

Telecom Regulatory and Policy Environment in Thailand

Results and Analysis of the 2008 TRE Survey

Deunden Nikomborirak, PhD

Saowaluk Cheevasittiyanon

deunden@tdri.or.th

scheev@tdri.or.th

Thailand Development Research Institute

Table of Contents

1. Executive Summary	4
<i>The Thai Government:</i>	5
<i>The NTC</i>	5
2. Introduction: The Development of the Thai Telecom Market	6
3. Methodology.....	10
4. Finding/Results	11
4.1 Overall results	11
4.2 Market Entry	15
4.3 Access to scarce resources.....	17
4.4 Interconnection.....	19
4.5 Tariff.....	20
4.6 Anti-competitive practices.....	21
4.7 Universal Service obligation.....	22
4.8 Quality of Services Regulation	24
5. Conclusion.....	24
6. Recommendations.....	25
7. Annex 1: Significant regulatory and policy events for Thailand (February 2007 – April 2008)	27
8. Annex 2: TRE Questionnaire	28

List of Figures

Figure 1: Telecom Market Development during 1990-2007	7
Figure 2: HHI – Fixed Line.....	8
Figure 3: HHI - Mobile	9
Figure 4: HHI – Internet Broadband.....	9
Figure 5: Average TRE scores by sector	11
Figure 6: TRE Scores by Regulatory Dimension	12
Figure 7: TRE Scores by Sector and by Regulatory Dimension.....	13
Figure 8: Number of Internet subscribers	16

List of Tables

Table 1: Number of Respondents	11
Table 2: Number of Licenses Handed out by NTC during 2005-2008 (August)	12
Table 3: Comments made by Respondents	13

List of Acronyms

ADSL	Asymmetric Digital Subscriber Line
AIS	Advanced Info Service PLC.
BTO	Build-Transfer-Operate
CAT	Communication Authority of Thailand
EGAT	Electricity Generating Authority of Thailand
HHI	Herfindahl-Hirschman Index
IC	Interconnection
IDD	International Direct Dialing
IIG	International Internet Gateway
ISP	Internet Service Provider
MEA	Metropolitan Electricity Authority
NBC	National Broadcasting Commission
NTBC	National telecommunications and Broadcasting Commission
NTC	National Telecommunications Commission
PEA	Provincial Electricity Authority
QoS	Quality of Service
SOE	State-owned Enterprise
TA	Telecom Asia Corporation
TAC	Total Access Communication PLC.
TBA	Telecommunications Business Act
TOT	Telephone Organization of Thailand
TRE	Telecom Regulatory Environment
USO	Universal Service Obligation
VoIP	Voice over Internet Protocol
WiMAX	Worldwide Interoperability for Microwave Access

1. Executive Summary

The average result of the TRE survey in Thailand (2.8 out of 5) reveals mixed performance of the National Telecommunications Commission (NTC), the Thai telecom regulatory body. Higher TRE scores for market entry (3.1), tariff regulation (2.8) and quality of services (2.9) are interrelated. That is, the NTC has clearly adopted a liberal licensing regime that has led to increased competition in many markets, in particular, the broadband and the international internet gateway markets. New entrants into the broadband market are guaranteed access to the local loop or can request for a WiMAX license. Abolition of the monopoly over the international internet gateway (IIG) was a major boon to the industry.

At the same time, its rather light-handed approach to tariffs regulation through the establishment of price ceilings that are mostly non-binding on operators, allow market mechanism to function without distortion¹. In general, greater competition in mobile, broadband, and IDD has resulted in lower costs and higher service quality that helped boost TRE scores in these categories.

On the other hand, in areas where regulatory rules are required as market forces cannot deliver the desired outcome, such as interconnection, universal service and anti-competitive practices, TRE scores are slightly lower. They are 2.5, 2.6 and 2.7 respectively. This reveals NTC's limited capability in dealing with more complicated regulatory rules that require profound understanding of the issue at hand and clear and transparent rules to ensure fairness and predictability of the regulatory regime. At the same time, the lack of a comprehensive database on key regulatory variables such as cost, capital expenditure, price levels and quality of service, etc. does not bode well for regulations that require these data.

Several comments expressed through the questionnaires addressed concerns about unclear and broad rules or regulations or the lack of detailed implementation regulations ranging from licensing, tariffs regulation to universal service obligation.

It should be noted, however, that certain TRE scores reflect not only the performance of the NTC, but also other external factors that affect the regulatory environment. For example, the low interconnection score can be attributed to the legal battle surrounding the arbitrary access regime established during the telecom concession era that are inconsistent with NTC's current interconnection rules. As the Constitution upholds these concessions, it is beyond NTC's control to solve the problem. Similarly, the much delay in the establishment of a joint frequency allocation committee between the National Telecommunications Commission and the National Broadcasting Commission (NBC) due to political wrangling contributed to low access scores as the NTC was not able to proceed with the auctioning of the 3G licenses without proper legal clearance.

¹ The exception would be the tariff regulation for (politically sensitive) local fixed line services that appears to be well below actual costs as the NTC chooses to maintain the prevailing rate that has not been adjusted in 20 years.

