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ADB Institute Discussion Paper No. 19

**Private Sector Participation in Infrastructure:
the case of Thailand**

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1. Overview

The investment in infrastructure and the provision of its services in Thailand were exclusive to state-owned enterprises until the late ninety eighties. In 1988, the government, for the first time, turned to the private sector in its effort to solve the dire traffic condition in Bangkok resulting from the country's rapid economic expansion. A 30-years build--transfer-operate (BTO) concession was granted by the Express and Rapid Transit Authority of Thailand, a state-owned enterprise, to a private company. The concession involves the construction of 6-lanes elevated expressway totaling 40 kilometers worth US\$ 900 million

The unique build-transfer-operate (BTO) scheme was designed specifically to circumvent the domestic law, which prohibits private ownership of public infrastructure. Under such a scheme, the private concessionaire that installed the infrastructure was required to transfer ownership of all assets once installed to the state telecom operator in exchange for an exclusive right to operate the network for 25-30 years. Since this project, private capital has been mobilized under the BoT scheme for all major toll roads construction in Bangkok, including certain inter-provincial expressway connecting Bangkok to nearby provinces and the elevated light rail in Bangkok.

In a few cases, the investment is shared between state and the private sector. For example, the construction of the Bangkok subway system involved state financing of the construction of the tunnel (approximately US\$ 2 billion), while the private sector invested in the rolling stock -- i.e., the train (approximately US\$ 350 million) . This may be the case because the government recognized -- from the case of the elevated light rail -- that public transport services are not commercially viable in the absence of partial state subsidy, be it in the form provision of basic infrastructure or operational subsidy. Moreover, the subway system is highly costly compared with other alternative modes of public -- i.e., buses or the elevated light rail.

The construction of ports also involves extensive private participation. All 8 piers at the Lam Chabang Seaport on the Eastern Coast of Thailand are operated by the private sector. However, 5 piers are owned by the Port Authority of Thailand and operated under "management contracts", while 3 piers belong to major shipping companies access to which is limited. Most recently (October 2004), the government has granted another major concession to Hutchinson Port Holdings, a Hong Kong Company, to construct and operate 6 new berths at the Laem Chabang Deep Sea Port. The project is worth roughly US\$ 1.5 billion.

Private participation in green-field infrastructure projects in electricity generation and in telecommunications began somewhat later in 1992. Again, double-digit economic growth placed great strains on the state-owned generation capacity. In order to alleviate the investment burden of the state electricity operator, 7 IPPs were selected to sign long-term Power Purchase Agreements (PPA) Their combined generation capacity totaled 5,943 MW. These projects have been estimated to saved over US\$ 10 billion¹ of state funding.

In that same year, several major telecommunications concessions were handed out to private operators mainly for fixed line and mobile services, as well as paging. As in the case of transport, a state monopoly is stipulated by law. Private operators are prohibited from owning telecom infrastructure and thus, could not obtain the legal status of a carrier. Major concessions under the BTO scheme include, for example, the concession to install 1.5 million fixed-line telephone services in the provinces and 2.6 million lines in Bangkok, as well as 2 cellular concessions with unlimited scale of operation. To date there are almost 40 telecom concessions ranging from VSAT, broadband network to yellow pages.

Private participation in water utility has been most limited despite the dire need for investment given that 38 million people out of 62 million still rely on local wells or small-scale local water schemes. These are mainly people that live in the provinces as over 80% of

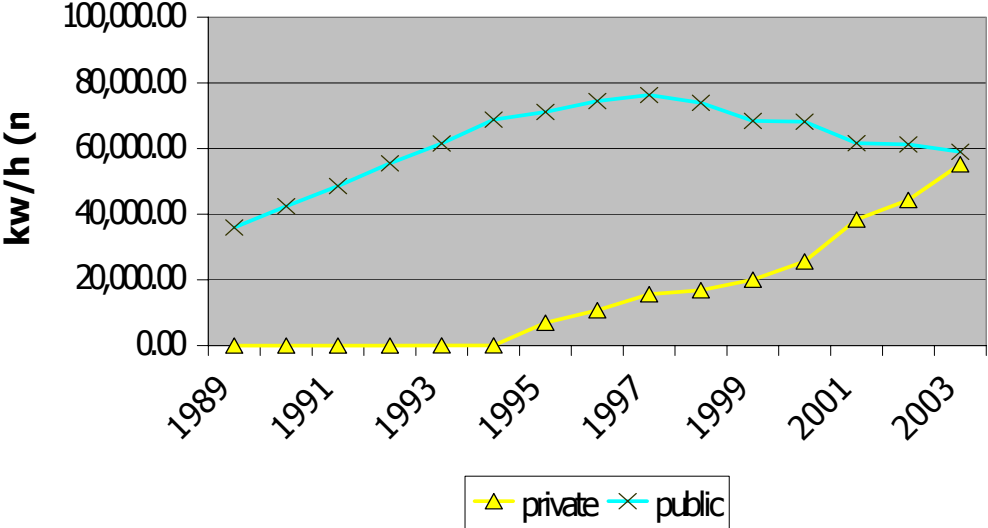
¹ Given the exchange rate of 25 baht per US dollar at the time.

residents of Bangkok are served by the Metropolitan Water Authority of Thailand (MWA).² Unregulated extraction of ground water has been causing severe geological problems. In 1992, the Provincial Water Authority (PWA) of Thailand set up a company called the "East Water Company" to provide water facilities to the Eastern Seaboard Industrial Estates. While the company was initially wholly owned by the state-enterprise, it was later privatized with a minority state holding of 44 per cent.

