

Telecom Regulatory and Policy Environment in Thailand: Results and Analysis of the 2011 Telecom Regulatory Environment Survey¹

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INTRODUCTION

This paper is part of the Telecom Regulatory Environment (TRE) Assessment Project conducted by LIRNE Asia, a non-profit organization specializing in information and communication technology (ICT) policy issues based in Colombo, Sri Lanka. The project involves assessment of the quality of telecom regulations in nine countries in Asia, including Thailand, based on perception surveys designed by LIRNE Asia.² It was carried out with the aid of a grant from the International Development Research Centre (IDRC), Ottawa, Canada.

A perception survey of informed stakeholders of Thailand's telecom sector was conducted during the period February-March 2011; they represented service providers, academics, security analysts, companies, journalists, and civil society. They were asked to evaluate the regulatory and policy environment in Thailand's mobile, fixed and broadband markets according to seven different dimensions, namely market entry, access to scarce resources, interconnection, tariff regulation, regulation of anti-competitive practices, universal service obligation (USO) and quality of service (QoS). The evaluation was done on a Lickert scale of 1 to 5, with 1 being "highly ineffective" and 5 being "highly effective." A total of 50 responses were received. Since each respondent category should contribute equally to the final score in each dimension, and since it was not possible to pre-plan the number of completed questionnaires that would be received in each category, weights were assigned to equalize the contribution from each sector's score. These weights are shown in Table 1.

Table 1 Number of Respondents

	No. of Respondents	Weighted by LIRNEasia
Category 1: stakeholders directly affected by sector regulation, i.e., operators	16	1.042
Category 2: stakeholders who analyze the sector with broader interests, i.e., analysts and law firms	17	0.980
Category 3: stakeholders with an interest in improving the sector to help the public, i.e., academics, journalists, civil society, etc.	17	0.980

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²The TRE Assessment Manual may be viewed at http://www.lirneasia.net/wp-content/uploads/2008/04/lirneasia_tremanual_v21.pdf

Total	50	
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The structure of this article is as follows. The first section provides an overview of the Thai telecommunications (telecom) market. The second and third sections summarize the results and conclude key findings from the survey respectively. The final section provides recommendations to the Thai government and the Thai regulatory body, the National Telecommunications Commission (NTC).

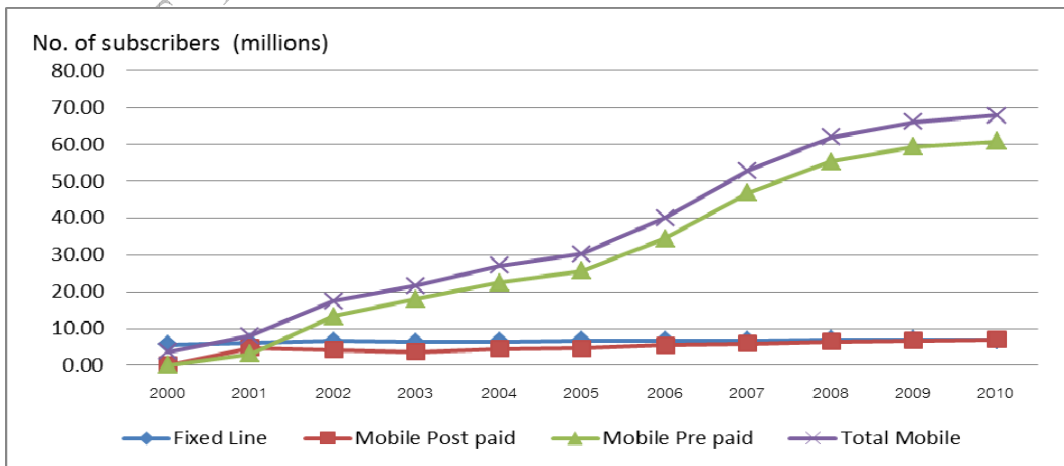
1. Introduction: The Development of the Thai Telecom Market

Telecommunications services in Thailand were once provided exclusively by two State-owned enterprises (SOEs): the Telephone Organization of Thailand (TOT), which held a monopoly on domestic telephony, and the Communication Authority of Thailand (CAT), which had a monopoly on international gateway services. The market division between the two SOEs held throughout the early development of the telecommunications sector in Thailand, but in the early 1990s, it was recognized that the industry could grow further through the infusion of private capital.

Over time a unique scheme evolved to preserve the statutory monopoly of the two SOEs while accommodating the private sector. Starting in 1992, TOT and CAT awarded concessions to private companies to undertake network development and provide fixed-line, mobile, satellite, paging and other communication services, under build-transfer-operate (BTO) agreements. Under such agreements, private concessionaires invested in infrastructure and transferred legal ownership of the installed network to the state operator upon completion. In exchange, they were granted 25-30 years' exclusive operation of the network. Over 30 telecom concessions were signed and implemented in the 1990s.

The entry of the private sector into the Thai telecom landscape via BTO concessions ushered in an era of remarkable expansion in the subscriber base of both the fixed and the cellular networks, as can be seen in Figure 1. The figure reveals a striking divergence in the growth paths of fixed-line versus mobile services. This was because the fixed-line concessions specified the maximum number of lines that each private operator was allowed to install. Since no new concessions were granted during the latter half of the 1990s, the roll-out of the fixed-line network stalled when the number of installed lines reached the ceiling.

Figure 1 Telecom Market Development: 1990-2010



Sources: Companies' data (TOT, TT&T, AIS, DTAC, TrueMove).

The concession era came to an end with the promulgation of the Telecommunications Act in 2001, which terminated statutory state monopolies by empowering NTC to issue new telecom licenses. The law, however, also upholds the legal legitimacy of the BTO concessions, meaning that all terms and conditions stipulated in the telecom concessions signed in the past by the state telecom operators, TOT and CAT, and the private telecom operators remain effective.

This has been a major regulatory problem as these concessions contain provisions that are inconsistent with regulatory rules established by NTC. Since BTO concessions were written up during the time when state enterprises were monopolies and assumed a certain regulatory role, they contain several clauses that overlap with the regulatory functions of NTC. For example, private operators were required to obtain permission from the state-owned operators for any price changes, network expansion or introduction of new services, and pay access charges according to the terms and conditions of the concessions. This requirement has posed a major obstacle for NTC in introducing interconnection charges and regulating prices.

More recently in February 2011, the state owned operator, CAT, arbitrarily handed over the mobile phone concession formerly operated by Hutch of the Hutchison Whampoa Group of Hong Kong to TRUE, the local telecom operator, without open bidding despite the fact that access to Hutch's 3G frequency is priceless when official 3G auction cannot yet be launched due to legal complications. The legality of such a move is heavily contested. Thus, much of the discontent expressed by respondents is a result of the problems resulting from the concession legacy.