To sum up, although the NTC has contributed significantly to a more competitive telecom market with its relatively liberal licensing policy, unclear regulatory rules pose a major problem for telecom operators and absence of proper quality regulation has left consumers at the mercy of service providers. Nevertheless, the Thai experience shows that competition can go a long way in protecting consumers in the absence of proper regulatory oversight

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

The Thai Government

1. Devise a concession conversion scheme that will eliminate clauses that are consistent with NTC rules, in particular those concerning arbitrary access charges that are levied on certain mobile operators, price regulations by TOT and revenue sharing schemes between state enterprises and private concessionaires.

There has been no major progress in this area thus far since the last failed attempt back in 1999. Any conversion scheme would have to be perceived as transparent and fair, not only by the private concessionaires and the state owned enterprises, but also by the public. Past attempts at converting these concessions have become subject to alleged money politics and vested interests.

2. Urgently pass the draft amendment of the Frequency Allocation Act to establish the NTBC so that frequency allocation and assignment can be undertaken properly.

The NTC

1. provide clear definition of type 1 2 and 3 license in order to promote transparency in the granting of licenses.

2. urgently build up cost data base for key services that will allow effective cost-based price regulation, in particular for interconnection charges and fixed line services.

3. urgently build up industry's data base that contain detailed data about service providers, their revenues, output, prices, and quality of services.

4. clarify and pass clear rules regarding its anti-trust rules such as providing market share threshold for dominance and pre-merger notification requirement and provide implementing guidelines for vague prohibitions such as predatory pricing.

5. establish a clear and transparent accounting system that is publicly accessible for the use of universal service fund.

2. Introduction: The Development of the Thai Telecom Market

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

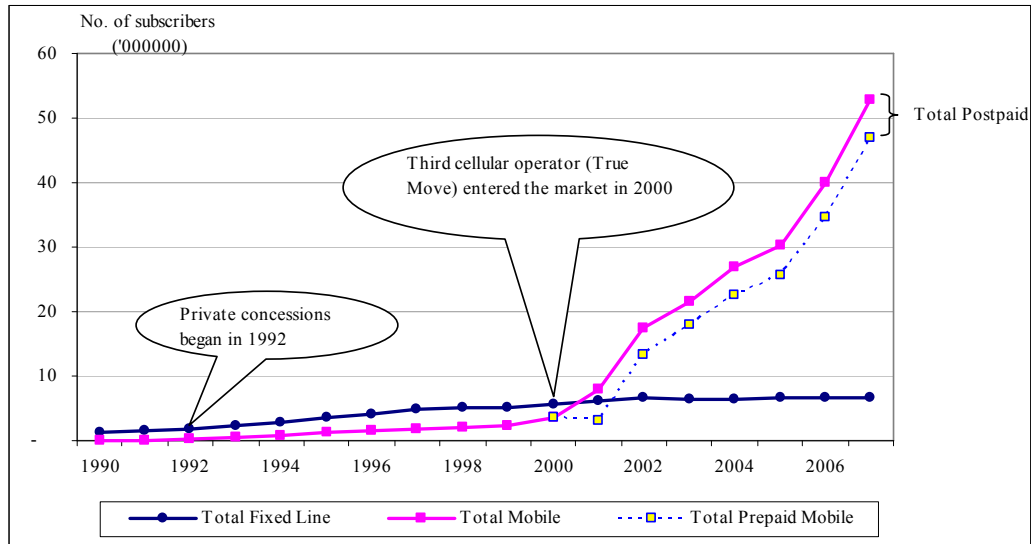
A unique scheme evolved to preserve the statutory monopoly of the two SOEs, while accommodating the private sector. Starting in 1992, TOT and CAT awarded concessions to private companies to undertake network development and provide fixed line, mobile, satellite, paging and other communication services, under Build-Transfer-Operate (BTO) agreements. Under such an agreement, 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 nineties.

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 below. The figure reveals a striking divergence in the growth paths of fixed 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 later half of the nineties, the roll-out of the fixed line network stalled when the number of installed lines reached the ceiling.

The concession era came to an end with the promulgation of the Telecommunications Act in 2001, which terminated statutory state monopolies by empowering the National Telecommunications Commission (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 telecom concessions signed between the state telecom operators, TOT and CAT, and the private telecom operators in the past remained effective.

This has been a major regulatory problem as these concessions contain provisions that are inconsistent with regulatory rules established by the NTC. Since BTO concessions were written up during the time when state enterprises are monopolies and assume certain regulatory role, they contain several clauses that overlap with the NTC's regulatory functions. For example, private operators were required to obtain a permission from the state-owned operators for any price changes, network expansion or introduction of new services and pay access charge according to terms and conditions of the concessions. This has posed a major obstacle for the NTC in introducing interconnection charges and regulate prices. Much of the discontent expressed by respondents are a result of this particular problem that can only be solved at the policy rather than regulatory level.