In 1995, the PWA signed a BoT contract with a private company to rehabilitate the distribution system and set up water purification plants in Pathumtani province. Besides these initiatives, there are several small-scale build-owned-operate (BOO) contracts for provision of raw water, water treatment, bulk transfer and local distribution. These BOOs currently provide less than 1% of the total clean water supply provided by the state water authorities, however.

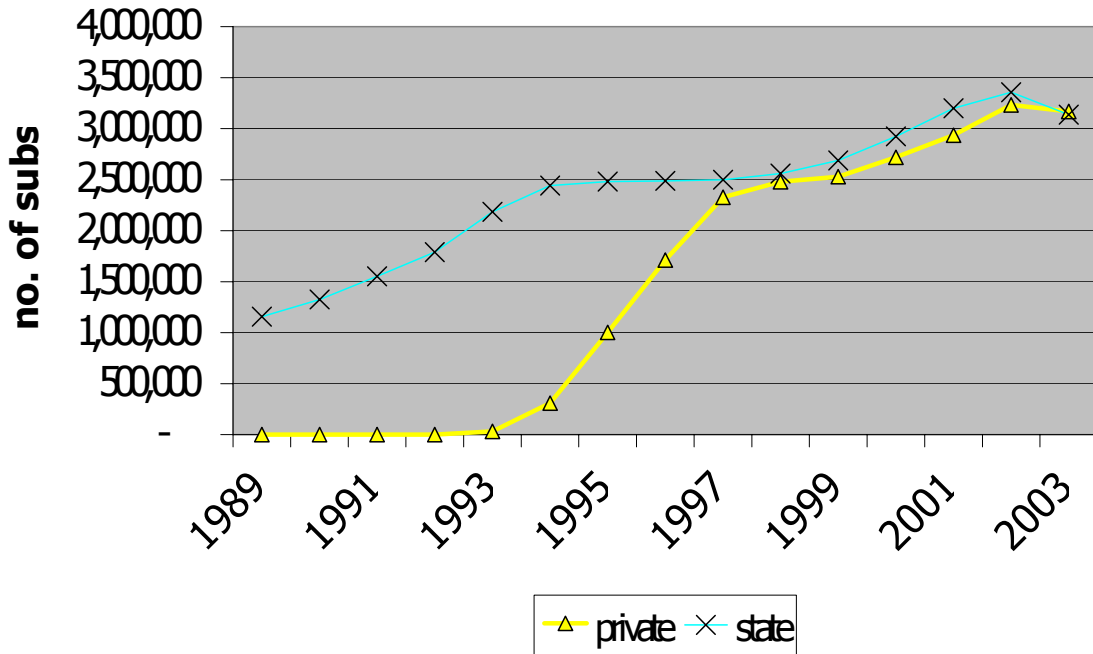
To conclude, private-sector participation in infrastructure played a major role in accommodating the rapid economic growth of the country during the late eighties up until shortly before the financial crisis in June 1996. As can be seen in graph 1-3, private sector participation has resulted in a surge in the number of fixed line and mobile telephone services, as well as electricity capacity. Private sector participation in water utility is still minimal, at less than 1 per cent of total supply of treated water in 2003. In road transport, total length of private toll roads is approximately 150 kilometer, most of which are in Bangkok and the vicinity area. More recently, the government has shifted focus to privatizing the state-owned enterprises, in particular in the telecom and energy.