Fortunately, these concessions are about to expire. The major mobile concessions will end in 2013 for TRUE, 2015 for AIS and 2018 for DTAC. The different termination dates can cause additional complications to regulation, as competing providers will be subject to different sets of rules at the same time. But more worrisome is the uncertainty surrounding the network management after the concessions expired. As these are build-transfer-operate concessions, private concessionaires do not own the network, they merely hold an exclusive right to exploit the network while the concession is still in effect. How the two state enterprises exploit the network –i.e., whether they would sell the network to the private concessionaires who installed, lease it, or provide service themselves – is never discussed. As a result, private operators have been trying to secure the future of their businesses on their own. TRUE managed to secure a new 14 years 3G mobile concession in 2011 by taking over Hutch,

Private sector entry into the telecom sector has introduced competition into what was once a monopolistic market. The degree of competition in each sector varies, however, according to the number of concessions handed out and the terms and conditions of the concessions.

The fixed-line market is divided into two separate geographical markets: the greater Bangkok market and the provincial market. Both markets are duopolistic. This is because the two private concessionaires, Telecom Asia Corporation PLC (TA)³ and TT&T PLC (TT&T), are allowed to provide services only in their respective area, while the state operator, TOT, operates nationwide and thus competes directly with its private concessionaires in both markets.

³ The TA company name was later changed to “True Corporation.”

The level of competition in the fixed-line markets, as measured by the Herfindahl-Hirschman Index (HHI) for the Bangkok market, increased (HHI declined) during the period 2003-2010, as can be seen in Figure 2. This was due to the fact that the market share of the two providers in the market – the state (TOT) and the private operator (TA) – had been converging. On the contrary, in the provinces, the competition level continually lessened (HHI increased) during same period, especially between 2007 and 2010. This is because the state operator's market share had continued to climb at the expense of its financially strapped private concessionaire, TT&T. Indeed, the lack of competition in this duopoly has led to much lethargy in the fixed-line market. Several network licenses that allow a broad service category had been granted by NTC but no new fixed-line roll-out is anticipated. This may be due to the extremely low regulated fixed-line call tariff rates, which make any investment in the service commercially unviable. New network service providers are badly needed in the fixed-line sector.

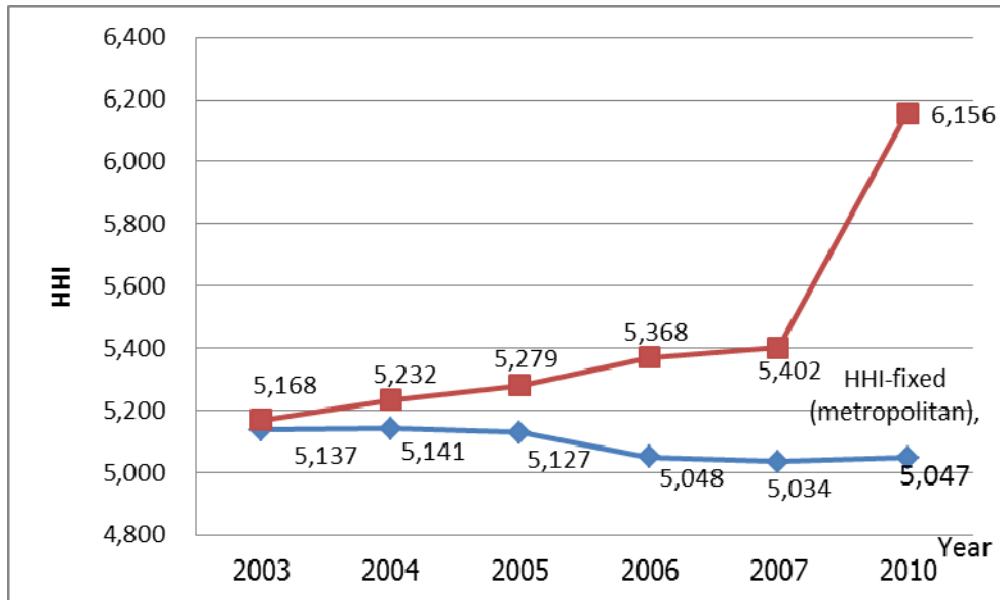
The mobile telephone market has six providers in the market, but three major providers, all of which are private concessionaires, occupied almost 98 per cent of the market. Advanced Info Service PLC (AIS), which also owns DPC, a small player, held 43.77 per cent of the market during the third quarter of 2010. Total Access Communication PLC (TAC or DTAC), and True Corporation (TrueMove), the second and third largest players held 30 and 23.7 per cent respectively. The fourth player that is trying to establish a foothold in the market is the state-owned Thai Mobile. The latter had been a joint venture between the two state operators, the TOT and the CAT until mid-2008 when TOT acquired the entire equity stake because the partnership had encountered many problems⁴. Thai Mobile was officially closed down in September 2008 and TOT reopened the 3G service during the last quarter of 2009. It has leased the network to 5 private MVNOs namely, i mobile, i – Kool 3G, IEC 3G, Mojo 3G and 365. The TOT 3G network had 102,462 subscribers as of the third quarter of 2010.⁵

The last provider that has not been mentioned is Hutch, which is a private operator that held not a concession, but a "marketing contract" by CAT. The provider finally exited the market in the beginning of 2011 because of the inability to solve interconnection problem with TRUE. As a much smaller player, Hutch could not survive and had to sell out. Interestingly, CAT decided to hand over Hutch to TRUE, rather than open a competitive bid for the enviable 3G frequency formerly held by Hutch.

⁴ MagmaReport.com, English Reporter, 01 June 2009 (<http://www.magmareport.com/content/5365?PHPSESSID=b20bd1b4a6f259a1ffb25c76b2031ed8>)

⁵ NTC's Telecom Market Report, third quarter 2010.

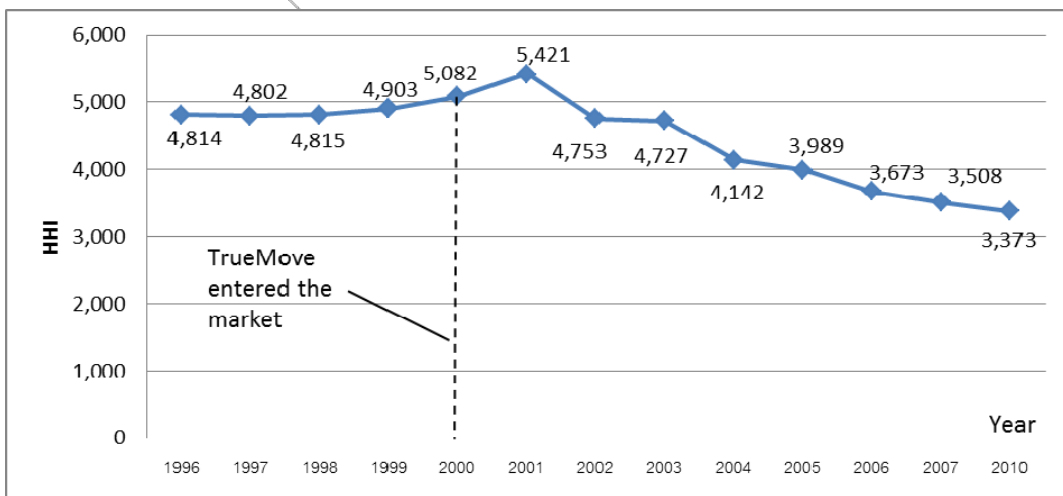
Figure 2 Herfindahl-Hirschman Index – Fixed Line



Source: Calculated by authors using data from TOT, TT&T and True Corporation.

