIBIT 10: MOST OF THE PRODUCTIVITY GAP IS DUE TO THAILAND'S LOW VALUE-ADDED PRODUCT MIX



Sample companies
A. Elec & Eltek
B. Hana Semiconductor
C. Nidec
D. PCB Center
E. SCI
F. Sony Semiconductor
G. Tana Elnin

Sample companies
A. ATEC Computer
B. Belta Computer
C. Powell Computer

Sample companies
A. Delta
B. Cal-Comp
C. Capetronic
D. Fujitsu
E. IBM
F. NEC
G. Seagate
H. Toshiba Display

Source: ASIDnet

Two factors underlie the difficulty Thailand faces in moving up the value chain:

Shortage of local skills and expertise: As international outsourcing and contract manufacturing in the hi-tech industry have expanded, the skills required to operate world-class manufacturing facilities are becoming increasingly sophisticated. Companies such as Flextronics in Singapore or Taiwan Semiconductor Manufacturing Company have achieved leading global positions in contract manufacturing. Thailand, however, currently lacks the technology, know-how, and human resources to become a leading-edge producer of high value-added electronics products and services. Thailand faces a severe shortage of sufficiently skilled engineers and workers in the high-tech area who can drive product and process development. Correspondingly, investment in innovation and research in Thailand lag behind other countries: Thailand's national R&D expenditure was a low US$3 per capita in 1998, compared to US$9 in Malaysia and US$250-350 in Taiwan and Singapore.

Rising labor costs dampening new foreign investment: Computer and electronic parts are global industries in which a handful of 'global champions' dominate certain products or various parts of the industry value chain. R&D and product design and development are generally kept at head offices in the US, Japan, or Taiwan, while labor-intensive functions are outsourced to countries with labor or logistical cost advantages. The rising wage and cost differentials with countries like China are making Thailand less and less attractive as a manufacturing base for MNCs. Industry wages in China, for example, are less than 50% of those in Thailand, while the salary of a Chinese engineer is similar to that of an assembly operator in Thailand.

POLICY RECOMMENDATIONS

Thailand's computer and electronics industry, which represents a key export sector for the Kingdom, is at a critical juncture: having lost its 'natural' competitive advantage of low labor costs to China, there is now a need to quickly move up the value chain. While it will be a substantial challenge for Thailand to achieve this step-change, there are several key areas where policy action can help:

Increasing R&D investments through public-private partnerships: Government should contribute to developing key elements of an R&D sector strategy that could help provide industry players with the skills and insights needed to jointly move into higher-value added products and processes in the years ahead. Such a strategy would best be undertaken through public-private partnerships in order to ensure relevance and effectiveness. A public-private approach would also limit the cost borne by the public sector.

Improving and tailoring incentives for FDI: Thailand's current FDI incentives lag behind those of other countries (Exhibits 11 and 12). For example, tax exemptions in Singapore and Malaysia extend for a period of 10 years, while Thailand offers only 3-8 year exemptions. Also, Thailand lags behind its competitors in tailoring incentives

EXHIBIT 11: THAILAND'S FDI INCENTIVES LAG BEHIND OTHER COUNTRIES

● Best package offer ✓ Offered
○ Not available ✘ Not offered

	Thailand	*Malaysia*	*Singapore*	*Ireland*	*Israel*
Tax incentives	◑	◕	◕	◑	◕
R&D grants	◑	◑	●	◕	●
Education/training grants	○	○	●	n/a	n/a
Other benefits (e.g., relocation)	○	○	●	●	○
Tailored financial incentives	✘	✘	✓	✓	✓
Ownership liberalization	◑	◑	●	●	●
Immigration policy	◑	◕	●	◑	◕
IP protection/cyber-laws	◑	◕	●	◕	◑
One-stop 'super-shop'	◕ BOI	● MDC	● EDB	● IDA	◕ IPC