Figure 1: Telecom Market Development during 1990-2007



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

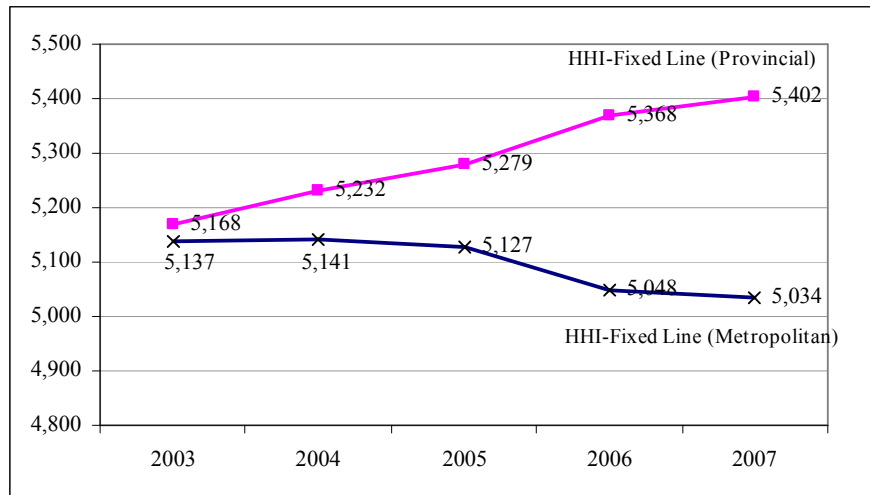
Private sector entry into the telecom sector has introduced competition into what was once a monopolistic market. The degree of competition in each sector varies, however, on the number of concessions handed out and the terms and conditions of the concessions.

The fixed line market is divided into 2 separate geographical markets: the Greater Bangkok market and the Provincial market. Both markets are duopolistic. This is because the two private concessionaires, TA² and 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.

The level of competition in the fixed line markets as measured by the HHI index for the Bangkok market has increased (HHI declined) during 2003-2007 as can be seen in Figure 2. This is due to the fact that the market share of the 2 providers in the market, - the state (TOT) and the private operator (TA) – has been converging. On the contrary, in the provinces, the state operator's market share has continued to climb at the expense of that 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 broad service category have been granted by the NTC but no new fixed line roll out is anticipated. This may be due to the extremely low regulated fixed call tariff rates, which makes any investment in the service commercially unviable. New network service providers are badly needed in the fixed sector.

² TA was changed the company name to "True Corporation"

Figure 2: HHI – Fixed Line



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

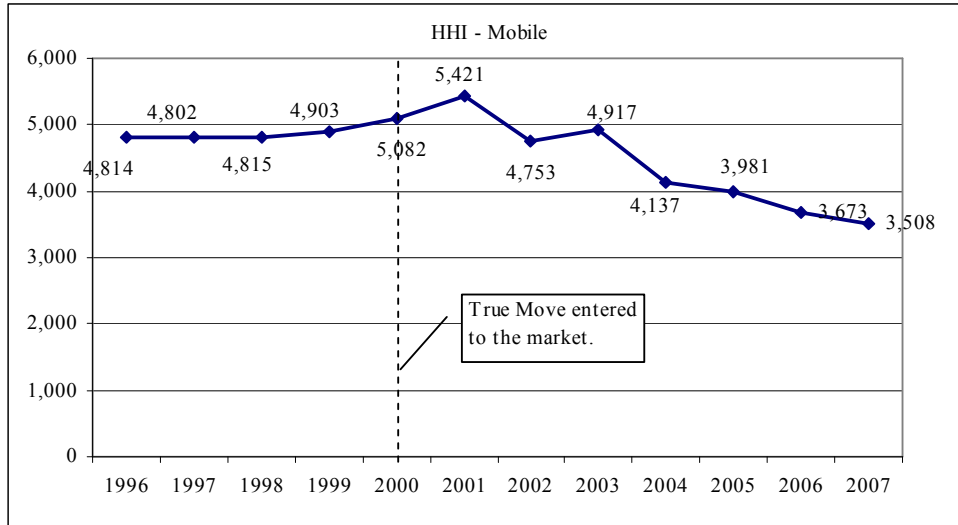
The mobile phone market has three major service suppliers, all of which are private concessionaires. They are Advanced Info Service PLC.(AIS), Total Access Communication PLC. (TAC or DTAC) and True Corporation (True Move). The fourth player that is trying to establish a foothold in the market is the state owned Thai Mobile, currently the only operator with a 3G license. The latter was a joint venture between the two state operators, the TOT and the CAT until mid 2008 when TOT acquired the entire equity stake as the partnership encountered many problems.

In terms of past trends, the level of competition in the cellular market, measures by the HHI Index, has increased markedly after 2001 after the entrance of the third major mobile operator in the market, as can be seen from Figure 3 below. Since then, competition between 3 major private suppliers has been fierce so that each provider's market share has become more comparable as the dominance of once formidable AIS fades away. The HHI index is likely to continue to fall with the continued decline in AIS's market share. 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, the only operator with a 3G license as mentioned earlier. However, the only state operator is still saddled with legal problems concerning the transfer of the 1900 MHz frequency from the CAT, its former joint venture partner that pulled out during mid 2008. The NTC will have to decide whether to allow the requested transfer or re-open an auction for the said frequency. The whole process is likely to take several months as public hearings are required.

The broadband market has been booming due to a number of new internet licenses handed out by the regulatory body over the last 2 years. Nevertheless, incumbent provider with extensive existing fixed line network such as True was able to capture the main market share, with the state owned operator, TOT, trailing well behind new comers will have to face right of way problems and will have to spend significant time and investment in network installment.