Graph 1: Private sector participation in electricity generation

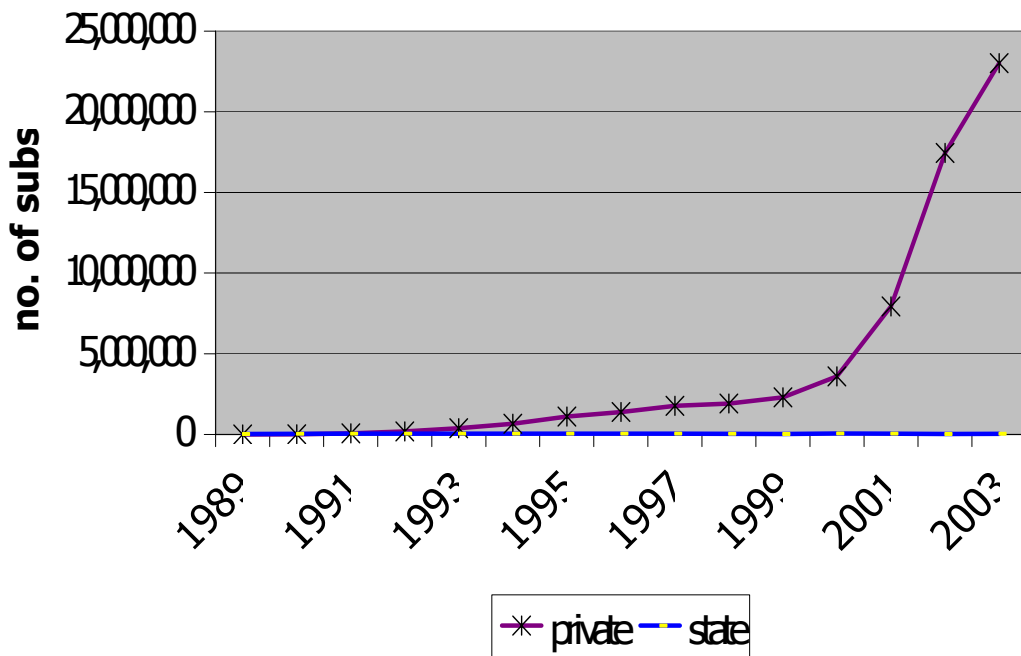


² MWA Annual Report 2002

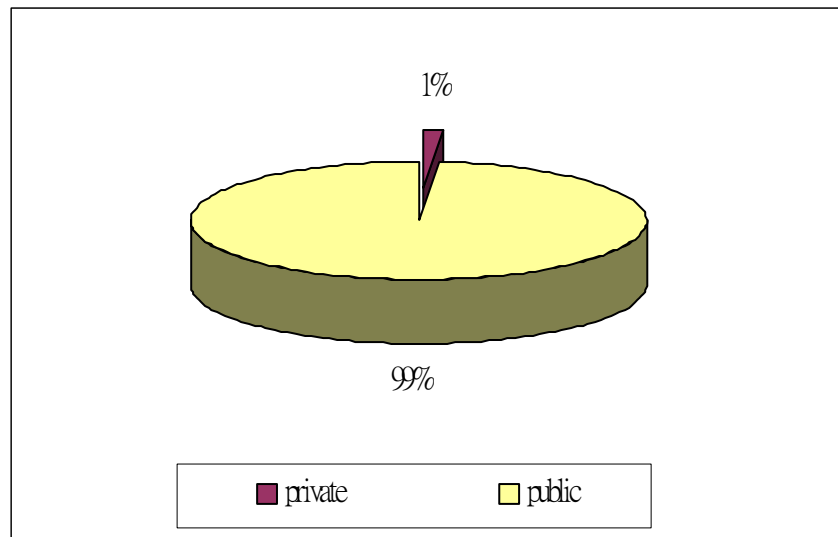
Graph 2: Private sector participation in fixed line telephone service



Graph 3: Private sector participation in cellular phone service



Graph 4: Private sector participation in clean water service in 2003



2. Determinants of modalities of private sector participation

According to Kirkpatrick and Parker (2004), private infrastructure projects make take 4 major forms:

- *Management and lease contract*, whereby a private operator manages public infrastructure.
- *Concessions*, whereby a private entity investments in and operates the infrastructure for a specified period of time before the ownership of the asset is transferred back to the public sector at the end of the concession.
- *Greenfield project*, whereby a private entity, or a public-private joint venture, invests in and operates the infrastructure for a specified period of time. The ownership of the asset may or may not be transferred back to the state.
- *Divestiture (privatization)*, whereby a private entity buys an equity stake in state enterprises.

As elaborated earlier, private sector participation in telecom and transport infrastructure projects in Thailand have been mainly in the form of long-term concessions. In the case of water and electricity, there are a few joint public-private business entities. But these are limited to electricity generation and water treatment. State enterprises remain the sole owner and operator of network infrastructure and services such as electricity transmission and distribution and water distribution system.

Partial divestiture of state enterprises that have been carried out in the last few years include the Petroleum Authority of Thailand (state 70%), the Airport Authority of Thailand (state 70%), and the Ratchaburi Electricity Generation (40%). In queue for privatization are the Electricity Generation Authority of Thailand (EGAT), the CAT Telecom Ltd. and TOT Corporation Ltd.

The modality of private sector participation in Thailand is dictated by (i) relevant laws governing the particular sector; (2) commercial viability of the project and (3) government policy of the day.

As mentioned earlier, the BTO scheme has been designed specifically to circumvent the domestic law that prohibits private operation in public utilities. Such a scheme has proved to be quite effective in delivering modern infrastructure and services. Given that Thailand has promulgated a Telecommunications Act and Broadcasting Act that eliminate state monopolies in these services, private sector should be able to operate as a carrier rather than a concessionaire in the future by obtaining a license from the independent regulatory authorities.

Commercial viability is another important consideration. Projects that are deemed to be commercially viable, such as those in the telecom sector, private sector is required to take full responsibility in the investment and operation of the infrastructure under the BTO concession. The state enterprise merely collects a revenue share in exchange for granting the concessionaire the right to operate under its statutory exclusivity. On the other hand, projects that are not commercially viable, such as public transport services, the state is likely to finance the civil work involved, either partially or in full. Private sector's role in this case is often limited to the maintenance and the operation of the infrastructure under management and lease contracts such as the case for the Bangkok Subway System and certain government-owned ports that were constructed during earlier days.