Source: McKinsey analysis

EXHIBIT 12: FINANCIAL AND NON-FINANCIAL INCENTIVES

	Thailand	Malaysia	Singapore	Ireland	Israel
Tax incentives	BOI status (3-8 year tax exemption)	MSC status (10 year tax exemption)	Pioneer status (10 year tax exemption)	10% rate for eligible companies	Approved Enterprise (2-10 year tax exemption depending on location)
R&D grants	None	MSC Grant Scheme (RM200 million)	Innovation Develop. Scheme (S$1.77 bn) RDAS, RIS	IDA scheme, Technology Foresight Fund, EU grants	Office of Chief Scientist Bi-National funds (BIRD, CIIRDF, SIIRD, EUREKA) MAGNET
Education/ training grants	None	None	INTECH scheme	Available for new industries	n/a
Other benefits	None	None	Negotiable	Negotiable	Negotiable
Ownership liberalization	100% foreign ownership allowed for BOI company	100% foreign ownership allowed for MSC entity	100% foreign ownership allowed	100% foreign ownership allowed	100% foreign ownership allowed
Immigration policy	Freedom of employment of knowledge workers 45 days visa processing	Freedom of employment of knowledge workers 48 hours visa processing	Liberal immigration policy with levies Work permits for knowledge workers easily processed	Work permits for non-EEA workers take 4 weeks Fast track visas for IT workers	Liberalized immigration policy
IP protection*	57%	60%	84%	71%	70%
One-stop super-shop	Board of Investment	Multimedia Development Corporation	Economic Development Board "empowered"	Industrial Development Agency	Investment Promotion Centre

* The Global Competitiveness Report 2000 ratings for IP protection

Source: MSC, EDB, DIC, IDA, promotion materials, Israel's Investment Promotion Centre website, McKinsey analysis

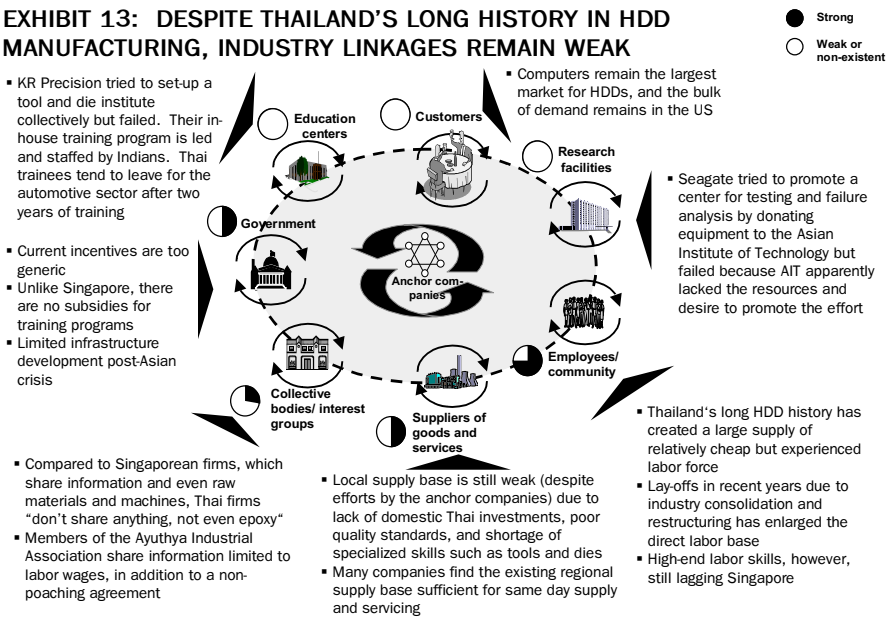
to investors' specific requirements. In line with the need to increase relevant R&D investments, Thailand should consider selectively introducing R&D grants for areas where real opportunities to develop a competitive edge are emerging. Finally, intellectual property rights need to be better defined and protected in Thailand to attract high-caliber research facilities to locate in the country.

Creating better linkages among industry players: Despite Thailand's long history in HDD production, linkages and collaboration between the various players involved remain limited (Exhibit 13). Upstream and downstream sectors have been slow to develop, and overall there has been little evidence of effective collaboration between industry, government, and academia. Hence, government efforts to enhance knowledge development should also seek to establish joint research facilities and vocational training programs that share information and cooperate on improving the relevant operating environment and infrastructure in Thailand (Exhibit 14). Concerted efforts can also be made to encourage the development of relevant local supply industries to sustain and enhance growth in the downstream sector.