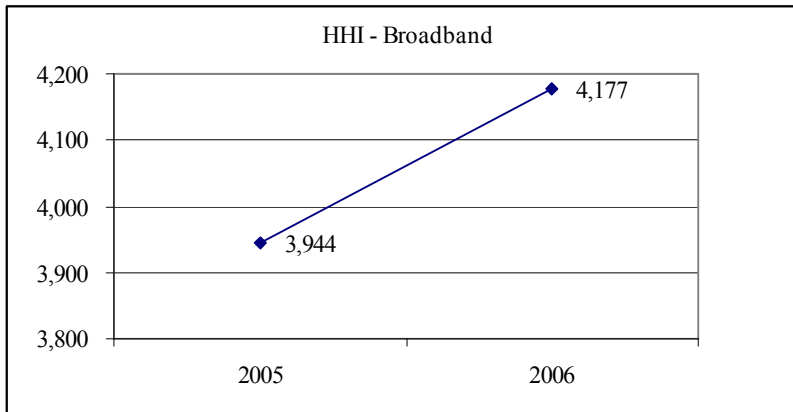
Potential competitors with extensive right of way in hand such as the state electricity enterprises were able to secure licenses from the NTC. However, they have been mired in legal problems as it is not clear whether the law allows them to be engaged in services unrelated to its core activity, electricity generation and distribution. In the absence of new effective entrant, the private incumbent continues to capture ever larger share of the market from rapid roll out of its broadband network. Hence, the higher HHI index as shown in Figure 4 below. The index will likely begin to fall over time as new entrants begin to install networks.

Figure 3: HHI - Mobile



Source: Calculated using data from AIS, DTAC and True Move

Figure 4: HHI – Internet Broadband



Source: Calculated using data from IDC Thailand

In summary, Thailand's telecom industry has benefit greatly from private sector participation since over a decade ago. Competition among the private sector has resulted in a cellular boom that has markedly improved the connectivity of the

people. 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 the lack of new entrants into the lethargic market. Nevertheless, given the numerous network licenses handed out by the NTC in the past 3 years, more competition in all markets is anticipated.

3. Methodology

To attain the research objectives, the survey had been conducted a perception survey of informed stakeholders of Thailand's telecom sector during June-August 2008. Respondents were asked to evaluate the regulatory and policy environment in Thailand's mobile, fixed and broadband markets along 7 different dimensions (market entry, access to scarce resources, interconnection, tariff regulation, regulation of anti-competitive practices, universal service obligations and quality of service). The evaluation is done on a Lickert scale of 1 to 5, 1 being "highly ineffective" and 5 being "highly effective".

The potential respondents broadly fall into 3 categories:

Category 1: those directly involved in and effected by the sector such as operators and equipment manufacturers

Category 2: those observing the sector with broader interested and who may be indirectly impacted by the sector such as lawyers, telecom sector consultants, and analysts

Category 3: those who represent the public interest such as media, other government officers, retired regulators or civil society organizations

The research team distributed the questionnaire responses through three main channels;

1) Sending fax and emails. Out of 144 questionnaires sent out, 38 were returned.

2) Distributing the questionnaire at the public hearing conference concerning the impacts of the delay in issuing the wireless 3G, organized by the Senate Committee on Science, Technology, Information and Telecommunications on July 3, 2008. In total 215 questionnaires were distributed, 30 of them were returned.

3) Distributing questionnaires to analysts through the Association of Securities Analyst. Only 4 questionnaires were returned.

A total of 72 responses were received. Since each respondent category should contribute equally to the final score in each dimension, and since it is not possible to pre-plan the number of completed questionnaires that will be received in each category, weights are assigned to equalize the contribution from each sector's score. These weights are shown in Table 1 below.

Table 1: Number of Respondents

	No. of Respondents	Weighted by LIRNEasia
Category 1: stakeholders directly affected by sector regulation – i.e., operators	40	0.60
Category 2: stakeholders who analyze the sector with broader interests -- i.e., analysts	15	1.60
Category 3: stakeholders with an interest in improving the sector to help the public –i.e., academics, journalists, civil society, etc.	17	1.41
Total	72	

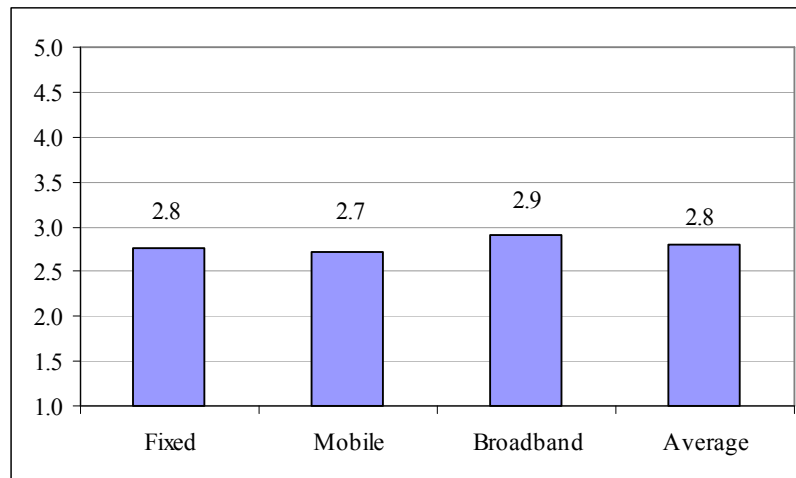
4. Finding/Results

4.1 Overall results

The average TRE score for all 3 telecom sectors in all 7 regulatory dimensions is 2.8. The lowest score goes to mobile as can be seen in Figure 5 below. This is because the size of 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 that may be lacking in the views of the respondents. Also, no new mobile or 3G licenses have been handed out thus far due to legal complications that will be elaborated later.