In terms of past trends, the level of competition in the cellular market, measured by the HHI, increased markedly after 2001 following the entrance of the third major mobile operator in the market, as can be seen in Figure 3. Since then, competition between the three major private suppliers has been so fierce that each provider's market share has become more comparable as the dominance of the once formidable AIS fades away. The HHI is likely to continue to fall with the continued decline in the market share of AIS. However, in the absence of a fourth player in the market, the index cannot fall below 3333. A potential major entrant in the market is TOT's Thai Mobile, as mentioned previously.

Figure 3 Herfindahl-Hirschman Index – Mobile



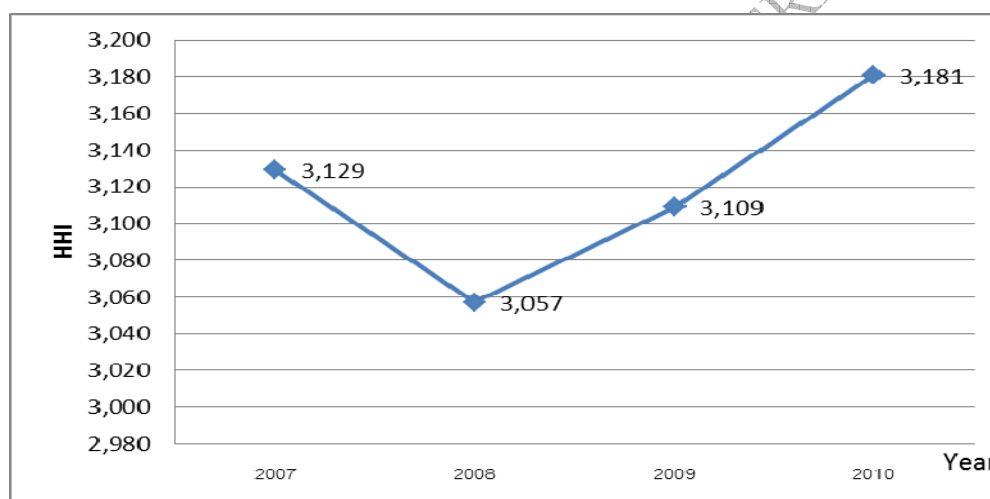
Source: Calculated using data from AIS, DTAC and TrueMove.

The broadband market has been booming owing to the new internet licenses handed out by the regulatory body during 2007-8. There was 2.6 million subscribers and

over 20 ISPs as of the third quarter of 2010. . The three largest providers, all of which are subsidiaries of a fixed line operator, occupied almost 90 per cent of the market share. They are TOT broadband (33.94%), True Broadband (29.41) and 3BB (26.45%) that was a subsidiary of TT&T. Newcomers will face right-of-way problems and will have to spend significant time and resources on network installation if proper network unbundling is not implemented.

Potential competitors with extensive right-of-way in hand, such as the state electricity distributors, were able to secure licenses from NTC. However, they have been mired in legal problems as it is not clear whether the law allows them to be engaged in services unrelated to their core activity: the generation and distribution of electricity. Competition in the market intensified between 2007 and 2008, it continually decreased since 2008 to 2010 as shown in Figure 4. This is because, in the absence of a new network-based entrant, the majority share of the market will likely to be captured by suppliers affiliated with fixed line operators. The private incumbent continues to capture an ever-larger share of the market from the rapid roll-out of its broadband network: hence, the higher HHI.

Figure 4 Herfindahl-Hirschman Index – Internet Broadband



Source: Calculated using data from IDC Thailand.

In summary, Thailand's telecom industry has benefited greatly from private sector participation for over a decade. Competition among private sector firms has resulted in a cellular boom that has markedly improved the connectivity of the general public. In contrast, the fixed-line roll-out has been constrained by the conditions stipulated in the concessions, which limited the number of lines that private concessionaires may roll out, and by the lack of new entrants into a lethargic market. Nevertheless, given the numerous network licenses handed out by NTC over the past six years, more competition is anticipated in all markets if pro-competitive regulatory rules are properly implemented to facilitate effective new entry.

2. Findings/Results from the Survey

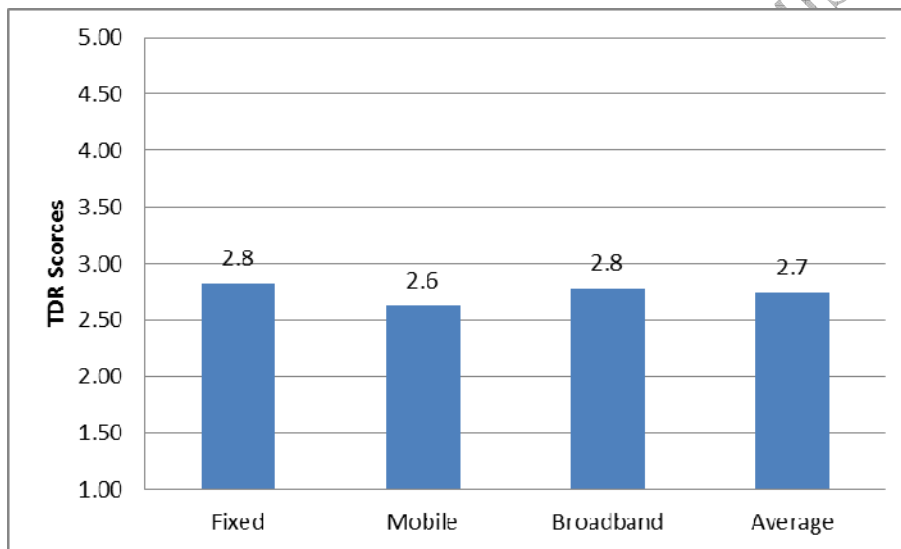
2.1 Overall Results

The average TRE score for all three telecom sectors in all seven regulatory dimensions is 2.7. The lowest score was for the mobile sector, as can be seen in Figure 5.