Finally, contemporary government policy probably matters most. In the late eighties and nineties, government policy concentrated on introducing private competition into service markets monopolized by state enterprises. Hence, state and private service providers operate in parallel in providing transport and telecommunications infrastructure services. The current government under Prime Minister Thaksin Shinawatra, on the other hand, believes that privatization (rather than competition) can lead to greater efficiency and thus, focuses instead on divestiture.

3. Review of the terms of actual contracts between government and private investors in selected sector,

- Revenue sharing -

Most telecom concessions entail a revenue sharing scheme between the private concessionaire and the relevant state telecom operator that holds the exclusive right to operate. The assigned share is diverse, depending on the type of service as well as the procurement process applied as can be seen in table 1 below. Cellular phones have escalating shares, ranging from 12-30%, while that for satellite from 5.5% - 22.5%. The same service may have a different revenue share either because

- (a) the concessions were granted by a different state enterprise. For example, the first cellular concession was granted by the government-owned local telephone operator, while the second concession was granted by the international telephone operator.
- (b) The concession was an outcome of a different procurement process. For example, both fixed line telephone concessions were granted by the same state-owned local telephone operator. However, the first concession was concluded on the basis of negotiations, while the second concession was an outcome of a bidding process under a new government. Hence, the agreed revenue shares are different.

The revenue sharing scheme places financial risks fully on the side of the private sector since they are independent of profits. Moreover, most concessions entail a minimum payment that is independent of revenue the private sector may generate from the

concession. Examples of the revenue sharing scheme for major telecom concessions are provided below:

Table 1: Revenue-sharing schemes in transport and telecom concessions

concession	Revenue sharing scheme	Minimum payment
Fixed-line 1 2.6 million fixed line in BKK	<ul style="list-style-type: none"> ● 16% for the first 2 million lines ● 21 % for the subsequent 600,000 lines ● 18% for PCT ● 23.5% for public phones ● 18% for value-added service 	No minimum payment
Fixed-line 2 1.5 million fixed line in provinces	<ul style="list-style-type: none"> ● 43.1% for the first million lines. ● 44.5% for the subsequent 0.5 million lines. ● 23.5% for public phones 	No minimum payment
Cellular 1	<ul style="list-style-type: none"> ● 15-30% 	12 million baht the first year to 1.4 billion baht the 20 th year.
Cellular 2	<ul style="list-style-type: none"> ● 12% - 25% 	4.1 billion baht for the extension of the contract (15 years)
Satellite	<ul style="list-style-type: none"> ● 5.5 - 22.5% 	1.4 billion baht for the entire duration of the contract (30 years)
Expressway (Phase 2)	<ul style="list-style-type: none"> ● 40-60% 	none
Don Muang Tollway	<ul style="list-style-type: none"> ● 10% of revenue or 60% of net profit (whichever is higher) only for the last 4 years of the 25 years concession 	none
Bangkok Subway	na	na

Source: from various contracts

In transport, similar revenue-sharing scheme applies for most concessions, with the exception of a few cases. These are the elevated sky train in Bangkok and certain sections of the expressway that extend into the suburbs, where low traffic volume is expected.

In short, revenue sharing schemes are designed to guarantee state enterprises a share of rents that may arise from the concessions granted to the private sector. Most concessions go to the bidders who offer the highest revenue share. Such process at times lead to a "winner's curse" whereby the winner of the bid finds itself burden with an unusually large revenue share that threatens its own commercial survival.

- Cost sharing - As most telecom concessions are considered commercially viable, they require the private concessionaire to finance the entire infrastructure investment. However, interconnection charges are included in the revenue sharing scheme for concessions granted by the state local telephone operator, the ToT. For other concessions granted by other state enterprise, the private concessionaire must a per-

minute interconnection charge to the ToT. This has provided a significant cost advantage to the private operators that hold ToT's concessions.

In transport, cost sharing in the form of co-investment is more common. For example, in the construction of the subway in Bangkok, the government is responsible for the acquisition of land and the construction the tunnel and stations. The private concessionaire is responsible for investment in the rolling stock and operation (electrical, ticketing and signaling systems). Private investment totaled roughly US\$ 0.6, while the state's share approximately US\$ 2.2 billion.

Another example of cost sharing in private infrastructure development is the Laem Chabang Seaport Phase 2 expansion. The project requires the Port Authority of Thailand to reclaim land and to construct breakwaters. Private concessionaire will be responsible for the construction and operation of 6 new berths as mentioned earlier. The public investment will amount to US\$ 195 million, which is a relatively small sum compared with the estimated private investment of US\$ 1.5 billion.

Some concessions require the government to acquire land for construction. And in some cases, the government provides temporary equity financing until the debt can be securitized when company can be listed in the stock market (whereby the company must experience a profit for 3 consecutive years).

To conclude, the Thai government normally shares investment costs "in kind" only. It rarely provides private sector direct subsidy in the investment in or operation of infrastructure.

- **Risk sharing:** For most telecommunications concessions, private sector bears all the investment and operational risks. The state-owned enterprise demands a revenue share and in some cases, is guaranteed a "minimum payment" whose amount is stipulated year by year in the contract as can be seen in [table 1](#). The fact that the sharing is based on "revenue" rather than "profit" places extra risks on the private concessionaire. At the same time, it is understandable that the state enterprise did not want to get involved with the details of the accounting standard and practices of the private operator. From past experiences, profit-sharing schemes rarely provide the state party with any financial returns.