The highest score goes to broadband services. This is because internet services, unlike fixed line and cellular services, are not subject to regulatory complications associated with the concession terms and conditions. Also, several new type 3 licenses were handed out to new operators in 2007, providing consumers with alternative broadband suppliers with own network.

Figure 5: Average TRE scores by sector



Among the different regulatory dimensions surveyed, the highest score goes to market entry as can be seen in Figure 6 below. This reflects the fact that many

licenses were issued by the NTC during the last three and a half years as shown below. But at the same time, most licenses handed out thus far have been type 1, non-network services such as internet services, resale services and broadband services for small operators. Type 3, network-based services have been much more limited as can be seen in Table 2 below.

Table 2: Number of Licenses Handed out by NTC during 2005-2008 (August)

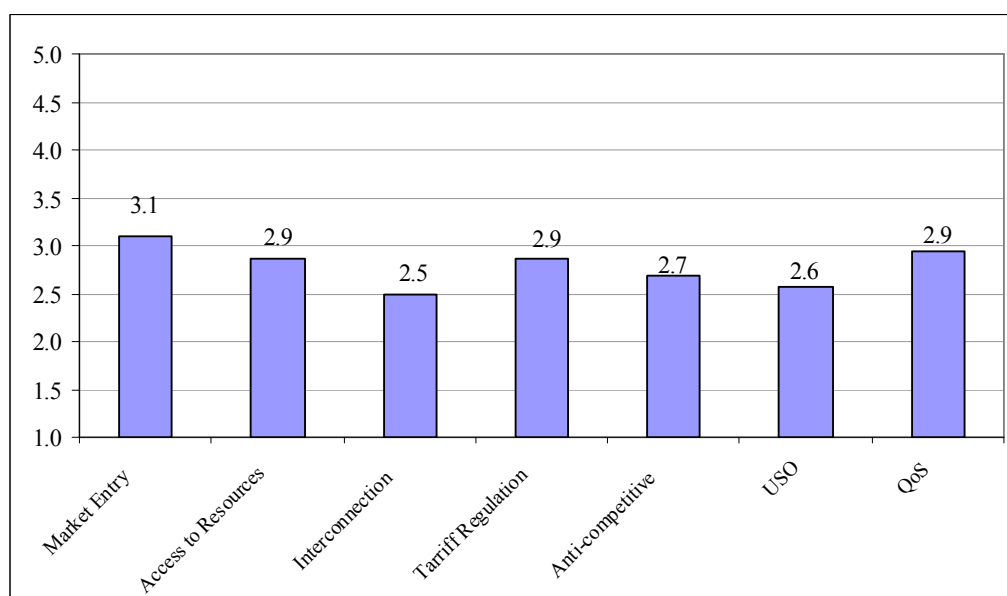
	2005	2006	2007	2008 (as of August 08)	Total
Type 1 licenses (service without network)	23	26	62	32	143
Type 2 licenses (private telecom services)	1	6	13	2	22
Type 3 licenses (public network telecom services)	2	5	9	3	19

Source: NTC

The lowest score goes to interconnection issues because of the long standing disputes and pending court case concerning interconnection and access charge between private telecom concessionaires and state operators. The relatively low USO score also reveals the shortcomings of the current universal service regime established by the NTC.

On the whole, only one dimension (Market Entry) receives a score above the mid-point of 3.0. The low overall scores reflect the fact that the NTC is seen to be “slow” and “ineffective” as evident in the comments made by respondents summarized in Table 3 below under the category “others”.

Figure 6: TRE Scores by Regulatory Dimension



Scores do not seem to fluctuate too much across different types of services for each regulatory dimension as can be seen in Figure 7 below. Bottom score goes to interconnection problem in fixed line services arising from concession provisions that are inconsistent with NTC's Interconnection (IC) rules as reflected in the comments made by respondents shown in Table 3. The top score goes to market entry for broadband as already explained earlier.