This is because the size and the level of dynamism and competition in this particular market require sophisticated and effective regulation in many areas, such as frequency allocation and assignment, number portability and interconnection, which may be lacking in the view of the respondents. Also, no 3G licenses have been auctioned after more than three years due to continued legal complications that will be elaborated later.

The highest score, 2.8, went to fixed-line and broadband services. Fixed line score was boosted by positive perception about the expansion of universal services as the NTC announced concrete universal service implementation plan for the year. As for broadband services, higher scores are associated less regulatory intervention as internet services are not subject to regulatory complications associated with the concession terms and conditions. In addition, since several type-3 (non network) licenses were handed out to new operators in 2007 and a number of broadband suppliers entered the market between 2008 and 2010, consumers have been provided with greater choice of suppliers.

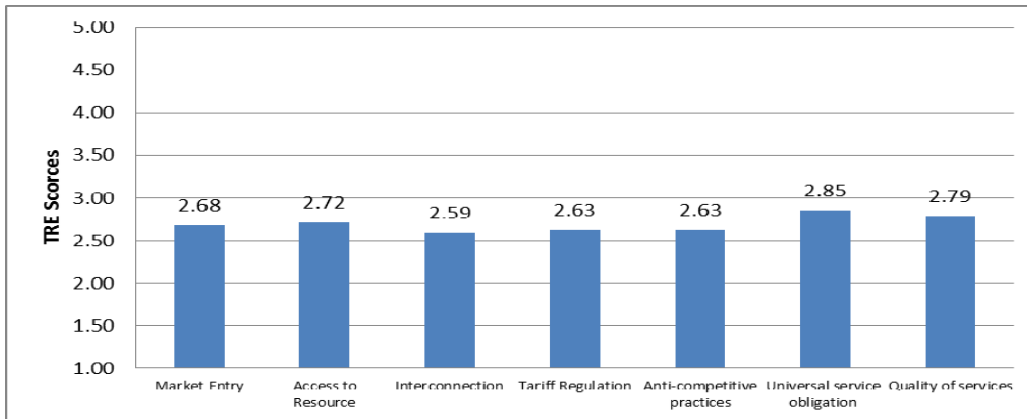
Figure 5 Average Telecom Regulatory Environment Scores by Sector



Source: Scores from perception survey results.

Among the different regulatory dimensions surveyed, scores vary narrowly between 2.59 and 2.85 as can be seen in Figure 6. Highest score went to universal service obligation reflecting the positive perception of the NTC's Universal Service Implementation Plan for the year 2010, which clearly stipulates the number and name of villages and education institutions fixed line and public phone shall be made available.

Figure 6 Telecom Regulatory Environment Scores by Regulatory Dimension

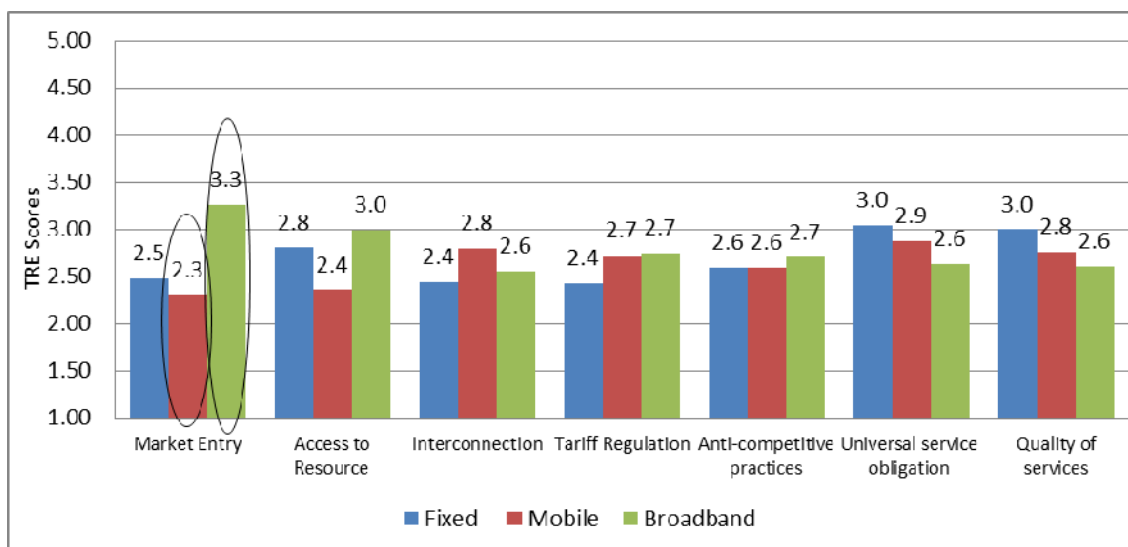


Source: Scores from perception survey results.

The lowest score went to interconnection issues because of various problems that occurred during the last few years. First was the long-standing disputes (since 2006) and pending court case concerning interconnection and access charges between private telecom concessionaires and state operators. Second, was the interconnection charge settled among the major mobile phone service providers at 1 baht per minute back in 2007 was perceived to be too high by the public and in particular, smaller operators, namely Hutch, which believed that the appropriate rate should be 25 satang only. It was not until March 2010 that the NTC mandated interconnection between CAT (Hutch's subcontract partner) and other major private cellular operator at 50 satang per minute.

Examining the scores in details by both sector and regulatory dimension as shown in figure 7, it can be seen that market entry for broadband received the highest score of 3.3, while the lowest score went to market entry for mobile services due to reasons explained earlier. Comments that were provided are summarized in table 2.

Figure 7 Telecom Regulatory Environment Scores by Sector and by Regulatory Dimension



Source: Scores calculated from results from the perception survey.

Table 2 Comments Made by Respondents

	Fixed line	Mobile	Broadband
Market entry	<ul style="list-style-type: none"> Licensing regime is inefficient and not up to international standards, in particular concerning the amount of time taken to deliver a decision. There are no clear rules regarding the right of way. Although several new fixed-line operators have been granted (licenses), few roll-outs materialized thus far. 	<ul style="list-style-type: none"> No new mobile licenses have been issued thus far. Thailand lags behind others due to the delay in issuing 3G licenses. Article 46 of National Telecom and Broadcasting Act 2010 may be interpreted to prohibit MVNOs and thus, obstructs the entrance of small mobile service providers. 	<ul style="list-style-type: none"> Although several broadband licenses have been issued, small operators face unfavorable regulatory rules.
Access to scarce resources		<ul style="list-style-type: none"> The delay in 3G network auction. 	<ul style="list-style-type: none"> Lack of “right-of-way” regulations hinder expansion of wired network The basic infrastructure for hi-speed internet is built only in big cities not in provincial and/or rural areas.
Inter-connection	<ul style="list-style-type: none"> Although the NTC mandated interconnection obligation since 2006, until now, it still cannot enforce the regulation.. NTC order no.11/2553 on reference interconnection charge generated too much cost to fixed line services 	<ul style="list-style-type: none"> NTC does not intervene in the setting of the interconnection charge by larger players in the market, which could be unfair to small players. NTC has not been able to bring in State-owned enterprises under Interconnection regulation is not practical. Interconnection regime improves too slowly. Many regulations issued by the NTC 	<ul style="list-style-type: none"> NTC has not taken any action regarding legal disputes between state operators and private concessionaires regarding the use of networks under the build-transfer-operate scheme. Interconnection rules for Internet services are unclear.