In order to ensure that the private concessionaire is commercially viable, most concessions contain clauses that provide a "protection period", whereby the grantor of the concession -- i.e., a state-owned telecom operator -- guarantees not to provide any new concessions that represents direct competition to the incumbent concessionaire. Such a period often last between 5-8 years. Some concessionaires have traded this protection clause in exchange for an expansion of the scope and scale of their operation under the original contract. For example, both fixed line telephone operators gave up 3 years of remaining market protection in exchange for an increase in the number of lines that they were allowed to install. The last effective market protection clause in telecommunications belongs to satellite concession. It ended in 1999 as shown in [table 2](#) below.

Interestingly, certain BTO contracts contain *de jure* protection that offers no *de facto* protection. For example, one of the cellular concession binds the state-owned enterprise that granted the concession -- i.e., the Telephone Organization of Thailand (ToT) -- from granting a more favorable cellular concession to another private enterprise. However, the contract did not bind the other state entities that also possessed the authority to handout cellular concessions, namely, the Communications Authority of Thailand (CAT). Given the uncertainty with regard to which state organizations are vested with the authority to grant concessions, protection clauses that only bind the particular government enterprise or organization that is party to the contract cannot guarantee effective protection.

On the other hand, a comprehensive protection clause that binds non-parties can be seen as being overly protective. For example, a television broadcasting concession granted by the Office of the Prime Minister barred any state organizations from providing new broadcasting concessions that are more favorable than that obtained by the particular concessionaire. The clause was put to a test when the private concessionaire accused the Ministry of Defense of providing a more favorable contract when it renewed an expiring broadcasting concession with another private company that carried a lower revenue share. It also accused the state-owned broadcasting operator, the Mass Communications Authority of Thailand (MCOT), of allowing the cable television concessionaire to broadcast advertisement, when such an act was clearly in breach of the condition stipulated in the concession. This particular concessionaire claimed that the fact that the cable television was able to advertise, while it was prohibited from doing so tantamount to a *de facto* more favorable treatment such that monetary compensation is due.

The protection clause in transport varies from one concession to the other, some more comprehensive than the other. For example, the Bangkok Expressway Concession contains a relatively comprehensive protection clause whereby any construction or improvement in road infrastructure undertaken by any state entity that adversely affects the volume of traffic using the expressway will be subject to compensation. On the other hand, the Don Muang Toll way that connects the Bangkok International Airport to downtown Bangkok did not have such a protection. Subsequent expansions and improvements of the 6-lanes road beneath the elevated toll way and the construction of local roads parallel to the toll way have significantly diverted traffic from the toll way. Moreover, new road and expressway developments in more distant locations offered alternative routes to enter or exit the central Bangkok area.

In short, market protection clause is necessary where medium or long-term infrastructure developments are not foreseeable, given the dynamism of the economy. The important question is how to ensure a balance between protection of private investor and protection of competition that will benefit the public.

Table 2: Market protection clauses in telecom and transport concessions

concession	Market Protection
Fixed-line 1 2.6 million fixed line in BKK	First 5 years, but later amended to 2 years only.
Fixed-line 2 1.5 million fixed line in provinces	First 5 years, but later amended to 2 years only.
Cellular 1	Concession requires ToT to compensate concessionaire if a more favorable concession is granted to another private operator.
Cellular 2	No protection
Satellite	Protection for the first 8 years (no new concessions), which ends in 1999
Expressway (Phase 2)	If Government constructs or substantially improves any road or highway within the primary catchment area that affects the volume of traffic of the concessionaire materially, compensation shall be due.
Don Muang Tollway	No market protection clause
Bangkok Subway	No market protection clause

- Pricing:

Pricing schemes in telecommunication concessions are at best, arbitrary. In the absence of a full-fledged regulatory authority and comprehensive regulatory rules, state-owned enterprises have been able to dictate the terms and conditions of private operators' pricing scheme at their free will. As can be seen in table 3 below, most contracts do not spell out the rates that the private sector may charge. For basic fixed line local telephone services, rates are approved by the cabinet. For other services, including cellular phone services, rates are determined by the state-owned enterprise itself. The contract simply states that the private concessionaires must obtain approval from the state-owned enterprise that is party to the contract, namely, the former Telephone Organization of Thailand and the Communications Authority of Thailand.

As for transport, pricing schemes are more transparent given that road tolls affect a wider range of users and hence, are subject to greater public scrutiny. Initial tariffs are determined in the contracts, as well as the tariff adjustment criteria and adjustment periods. In most cases, tariffs are adjusted to some sort of a CPI. Some allow a special price adjustment in case of high inflation (the Expressway contract) or unexpected economic condition (Don Muang Tollway contract).