Figure 7: TRE Scores by Sector and by Regulatory Dimension

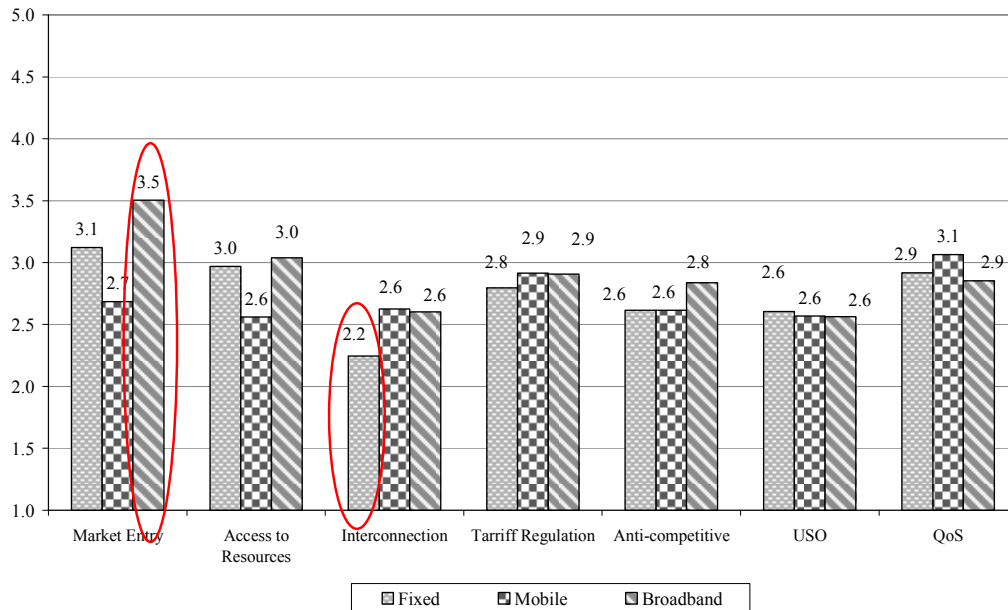


Table 3: Comments made by Respondents

	Fixed Line	Mobile	Broadband
Market Entry	<ul style="list-style-type: none"> Licensing regime is inefficient and not up to international standard, in particular concerning the amount of time taken to deliver a decision. There is no clear rules regarding the right of way Although several new fixed line operators have been granted, few rollouts materialized thus far. 	<ul style="list-style-type: none"> No new mobile licenses have been issued thus far. Regulatory permission for AIS to launch commercial 3G pilot project in the North is discriminatory. Thailand lags behind others due to the delay in issuing 3G licenses. Number portability policy should be implemented the soonest possible. 	<ul style="list-style-type: none"> In many areas of Bangkok, there is only one choice of ADSL providers. The issuance of WiMAX licenses should be sped up in order to support the surge in the demand for internet bandwidth in the near future. Although several broadband licenses have been issued, but small operators face unfavorable regulatory rules.

	Fixed Line	Mobile	Broadband
Access to Scarce Resources		<ul style="list-style-type: none"> The delay in frequency allocation delayed network upgrade from the current 2-2.5 G TO HSPA 	
Interconnection	<ul style="list-style-type: none"> Fixed line services do not comply with the cost based IC rules established by the NTC (because of the concession contracts) 	<ul style="list-style-type: none"> The NTC does not intervene in the setting of the IC charge by larger players in the market, which can be unfair to small players. The NTC has not been able to bring in state owned enterprises under its IC rule. 	<ul style="list-style-type: none"> The NTC has not taken any action regarding legal disputes between state operators and private concessionaires regarding the use of network under the build-transfer-operate scheme. Interconnection rules for internet services are unclear.
Tariff	<ul style="list-style-type: none"> No clear tariff regulation 	<ul style="list-style-type: none"> Maximum price for mobile services established by the NTC in 2008 are replicas of those stipulated in the concession, which does not reflect market environment. 	
Anti-competitive	<ul style="list-style-type: none"> No clear anti-trust regulation and no definition of a dominant player. 	<ul style="list-style-type: none"> No clear anti-trust regulation and no definition of a dominant player. No competition rules for anti-competitive or discriminatory behavior of vertical integrated operators. No definition of a dominant player No decision has been made on complaints on predatory pricing. 	<ul style="list-style-type: none"> NTC chooses not to regulate price and let price be determined by the market.
USO	<ul style="list-style-type: none"> The NTC has not yet passed clear rules or guidelines regarding the operation and management of USO The NTC should urgently promote the rollout of fixed line services to all regions. The NTC does not regulate the quality of USO services. CAT and TOT, the only 	<ul style="list-style-type: none"> The NTC has not yet passed clear rules or guidelines regarding the operation and management of USO 	<ul style="list-style-type: none"> The NTC should allow all licensed operators to participate in the USO Projects. Service fees may vary according to the nature of the service provided.

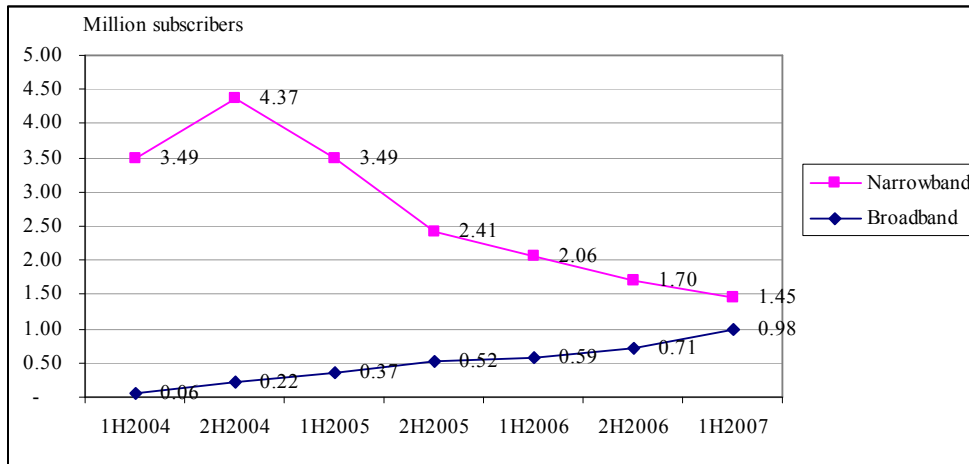
	Fixed Line	Mobile	Broadband
	<p>two state owned operators in the market, are assigned USO obligations without financial subsidy from the NTC.</p> <ul style="list-style-type: none"> • USO contribution is too high. 		
QoS	<ul style="list-style-type: none"> • There is not yet QoS regulation. 	<ul style="list-style-type: none"> • There is not yet proper QoS regulation. 	<ul style="list-style-type: none"> • The NTC has not yet announced QoS for internet services.
Others	<ul style="list-style-type: none"> • The NTC is slow to respond to regulatory needs of a dynamic sector. 	<ul style="list-style-type: none"> • The establishment of the Telecommunications Consumer Association by the NTC as stipulated by the telecom act is to be applauded. • The NTC cannot respond to regulatory problems effectively and timely. 	<ul style="list-style-type: none"> • The NTC is slow in performing its tasks and has not yet produced any visible performance results.