	Fixed line	Mobile	Broadband
Tariffs	<ul style="list-style-type: none"> No clear tariff regulation. 	<p>are appropriate, but not enforced.</p> <ul style="list-style-type: none"> Maximum prices for mobile services established by NTC in 2008 are replicas of those stipulated in the concession, which does not reflect the market environment. NTC made a serious mistake for trying to set a price floor for mobile phone service. 	<ul style="list-style-type: none"> NTC has no regulation to control the price of broadband service. Then, service providers, who have monopoly power, can set the price too high price to consumer.
Anti-competitive practices		<ul style="list-style-type: none"> No competition rules for anti-competitive or discriminatory behavior of vertically integrated operators. No decision has been made on complaints on predatory pricing. NTC's rules and regulations are at times anti-competitive, providing undue market advantage to a particular service provider in the market. There is no action from NTC to solve the anti-competitive problems, especially in case of interconnection refusal in the case of TRUE and HUTCH. NTC fails to use IC and MNP (Mobile Number Portability) to keep the market as competitive as it should be. 	<ul style="list-style-type: none"> NTC has no clear anti-competitive practice regulation.
Universal service obligation (USO)	<ul style="list-style-type: none"> NTC has not yet passed clear rules or guidelines regarding the operation and management of USO. NTC should urgently promote the roll-out of fixed-line services to all regions. NTC does not regulate the quality of USO services. Communication Authority of Thailand and Telephone Organization of Thailand, the only two state-owned operators in the market, are assigned USO without a financial subsidy from NTC. The USO contribution is too high. 	<ul style="list-style-type: none"> NTC has not yet passed clear rules or guidelines regarding the operation and management of the USO fund. Although NTC has ample funding for USO, it poorly manages the implementation. 	<ul style="list-style-type: none"> NTC should allow all licensed operators to participate in USO projects. Service fees may vary according to the nature of the service provided. NTC fails to unbundle local loop, which serves to entrench the market dominance of of fixed line operators in broadband internet market.
Quality of Services (QoS)	<ul style="list-style-type: none"> No QoS regulation yet exists. A long delay in obtaining a fixed line number from TOT and TRUE in certain areas. 	<ul style="list-style-type: none"> No proper QoS regulation yet exists. The quality of broadband on mobile phone is very poor. 	<ul style="list-style-type: none"> NTC has no appropriate obligation to control the stability and quality of broadband services. NTC has only announced QoSfor voice service, but nt data service. NTC is very slow in

	Fixed line	Mobile	Broadband
			taking measures to improve the quality of the service
Others	<ul style="list-style-type: none"> • NTC is slow to respond to the regulatory needs of a dynamic sector. • 	<ul style="list-style-type: none"> • The establishment of the Telecommunications Consumer Association by NTC, as stipulated by the telecom act, is to be applauded. • NTC cannot respond to regulatory problems effectively and in a timely manner. • Many actions from NTC are not initiated by itself, but from external pressure, for instance, NGOs. 	<ul style="list-style-type: none"> • NTC is slow in performing its tasks and has not yet produced any visible performance results. • Regulations issued by the NTC are limited and not enforced. •

Source: Respondents' comments from perception survey results.

2.2 Market Entry

Market entry received both the highest and the lowest score in terms of sectorial and regulatory dimensions of NTC as can be seen in Figure 7. Highest score of 3.3 goes to broadband market entry and lowest score, 2.3, goes to mobile phone service. This reflects the fact that many licenses issued by the NTC during the last six years, as shown in Table 3, have been type 1, non-network services such as internet services, resale services and broadband services. On the other hand, new Type 2 and 3 network-based services have been much more limited, as can be seen in Table 3, and even when network licenses have been granted, no new entry materialized due to the lack of proper right of way regulations and delayed allocation of 3G frequencies.

Complaints about the licensing regime mostly concern the confusion surrounding type 2 licenses, which is supposed to be network-based telecommunication service provided for a defined group of (corporate) customers, and type 3 license, which is supposed to be network-based services for public commercialization. Certain type 2 license holder has openly provided commercial services to the public with impunity, taking advantage of the lower license fee and USO contribution.

More recently, another serious market entry problem emerged. The new Telecom and Broadcasting Act 2010 that would merge the two commissions, the National Telecommunication Commissions and the National Broadcasting Commission, contains a provision that may be interpreted to prohibit capacity resale. Article 46 of the law prohibits a bandwidth licensee from renting out all or part of its spectrum to others to provide mobile service because it is an exclusive right of the licensee. Consequently, TOT has delayed signing contracts with winning bidders for its 19.9-billion-baht 3G expansion project until it obtains a clear ruling on whether its current business model is legally sound. Directors are concerned TOT's mobile virtual network operator (MVNO) business model might not comply with it. It should be noted that this particular market entry problem is external to the NTC and thus, should not be used against the regulatory body in assessing its performance in this regulatory area.

Table 3 Number of Licenses Handed out by National Telecommunications Commission 2005 – 2010

	2005	2006	2007	2008	2009	2010	Total
Type-1 licenses (service without network)	23	26	62	37	42	4	194
Type-2 (private telecom services)	1	6	13	5	7	1	33
Type-3 licenses (public network telecom services)	2	5	9	2	4	6	28

Source: National Telecommunications Commission.

2.3 Access to Scarce Resources

2.3.1 Frequency Allocation

According to the TRE survey results, the allocation of frequency for cellular services seemed to be the second most serious concern regarding access to scarce resources among respondents. The delay since 2005 in auctioning the 3G license until today has arisen from legal uncertainties surrounding the authority of NTC to allocate frequencies.

In a nutshell, the Radio Frequency Act 2000 stipulated that the frequency allocation is to be conducted jointly by the two commissions, the National Broadcasting Commission (NBC) and the National Telecommunications Commission (NTC). While the NTC was formed five years after the law was passed due to complications surrounding the selection process, the NBC was never formed. In the absence of the latter, the NTC alone could not allocate frequencies. The NTC's attempt to hold a 3G auction in September 2010, after legal consultation with the Council of State over whether it has full legal authority to auction the 3G-2.1GHz spectrum licenses, was challenged by the CAT on the basis that the regulatory body did not have the legal power allocate frequency. The Administrative Court suspended the auction. As it stands, 3G auction will have to wait for the new set of commissioners, the National Broadcasting and Telecommunication Commission, established under the new Frequency Act of 2010.