Table 3: Pricing Schemes of Telecom and Transport Concessions

Concession	Pricing scheme
2.6 million fixed line in BKK 1.5 million fixed line in provinces	<ul style="list-style-type: none"> • Per call local charges regulated by the cabinet • Domestic long distance charges must be approved by Telephone Organization of Thailand (ToT) • Other value-added service charges such as broadband internet services must be approved by the ToT
Cellular 1 (ToT's concession)	<ul style="list-style-type: none"> • Tariffs subject to approval by ToT
Cellular 2 (CAT's concession)	<ul style="list-style-type: none"> • Tariffs subject to approval by CAT
Satellite (Ministry of Transport and Communications's concession)	<ul style="list-style-type: none"> • Tariffs subject to approval by the Ministry of Transport and Communications (currently, Ministry on Information and Communications Technology)
Expressway (Phase 2)	<ul style="list-style-type: none"> • Initial tariffs are determined • Tariffs will be subject to revision every 5 years according to CPI index for Bangkok Metropolitan as issued by the Ministry of Commerce unless high inflation occurs • Each tariff adjustment for 4-wheels vehicles is not to exceed 10 baht for the first 15 years of the concession.
Don Muang Tollway	<ul style="list-style-type: none"> • Initial tariffs determined at 20 - 40 baht depending on point of entry and type of vehicle • Tariff will be increased by 10 baht every 5 years for the main section of the highway. For the extended

	<p>section, price will be adjusted upward 5 baht every 5 years.</p> <ul style="list-style-type: none"> • In case of unexpected economic condition, the private concessionaire may request the Department of Highway permit tariffs adjustment.
Bangkok Subway	<ul style="list-style-type: none"> • Initial tariffs are 14-36 baht per ride depending on distance. • Tariffs adjusted according to CPI every 2 years.

Source: from various contracts

▪ Commercial viability

None of the concessions reviewed in this study contain clauses that guarantee commercial viability of the private project. However, several provisions in the contract directly affect commercial viability of the private concessionaire. These are (a) various safeguards provided for unforeseen events; (b) market protection; (c) the size of revenue share/cost sharing arrangements; (d) accuracy of the estimated volume of business.

As mentioned earlier, a BTO contract may allow price adjustments in case of unusual economic condition. Most contracts also contain a market protection period, where the government is bound not to hand out new concessions or where the private investor is eligible for compensation in case the state develops competing new infrastructure or is guaranteed that no new competing investment.

The size of the revenue share matters the most. For example, TT&T, a private concessionaire with a very high revenue share of 43.1% is barely afloat, while its equivalent operating in the Bangkok area that is subject to a much lower revenue share of 16% is faring significantly better.

Cost-sharing arrangement can also significantly affect the commercial viability of the private investor. As mentioned earlier, a cellular operator does not have to pay interconnection charges to the state local telephone operator, while the other had to pay 200 baht per month per subscriber. Both compete in the same market. It is thus not difficult to tell which one should perform better financially.

Another important factor affecting the commercial viability of private concessionaires is the actual volume of business against the predicted value. Many concessions launched before the crisis in 1996 were indeed overly-optimistic about future revenue trends. For example, the Bangkok sky train project expected to break even with 600,000 rides per day. The actual number in January 2001 when it initially opened its service to the public was a mere 100,000 rides per day. The condition has since then continuously improved. The current number of rides per day is estimated to be 300,000 - 350,000, which is still well below the break-even point. The company is currently undergoing a debt-restructuring process as it has not been able to service its debts. The same story goes to the Don Muang Tollway as mentioned earlier. In both cases, price increases cannot solve the private concessionaire's financial problem since higher prices are likely to turn away customers given the relatively elastic demand due to competition from public bus transport services and public infrastructure that are relatively well developed. Competing with subsidized state services and public infrastructure is probably the private investor's greatest challenge.

In certain cases, the private concessionaire hopes to supplement service revenues with those from property development such as renting terminal spaces to small shops and advertisement. This seemed to be the case for the planned "Hopewell Project" involving the construction of sky train connecting Bangkok International Airport to downtown Bangkok along the train tracks. The plan was abandoned after the financial crisis broke out in 1996,

leaving until to date a stretch of "concrete pillars" that is humorously known as the "stone henge" of Thailand. This story goes to show that it is important to evaluate the commercial viability of an infrastructure project according to revenue flows generated from the provision of core services, rather than the periphery services that may not have been as carefully assessed.

- Scope of regulation

As mentioned earlier, in the absence of a regulatory body, regulatory rules governing private concessions in the telecommunications sector are dictated by the state enterprise. These tended to be overly restrictive and even intrusive. For example, private concessionaires are required to obtain permission from the state enterprise should it want to introduce any new service. In the case of the fixed line operator, the private concessionaires have to obtain an approval for their planned locations for fixed-lines installation. This served to prevent direct competition with the state operator. Moreover, the contract also demands that a representative from the state enterprise sits on the board of directors of the private company.

In transport, the scope of regulation appears to be more reasonable. Perhaps this is because transport services are less lucrative, less complex and are considered public services. More concessions entail regulatory rules governing price, service and equipment standards and specifications, frequency of service, etc. that are quite common.