4.2 Market Entry

Market entry receives the highest score among all regulatory dimensions of the NTC, which reflects the regulatory body's relatively generous licensing policy. As can be seen in Figure 7 above, scores for market entry is highest for broadband and lowest for mobile. Although several general network licenses have been granted, no new cellular services have been possible due to problems NTC face concerning frequency assignment and management as will be discussed later. In contrary, there is no such restriction to the roll out of broadband services, except perhaps for the right of way problems.

Most new broadband providers have not yet rolled out own network, however. This means that they have to rely on the wired network of existing fixed line operators in combination with other wireless technology for the last mile, such as WiMAX. The NTC has not yet handed out full WiMAX licenses. In April 2008, it issued 14 temporary (90 days) WiMAX licenses to test the technology. Incumbent fixed line operators, namely, True Corporation, TT&T as well as the state owned TOT, have been putting much effort in expanding and upgrading their broadband network to accommodate the surge in demand for broadband internet services in place of narrowband dial-up services as can be seen in Figure 8.

Figure 8: Number of Internet subscribers



Note: the numbers of the narrowband internet subscribers were estimated based on the numbers of dial-up internet cards sold, most of which were prepaid. However, the numbers of broadband internet subscribers were based on the number of accounts registered for monthly fee payment.

Source: IDC Thailand

Number portability has also been a concern of several respondents. The NTC has just arranged for a public hearing of its draft Regulations on Number Portability for mobile phone in August 2008. Although the draft regulation was much delayed since 2 years ago, it was welcomed by all stakeholders. However, experts have several reservations concerning the draft Regulation as follows:

- The draft regulation does not require that the number portability fee charged be cost-based. Rather, it establishes a price ceiling for fees charged at 300 baht around USD 8.7³. The set price by no means reflects the underlying costs. Rather, it is the maximum price that subscribers are willing to pay expressed in their responses to NTC's questionnaires. International best practices such as the EU's Universal Directive require that service charges must be cost-based.
- The draft regulation sets the maximum number of days service providers may take to transfer the number to the new provider at 3 days. However, it fails to specify penalties arising from non-compliance.
- Since mobile service providers currently set call charges based on whether the number called is within or outside its own network, a transfer of a number from a service provider to another may lead to additional costs for unsuspecting callers. The draft regulation does not require the service provider to notify callers that the number called is now subject to higher rates.

³ The reference exchange rate of Bank of Thailand in October 2008 was 1 USD = 34.4285 Baht.

4.3 Access to scarce resources

4.3.1 Frequency allocation

According to the TRE Survey results, the allocation of frequency for cellular service seems to be the single most serious access to scarce resource concern among respondents. The delay in auctioning the 3G license since 2005 arises from legal uncertainties surrounding the NTC's authority to allocate frequencies. The Frequency Allocation Act 2000 mandates that the NTC and the National Broadcasting Commission (NBC) jointly develop a national frequency table, manage the telecom and broadcasting spectrums and prescribe spectrum regulations. The NBC was supposed to have been formed years ago but claims of conflict of interest and political interference brought the process to a halt. As a result, the NTC was not able to assign and manage frequencies in the absence of its broadcasting counterpart.

To avoid the deadlock, the NTC had asked the Council of State, the government legal advisory body, to determine whether it has the legal authority to allocate and manage frequency in the absence of the NBC. In 2006, the Council ruled that the NTC may manage frequencies for telecom use. Following this decision the NTC handed out WiMAX licenses to incumbent operators. But because 3G licenses involve the allocation of 2.1 – 2.5 megahertz which can be used jointly with broadcasting, the NTC has been more cautious in exercising its authority and submitted additional queries to the Council of the State regarding the interpretation of the Council's earlier decision. It is only in the mid 2008, that it received positive response from the Council that the NTC decided to go ahead with the planned auctioning on the 3G license. In short, the 3G crisis has mainly been a result of legal problems external the control of NTC.