2.3.2 International Internet Gateway

NTC has handed the International Internet Gateway (IIG) license rather liberally to all Internet and broadband service providers. As of October 2008, 12 type-2 IIG licenses had been granted.

2.3.3 Local Loop Unbundling

The Telecommunications Business Act 2001 (TBA) stipulates that interconnection is mandatory at all "technically feasible" points, which is consistent with the Telecommunications "Reference Paper" of the World Trade Organization. That paper established standard telecom regulations for member states that are signatories to the telecommunications agreement. However, the law allows network owners to deny access or interconnection in cases of limited capacity or where technical problems exist.

To implement this particular clause, NTC requires that network licensees ensure fair and equal access to networks and facilities which supply asymmetric digital subscriber line (ADSL) Internet services:

- Network licensees must allow other licensees to interconnect with the telecommunications network (under specified technical criteria);

- Access/interconnection conditions and charges must be on an equal and non-discrimination basis; and
- Access/interconnection conditions and charges must be disclosed.

However, the quality and consistency of the last-mile copper wire service may be an issue. As a result, many Internet service providers (ISPs) have requested WiMAX licenses. The NTC had issued several “trial WiMAX licenses” to ISPs to test the technology and had planned to open bid for WiMAX license in the 2.3 GHz frequency in 2011. Due to legal complications surrounding the authority to allocate frequency of the NTC, the interim regulator, the planned Wi MAX frequency auction, like its 3G counterpart, will have to be postponed until the new commission, the National Broadcasting and Telecommunications Commission, is formed towards the latter half of 2011

2.3.4 Right of Way

TBA stipulates that licensees have the right to install poles or lay cables or wires on state and private property if the network roll-out plan is approved by NTC. However, the licensee will have to negotiate compensation for land usage with the property owner. In case agreement on appropriate compensation cannot be reached, NTC can establish a rate which it considers to be appropriate. If the land or property owner is dissatisfied with the proposed compensation rate, he/she may lodge an appeal with NTC. If the appellate decision is unsatisfactory, the property owner may file a complaint with the Administrative Court. To implement this particular provision, NTC has drafted “right-of-way regulations” that will be subject to public hearings before becoming effective.

While the right of way of telecom licensees, i.e., the right to hang wires or fiber optic cables over utility poles or ducts, and the right to install public telephone booths, may not be an issue of disputes, the rate of compensation will likely be the subject of intense negotiation. As in the case of interconnection, NTC will need to establish clear rules and principles in determining “fair” compensation rates that will be acceptable to both parties. Until the draft NTC rules governing right of way are passed, disputes about compensation for right of way would seem to be inevitable.

2.4 Interconnection

Among all the regulatory dimensions surveyed, interconnection received the lowest score, 2.5. Concerns expressed by the respondents included the inability of NTC to enforce its interconnection rules on state operators that are protected by the terms and conditions of the concessions that grant them regulatory rights, unclear interconnection rules and the failure of NTC to intervene in the setting of interconnection charges by large private mobile players in the market. As interconnection problems in Thailand are rather complicated, because the several laws and regulations that are involved are inconsistent with each other, it is perhaps best to lay out the background of the problem.

TBA mandates that interconnection is mandatory for all license holders and that interconnection charges are to be negotiated privately. Interconnection terms and rates are supposed to be non-discriminatory. No method for calculating interconnection fees is prescribed, but the law requires that the interconnection rates be reasonable and fair to all the licensees concerned.

TBA sets procedures for resolving disputes on interconnection agreements and requires NTC to issue a decision within 30 days. The law does not require the disputing

parties to make an effort to reach a resolution before appealing to NTC; consequently, private carriers may seek the intervention of NTC at any time during the interconnection negotiations.

While interconnection rules set out in TBA are clear, all telecom concessions are exempted from such rules. This is because all the networks installed under concessions are legally owned by the two state enterprises, TOT and CAT; private operators are mere subcontractors. Hence, all interconnection charges must be negotiated and paid only by the two legal license holders. The concession mandates that private cellular concessionaires of CAT (the gateway operator without a domestic network), namely DTAC and TrueMove, pay TOT (the domestic fixed-line operator with a network) a hefty fee of 200 baht per month as a flat rate per post-paid subscriber and 18 percent of the revenue for pre-paid users, while its own concessionaire, AIS, does not have to pay such a fee.

The lack of an access or interconnection charge among cellular providers proved chaotic as mobile operators engaged in a price war in the quest to expand their own market share. This overburdened the network's capacity, leading to a sharp deterioration in the quality of calls. In struggling to compete in cost, the two mobile operators stopped paying interconnection charges to TOT in November 2006, referring to the NTC rule on interconnection. The three main operators successfully agreed on bilateral symmetric interconnection charges of 1 baht (3.33 US cents) among themselves in early 2007, leaving behind Hutch, the smallest player in the market that insisted on a lower rate of 25 satang (0.8 US cent) per minute. The NTC did not intervene, but eventually, Hutch was able to strike a deal with AIS and DTAC, but not so with TRUE. It was not until 2010 that the NTC finally imposed a 50 satang (1.7 US cent) per minute charge on both parties.

While the private sector moved ahead to solve the interconnection problem among themselves, the TOT filed a civil suit against them to demand outstanding access fees of 10 billion baht, or about US\$290 million, from DTAC, and 4 billion baht, or US\$116 million, from TrueMove. At the same time, TOT submitted a petition to the Administrative Court requesting withdrawal of NTC's interconnection regulation which allows the substitution of interconnection charges for access charges stipulated under the concession agreement.

To sum up, the interconnection chaos has very much to do with conflicting rules and regulations that are well outside the scope of NTC's authority. However, concerns about NTC's lack of supervision of privately established interconnection fee calls may reflect the authority's failure to enforce its cost-based interconnection rules.

2.5 Tariffs

Tariff regulation received average scores compared with other regulatory dimensions, as can be seen in Figure 6. Respondents complained about the lack of clear tariff regulation and the arbitrary tariff ceilings established by NTC.

So far, NTC has taken a hands-off approach in tariff regulation and has allowed prices to be determined by competition in the market. Although it recently established ceiling prices for several services, most are non-binding, with the exception of local fixed-line services as will be elaborated in greater detail below.

In September 2006, the NTC announced a tariff rule that required operators to submit tariff schedules and their cost structure in order to assist NTC in setting maximum prices for all services. In May 2008, the NTC announced price ceilings for all major voice services, including fixed-line local and long distance, cellular (pre-paid and post-paid), and public telephone services. The maximum rates established were by no means rates that

reflect the underlying cost and rate of return of the investors as specified in the tariffs regulation. They are merely prevailing rates charged by incumbent operators at the time of the announcement. For example, the maximum tariff for fixed line service was set at 3 baht per call (10 US cents), a rate which was approved by the Cabinet some 20 years ago. It is therefore not surprising that fixed-line tariff regulation received the lowest score, as shown in Figure 7.