4. Analysis of outcomes of the contracts

- Return on investment

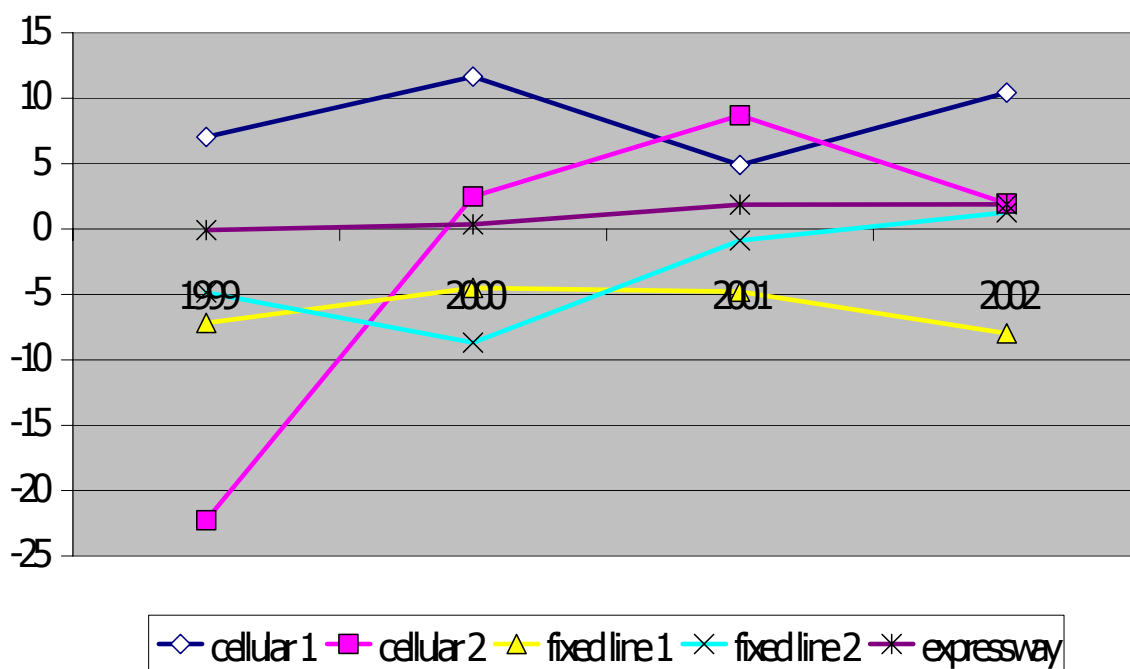
Most concessionaires were severely affected by the financial crisis that broke out in July 1996. Most carried debt in dollar denomination. As the baht devalued sharply against the dollar, their debts ballooned. Today, debt service still contributed to 20-40 % of most private operators' expenses. On the revenue side, negative growth also dampened market demand. Thousands of installed fixed lines were left idle in empty condominiums and office towers. The telecom sector went down with the bust in the property market.

However, over the years, the investment performance of the private concessionaires improved gradually as debts are restructured and new capital was injected. Weak performers were either taken over by both stronger local competitors or paired up with an experienced foreign partner. Nevertheless, the rate of return on assets for both fixed line operators remained mostly in the red. The cellular operators performed much better. The only company that emerged out of the crisis unscathed was Advanced Info Service (cellular 1 on graph 5) as it had hedged all foreign exchange risks before the crisis. It is currently the dominant player in the market with over 90% of market share (inclusive of its subsidiary)³. The other smaller operator has begun to show profits.

The only listed transport concession is the Bangkok Expressway project. The rate of return on asset for the company has been hovering around zero until 2002. As the economy picked up markedly in 2003 driven by domestic consumption boom due to low interest rates, more recent figures should be significantly higher.

³ Nikomborirak, Deunden (2004), Competition Law and Policy in Thailand, draft submitted to the ADB.

Graph 5: Return on Asset of Listed Concessionaires



- Price and competition impact of regulation

As mentioned earlier, terms and conditions for price regulations that appeared in the telecommunications concessions are dictated by the state enterprise. As a result, the public has not benefited as much as it should from competition and lower prices. For example, a relatively high cellular service monthly subscription of 500 baht per maintained for an extended period of time since 1994 despite widespread consumers' complaints of private sector's price collusion facilitated by regulatory rules set up by the state-owned enterprises that are parties to the concessions. Not until a major third player entered the market in 2001⁴ did prices begin to fall. Monthly subscriptions are now in the range of 300-400 baht, depending on the type of "package" the subscriber chooses according the volume of use. The introduction of pre-paid phone cards resulting from competition also allowed users to avoid monthly charges.

In some case, the state owned enterprise's attempt to protect its market share has also resulted in delays of new services and competition in the market. For example, TT&T, a private company that holds a concession to install and provide 1.5 million fixed-line telephone service in the provincial area since 1992, complained that ToT, the state enterprise, refused to approve its request to provide low-priced domestic long-distance services based on IP protocol. The private sector's request was merely a competitive response to ToT's introduction of such a service in the year 2000. Before the two parties were able to come to an agreement on the applicable revenue share that should apply for this "new service" in 2003, the private company had already lost a significant portion of the market share to the state operator. Many potential customers were also denied access to the lower-cost long distance services.

⁴ Nikomborirak, Deunden Saowalak Cheevasittianond, Rajitkanok Chitmunchaitham and Weerawan Paiboonchit-aree (2002), *A Survey of Trade Practices in 12 Industries*, TDRI Report (available in Thai on line at www.info.tdri.or.th)

The other fixed-line concessionaire that operates on the Bangkok area also requested for a permission to introduce the IP telephony. It later decided to abandon the request, however, having found that the demanded revenue share of 30% was unacceptable and thus opted for building its own IP network instead of leasing it from ToT⁵.