Being at the forefront of technology requires a 'tech-savvy' population that has access to and appetite for the latest products at competitive prices.

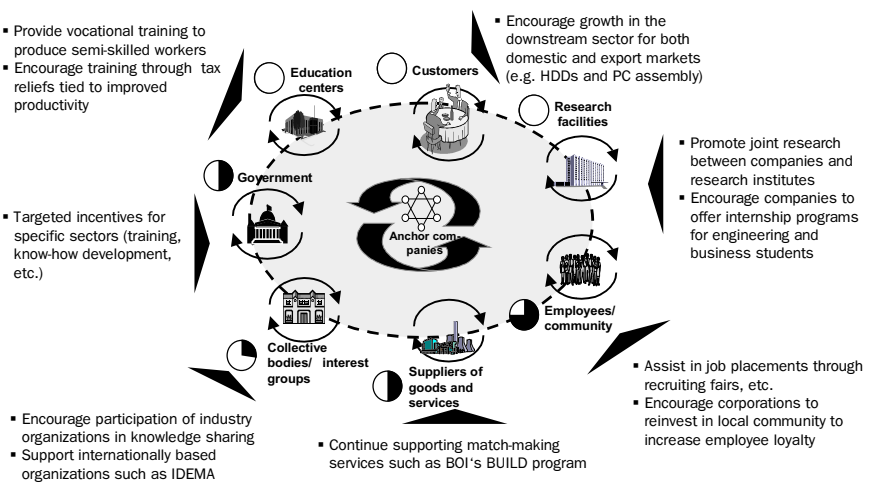
Facilitating growth of the domestic market: A healthy and vibrant home market is important for growing any leading-edge industry: it is generally difficult to remain at the forefront of product and process development without the demands of a strong domestic market. Being at the forefront of technology requires a 'tech-savvy' population that has access to and appetite for the latest products and services at competitive prices. However, Thailand currently has one of the lowest penetration rates for PCs and Internet compared to other countries at similar per capita GDP levels.

EXHIBIT 13: DESPITE THAILAND'S LONG HISTORY IN HDD MANUFACTURING, INDUSTRY LINKAGES REMAIN WEAK



Source: Doner Richard F., "Thailand's Hard Disk Drive industry", ISIC, UC San Diego; "From Silicon Valley to Singapore", McKendrick, Richard

EXHIBIT 14: THAILAND SHOULD INCREASE LINKAGES WITHIN THE EXISTING INDUSTRY WITH EMPHASIS ON KNOWLEDGE DEVELOPMENT



Source: Doner Richard F., "Thailand's Hard Disk Drive Industry", ISIC, UC San Diego; "From Silicon Valley to Singapore", McKendrick, Richard

This low penetration is at least partly due to import tariffs on PCs and related parts[2]. Thus, import tariffs on key technology products should be removed to enable and encourage more Thais to become familiar with modern computer technology and to create a broader and deeper domestic market for computer/electronics producers that currently see Thailand primarily as an 'export platform'. Also, in order to stimulate domestic demand for PCs and high-tech equipment, government could develop a more pro-active strategy for 'networking' the Thai economy-bringing more consumers, businesses, and public sector entities on-line.

Promoting cluster development within ASEAN: ASEAN conducts a substantial proportion of global electronics assembly, accounting for 85% of the world's HDD assembly, for example. As part of ASEAN, Thailand should help ensure that the region integrates more fully in order to defend and enhance this preeminent position. Deeper integration could be promoted by further cutting tariffs, creating common technical standards, and promoting efficient transport links.

* * *

The computer and electronics sector provides an encouraging example of Thailand's ability to become globally competitive in a fast-growing high-tech industry. However, Thailand is now increasingly 'squeezed' between lower cost countries such as China and more advanced economies such as Singapore and Taiwan. Unless Thailand rapidly improves its competitive position in areas such as R&D, technical training, public-private collaboration and investment incentives, its ability to achieve further growth–or even sustain current levels–is likely to be threatened.

[2] Another import factor is inefficiencies in the communications sector (see the chapter on the Thai telecommunications industry in this report).

SECTION III

APPENDICES