The regulation of tariffs based purely on private operators' submission of tariff information and benchmarking them against those in foreign countries clearly reflects the limited capability of NTC to examine the detailed cost structure of telecom operators. While the non-binding maximum bodes well for the dynamic and competitive cellular market that requires no regulation, the same cannot be assumed for fixed-line services. By setting arbitrary prices without any regard to costs, NTC had set the stage for serious under-investment in the roll-out of fixed-line services that are much needed after many years of restrictive investment conditions under the concession schemes.

Another problem with the NTC's price regulation is that the regulator chose to forebear price regulation for type 1 (non-network) services. To avoid tariff regulation of their internet service, dominant network operators the likes of TOT, TRUE, AIS and DTAC, all set up separate legal entities to lease its network to provide broadband services. The subsidiaries hold type 1 licenses. As a result, the NTC has not been able to respond to complaints about excessive charges imposed by dominant broadband service providers in the market. It is incomprehensible why the NTC does not treat a type 3 license holder and its subsidiary as the same "undertaking" even when the financial accounts of these companies are consolidated. Instead, it assumes that these subsidiaries operate independently from the parent company.

To conclude, although the NTC's relatively "hands off" attitude towards price regulation has nurtured fierce price competition in the market, it displays clear inability to set telecom tariffs due to a lack of data and information. At the same time, its decision to forebear regulation when such regulation is clearly in need raises doubts about the regulator's competence.

2.6 Anti-competitive Practices

Two pieces of legislation provide safeguards for competition in the Thai telecommunications market: the Trade Competition Act of 1999 and TBA. TBA requires that telecom businesses be subject to all provisions under the general competition law.

The Trade Competition Act contains provisions against the following five types of anti-competitive behavior:

- Abuse of market dominance: A business entity that has market power is prohibited from fixing prices, setting conditions that limit the provision of goods or services, and interfering with business operations of other parties without reasonable grounds.
- Merger and acquisition: A business entity is prohibited from merging with other operators in a way that could reduce competition, unless permitted by the Trade Competition Commission.
- Collusion: A business entity is prohibited from colluding with other business operators to conduct any act of monopolizing, reducing or limiting competition in the market.

- Cross-border provision: A business entity having a business relationship with a business operator outside the country is prohibited from performing any activity that would restrict the freedom of a person in the country with regard to purchasing goods and services.
- Unfair competition: A business entity is prohibited from carrying out any act that ruins market competition and has the effect of destroying, impairing, or restricting the business operations of other businesses. The use of information obtained from competitors with anti-competitive results can also be considered an unfair practice.

Although the Act does address all dimensions of restrictive practices, it still lacks guidelines for the implementation of the above prohibitions. For example, the law prohibits charging “unfair prices,” but there is no concrete description of what price level would be considered “unfair.” Similarly, the law requires pre-merger notification, but the threshold market share that would trigger the notification has not yet been determined. As a result, all mergers, including those in the telecom sector, are currently unregulated or supervised. In the absence of clear rules, the current competition regime is highly arbitrary and unpredictable, a situation that fuels the discontent of those governed by it.

TBA mandates that the telecom sector be subject to the Trade Competition Act. It also empowers NTC to undertake specific measures that prevent a licensee from carrying out acts that have the effect of restricting market competition. This law may provide adequate competitive safeguards for the telecommunications sector.

In September 2006, the NTC announced its Rules on Monopolistic or Unfair Trade Practices in the Telecommunications Market, which stipulate that all license holders as well as concessionaires, are subject to the Trade Competition Act 1999, the national competition law. They also contain provisions that restrict cross-equity holding in telecom businesses, prohibit cross-subsidies except for USO, and specify several trade practices that are deemed anti-competitive.

Contrary to the complaints found among the questionnaire responses (shown in the section on Anti-competitive Practices in Table 3: Comments Made by Respondents), NTC’s competition regulation does specify the definition of dominant service providers, i.e., those with a market share greater than 25 percent, or those that NTC declares to be dominant. Perhaps it is the latter part with which operators are not too comfortable, as it appears to be overly subjective in the absence of any guidelines.

Also, in contradiction of the concerns expressed by some respondents, NTC’s competition rules do address practices that are considered to be vertical restrictions. The language used is very imprecise, however, which effectively allows NTC to exercise broad discretion. For example, it is unclear to what the terms “unfair price discrimination,” “unfair prices,” “predatory pricing,” and “unfair conditions in dealing with other operators” refer. In the absence of implementing guidelines that clearly specify what “fair” or “predatory” means, service providers cannot assess whether, say, a price cut would be deemed unfair or anti-competitive rather than competitive. Perhaps it is the subjective interpretation and unpredictability of the rule rather than its absence that bothered most respondents about NTC’s competition rules.

Although competition regulation has been made available, it has not been properly enforced. For example, the NTC did not take any initiation when TRUE refuses to strike an interconnection deal with Hutch, its much smaller competitor, resulting in the eventual takeover of the latter by the former.

Interestingly, several comments were directed at the NTC's own rules and regulations that were deemed to be unfair. Criticism has been that the NTC appears to favor a particular network service provider which was able to provide commercial services to the public with a type 2 license as mentioned earlier and 3G broadband services with a trial license with impunity, while other competing operators.

2.7 Universal Service Obligation

Survey results indicate that USO regulation received the second lowest score, 2.6, following that of interconnection regulations. The major complaints expressed (as shown in Table 3) concerned unclear rules and selective implementation through incumbent state operators only. It is interesting to note that, while state operators complained about having to implement USO without a financial subsidy from NTC, other operators complained about having to pay a hefty contribution fee when they prefer to deliver the services themselves. Perhaps discontent on both sides results owing to the lack of transparency in the implementation of the USO scheme.

Traditionally, TOT, the state monopoly in fixed-line services, was the sole provider of USO, with financing coming from relatively expensive long-distance calls and the hefty access charges imposed on overseas calls operated by its counterpart providing overseas voice services, CAT. This cross-subsidy arrangement has fallen apart as the international and long-distance markets have been liberalized. TOT then turned to the massive financial surpluses generated from revenue-sharing schemes under private concession contracts. However, this financial source also started to dry up as private concessionaires began refusing to pay the fees or charges stipulated in the terms and conditions of the concessions that they deemed "unfair," such as the hefty and discriminatory access charges discussed previously.

The TBA provided a new framework for universal service provision by setting up the Universal Service Fund, which can be dispensed for USO since 2001. It also empowers NTC to require a licensee to provide universal service, but specifies that the obligation must not cause an inappropriate investment burden on the licensee. The NTC has the authority to decide how the Fund will be used to provide universal services. The Act is ambiguous with regard to the mechanics for the disbursement of the Fund, however.