- Quality of service

In general, service quality has not been a major problem associated with private concessions. This is because the private sector often installs "state-of-the-art" technology -- be it in transport or in telecommunications -- in order to benefit from advanced service features that are available. In transport, most projects are "turn-key" projects with clear specifications regarding the feature, standard and the quality of equipment and systems.

However, during the initial period when cellular service was experiencing exponential growth rates, the state-owned enterprise failed to regulate the quality of the wireless communications in terms of the number of drop calls and the quality of voice transmission. Unlimited subscribers were packed on to a very limited cellular network, resulting in constant over-capacity. The situation eased gradually overtime as private concessionaires continue to expand their networks.

- Investment impact of regulation

Unpredictable price and other economic regulations governing telecom businesses constitute a major risk factor facing private investors, in particular when the domestic market has become more competitive and margins are not as high as they used to be. Many potential investors prefer to wait for regulatory rules to be established by the newly appointed National Telecommunications Commission (NTC), whose secretariat office opened for the first time on November 1, 2004.

As for the incumbent players, it remains unclear how these restrictive and intrusive regulations embedded in long-term concession contracts are to be dealt with given that they are clearly inconsistent with regulatory rules that will soon be established by the NTC. Many attempts in the past to revise these concessions in order to eliminate these unreasonable regulations prove futile. The status of these concessionaires is also uncertain. Will they remain simply a contractor of the state-operator, or will they become a carrier with own license? Given the murkiness of the future regulatory regime, most investors hold back investment.

In transport, inconsistent price regulations across different modes of transportation resulted in price distortions that threaten the commercial survival of certain private sector. For example, the pricing for the Bangkok sky train service is based on full cost recovery since the private concessionaire financed all components of the project -- i.e., civil and operational components -- without any government subsidy. The metropolitan bus service, however, is subsidized by the state, as fares are tightly controlled. The Bangkok subway tariffs, on the other hand, are based on partial subsidy since the project was partially subsidized as the government financed the construction of the tunnel and stations, while the private financed the rolling stock. Under such a circumstance, the sky train operator no doubt faces a serious price constraint as any price increase would cause users to switch to lower-cost alternatives that receive state subsidy. Hence, consistency in regulations across substitutable services is important to ensure that there are no price distortions that can lead to misallocation of resources.

- Impact on government budget

⁵ The Nation (August 11, 2003), "Cell Phones: TA Hangs Up on Y-Tel 1234 plan for cheap calls".

There is no doubt that private participation has significantly lessened the financial burden of the government during the boom years of rapid development in infrastructure. Since most private concessions involve projects in the Bangkok area, larger state funds were made available for the development of inter-province highways and rural roads. Thailand now has a relatively extensive road network that covers all parts of the country. Most state highways are 4 lanes.

5. Lessons drawn from the review and relevance to other sectors

Fifteen years of experience with private concessions, the Thai telecommunications and transport have many lessons that may be applicable to other sectors. These can be summarized briefly as follows:

On the contract-granting regime

- (1) It is of utmost importance that the grantor of the infrastructure contract does not have a conflict of interest in the business in which the private concessionaire will be involved. Otherwise, the terms and conditions of the contract would serve to protect the commercial interests of the contract-granting agency rather than that of the public. In many developing countries, state-owned enterprises are the designated authority to give out infrastructure concessions in the absence of a proper regulatory regime and institution. This does not bode well for private participation.
- (2) Relatively clear and predictable regulatory rules need to be established before long-term concessions are granted to the private sector; otherwise, one may later find the regulatory terms and conditions stipulated in these concessions are in contradiction with those established by a regulatory body. In such case, it would be difficult to establish a level playing field in regulations.
- (3) The terms and conditions governing contracts of the same type of service should be comparable. This can be a problem when there are multiple contract-granting agencies, sometimes across different Ministries. Terms and conditions of a contract, such as the revenue share, should not be a key factor determining the competitiveness of a private operator. The government needs to develop a model contract for similar services. A standard procurement rules and procedures needs to be established and followed.

On sectoral regulation

- (4) Price regulations governing "like services" need to be comparable. Infrastructure services in most developing countries remain largely in the hands of state enterprises. That is, the private contractor has to compete head-on with state operator that provides competing services at subsidized rates. Hence, the terms of the contract must ensure level playing field across all "like service providers" -- i.e., providers of all substitutable services across modes .

On risk allocation

- (5) Some market protection is often necessary to ensure commercial viability of the project. One needs to balance very carefully the necessity to protect investment in order to ensure smooth delivery of services and competition that will ensure efficiency. Over-protection can easily fall prey to public

dissent, while under-protection may turn off investors. However, in no case should the protection period be extended, as this may allow opportunistic private concessionaire to negotiate to lengthen the protection period at the cost of the public and other potential competitors.

- (6) Commercial viability of the project should be based on the "core business" rather than the "peripheral business". Many infrastructure projects do not expect to make a profit from the provision of the service, rather, from property development in the adjacent areas or renting out spaces in the public areas. This can be risky when these peripheral businesses are volatile.

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