All type-3 license holders and type-2 license holders with their own network are required to contribute to USO by providing services as specified above, or contribute the 4 percent of their revenue. So far TOT and CAT are the only license holders that have chosen to provide USO with those services instead of paying the 4 percent contribution. They do so by installing facilities in remote areas or in public places such as educational institutions, schools and hospitals. Other operators, most of which are not in a position to provide the required social service obligations that often involve the installation of fixed-line or Internet services networks, have had to make financial contributions set at 4 percent of revenue. The figure has resulted in widespread criticism from operators as it is rather high compared with fees of 1-2 percent set in most other countries.

To sum up, the relatively low USO score is a result of the unclear and opaque rules and regulations of NTC that leave all operators as well as academics and other stakeholders dissatisfied with the regime. However, the most recent USO plan announced in January 2010 which specifies the name of villages where public telephones are to be installed and the name of education institutions where public and fixed line telephones are to be made

available, as well as broadband service, has helped promote greater transparency of the USO regime.

2.8 Quality of Services Regulation

In 2007, the NTC announced QoS for voice, interconnection and VOIP services. The QoS for fixed line, public telephone, mobile telephone service and long distance services is based on the ITU – T – E800 standard⁶. However, the announced QoS only covered voice service and not data service and the standard is self-monitored. That is, service providers are required to report the quality of the services they provide to both the NTC and the public every 3 months or the specific time interval stipulate in the announcement.

It is rather surprising that QoS ranked second highest after market entry given that monitoring of QoS by the NTC is basically non-existent today as the system is self reported. The NTC has never come up with its own QoS data.

From the perception survey, mobile service received the highest score, 3.1, while broadband received the lowest score, 2.9. Perhaps competition in the cellular market has prompted service providers to maintain service quality in order to gain or secure their market share. Lower quality for broadband reflects the lack of competition in the service as the market is currently dominated by a single provider, True, with a much smaller market share being held by TOT. NTC has handed out several broadband licenses to new entrants; however, the installation of a network is time-consuming. Competition in the market is likely to intensify in the near future; hence, consumers can expect service quality to be improved eventually.

Prior to TBA, responsibility for quality regulation rested with the state-owned operators providing the service. Hence, the rates of dropped calls and unsuccessful calls were monitored by TOT. However, TOT has ceased to monitor the QoS of private operators' altogether. Unfortunately, NTC has failed to regulate QoS as it has not yet set up a proper system to collect information and monitor service quality. As a result, broadband users of certain private operators have had to put up with Internet speeds well below the advertised capacity for which they paid because of the providers' aggressive promotional campaigns aimed at expanding their customer base (hence, the low broadband score). Likewise, in the past, cellular phone subscribers have had to put up with dropped calls and unsuccessful calls during peak periods because of the providers' overloading of the network as there is no monitoring of the subscriber-to-bandwidth ratio.

To sum up, the QoS score reflects market forces rather than the regulatory oversight of NTC. The competitive cellular market received higher score than the less competitive broadband market.

⁶ QoS for cellular service: 1) Drop call during 2000 – 2100 hours not more than 2% 2) successful call ratio during 2000 – 2100 hours not less than 85 % for cross network calls and 90% for within network calls 3) billing complaints not exceeding 2% of the number of bills per month and 4) response time for answering customer service calls not more than 60 seconds.

3. CONCLUSION

Results of the TRE Survey in Thailand paint a mixed picture of the country's first truly independent regulatory body, NTC, in all regulatory dimensions. The poor performance of NTC is attributed to three major factors:

- 1) Unfavorable regulatory environment associated with the legacy of telecom concessions;
- 2) Political interference in the setting up of proper institutions that facilitate an effective regulatory regime;
- 3) NTC's capacity constraints in handling complex but important issues such as pricing which requires detailed examination of cost data.

The TRE performance assessment has revealed NTC's inability to deal with more complicated regulatory issues, such as competition regulation, tariff regulation, quality of service monitoring, and USO. In all of these areas, NTC has merely announced rules that provide broad guidelines but lack detailed implementation regulations. It has therefore failed to establish a transparent, effective and predictable regulatory regime.

Generous license allocation helped boosted NTC's performance assessment in the past as many new non-network service providers entered the market, leading to greater competition benefitting consumers. , But the absence of rules and regulations required to facilitate new entries, such as network unbundling rules or interconnection fee rules, and the lack of enforcement of competition rules are taking a toll on market entry. Moreover, the perception that the NTC is not impartial appears to favor a particular large service provider in the market is more worrying. One major lesson learned in the Thai case is that, while independence is often emphasized as one of the most important characteristics of a regulatory body, it by no means guarantees regulatory success.

4. RECOMMENDATIONS

Although the presence of the NTC contributed significantly to a more competitive telecom market with its relatively liberal licensing policy, the lack of regulations -- or the lack of enforcement thereof -- served to restrict or distort effective and fair competition in the market. The absence of proper quality regulation in general and price regulation in the internet service in specific has left consumers at the mercy of service providers. The lack of right-of-way regulations poses significant barriers to entry for network service providers, while the regulator's reluctance to intervene in the settling of interconnection charges leaves smaller players at the mercy of larger or incumbent competitors.

Going forward, in order to improve the current regulatory environment, it is recommended that the Thai government and NTC take the following key measures or steps:

The Thai Government

1. Devise a clear plan regarding post-concession management of the telecom infrastructure as major telecom concessions will expire within the next 2 – 6 years. Unfortunately, the current government of Abhisit Vejjajiva seems to be going the opposite direction. In February 2011, the board of the CAT decided to sign a contract that is equivalent to a 14.5 years exclusive concession to exploit its 800 MHz frequency for 3G mobile service taken over from Hutch to TRUE without competitive bidding.

2. Amend the Trade Competition Act 1999 to abolish exemption provided for state enterprises.

NBTC (The National Broadcasting and Telecommunications Commission that has replaced the NTC as the new Frequency Act 2010 is passed)

1. Provide clear definitions of types 1, 2 and 3 licenses in order to promote transparency in the granting of licenses.
2. Build up a cost database for key services that will enable effective cost-based price regulation, in particular for interconnection charges and fixed-line services.
3. Build up the industry's database so that it will contain detailed data about service providers, their revenues, capacity, output, prices, and QoS.
4. Urgently formulate rules for "right-of-way," competition to facilitate entry of network based service providers.
5. Establish a clear and transparent accounting system for the management of the Universal Service Fund.
6. Conduct proper Regulatory Impact Assessment of its proposed regulation. Since 2010, the NTC has drafted a regulation that would further restrict foreign competition in the Thai telecom market. It is unclear how such regulations serve to promote the development of the Thai telecom industry or the welfare of consumers given the already highly concentrated market structure.

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