The Broadcasting Act was finally promulgated in March 2008. However, the Constitution of 2007 stipulates that the allocation and assignment of frequencies are to be managed by a single agency, namely, the National Telecommunications and Broadcasting Commission (NTBC), that will be established by an amendment to the Frequency Allocation Act. However, the draft act, which was approved by the cabinet in August 2008, faced much criticism from both the public and the media such that the Ministry of Information, Communication and Technology has had to remove the act from the legislative pipeline and hold new rounds of public hearings on the matter. Hence, the prospect of having a proper body that will oversee frequency allocation in the near future is rather bleak.

4.3.2 International Internet Gateway

The NTC has handed IIG license rather liberally to all internet and broadband service providers. As of October 2008, 12 type 2 IIG licenses have been granted.

4.3.3 Local loop unbundling

The Telecommunications Business Act 2001 stipulates that interconnection is mandatory at all "technically feasible" points, which is consistent with the WTO's Telecommunications "Reference Paper" that establishes 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 case of limited capacity or technical problems.

To implement this particular clause, the NTC requires that network licensees “Ensure fair and equal access to network and facilities which is supply for ADSL Internet services by:

- *Network licensees must allow other licensees to interconnect with his telecommunications network (under specified technical criteria)”*
- *Access/Interconnection conditions and charges must be on 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 ISPs have requested for WiMAX licenses. As of October, 18 trial WiMAX licenses have been issued to ISPs.⁴

4.3.4 Right of way

The Telecommunications Business Act 2001 stipulates that licensees have the right to install poles or lay cables or wires in state and private properties if the network rollout plan is approved by the NTC. The licensee will have to negotiate compensation for land usage with the property owner. In case an agreement on the appropriate compensation rate cannot be reached, the 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 to the NTC. If the appellate decision is unsatisfactory, the property owner may file a complaint to the Administrative Court. To implement this particular provision, the NTC has drafted the “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 over the electricity poles, the right to install public telephone booths -- may not be an issue of disputes, but the rate of compensation will likely be the subject of intense negotiation. As in the case of interconnection, the NTC will need to establish clear rules and principles in determining “fair” compensation rate that will be acceptable to both parties. Until NTC rules are passed, disputes about compensation for right of way seem inevitable.⁵

⁴ www.ntc.or.th

⁵ Recently, there was a dispute between private fixed line service provider and the Bangkok Metropolitan Administration (BMA) about the location of telephone booths and whether the operator needs to pay the BMA for the use of the site.

4.4 Interconnection

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

The Telecommunications Business Act 2001 (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 calculation of interconnection fees is prescribed, but the law requires that the interconnection rates be reasonable and fair to all affected licensees.

The TBA sets procedures resolving disputes on interconnection agreements and requires the NTC to issue a decision within 30 days. The law does not require the disputing parties to exert efforts to reach a resolution before appealing to NTC such that private carriers may seek NTC's intervention at any point of time during the interconnection negotiation.

While interconnection rules set out in the TBA is clear, all telecom concessions are exempted from such rules⁶. This is because all networks installed under concessions are legally owned by the two state enterprises, the TOT and the CAT. Private operators are mere subcontractors. Hence, all interconnection charges must be negotiated and paid by the two legal license holders only. The concession mandates private cellular concessionaires of the CAT (gateway operator without domestic network), namely, DTAC and True Move, to pay the TOT (domestic fixed line operator with network) a hefty 200 baht/month (around USD 5.8) flat rate per post-paid subscriber and 18% of revenue for pre-paid users, while its own concessionaire, AIS, does not have to pay such a fee.

The lack of access or interconnection charge among cellular providers proved chaotic as mobile operators engaged in a price war in quest to expand own market share that overburdened the network capacity, leading to a sharp deterioration in the quality of calls. Struggling to compete in cost, the two mobile operators had stopped paying interconnection charges to the TOT since November 2006 referring to NTC's rule on IC. The three operators successfully agreed on bilateral interconnection charges among themselves in early 2007. The TOT has filed a civil suit against them to demand outstanding access fees of Bt10 billion (USD 290 million) from DTAC and Bt4 billion (USD 116 million) from True Move. At the same time, the TOT has submitted a petition to the Administrative Court requesting for a withdrawal of the

⁶ The 1997 and 2007 Constitutions protect the legal enforcement of all provisions stipulated in all telecom concessions.

NTC's IC regulation that allows the substitution of interconnection charges for access charges stipulated under the concession agreement.

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

4.5 Tariff

Tariff regulation receives 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 the NTC.

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

In September 2006, the NTC announced Tariff Rule that requires operators to submit tariffs schedules and cost structure in order to assist the NTC in setting maximum prices for all services. In May 2008, the NTC has announced the price ceilings for all major voice services including fixed line local and long distance, cellular (pre-paid and post-paid), public phone services. The maximum rates established were by no means rates that reflect the underlying cost and rate of return of investor as specified in the Tariffs Regulation. They are merely rates currently charged by incumbent operators. For cellular, the tariff ceiling was not binding as it accommodates all rates set by various providers presently.

The maximum rate for fixed line, however, was set at 3 baht per call (less than 10 US cent), 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 above.

The regulation of tariffs based purely on private operators' submission of tariff information and benchmarking them against those in foreign countries clearly reflects NTC limited capability to examine detailed cost structure of telecom operators. While 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 regards to costs, the NTC sets the stage for serious under-investment in the roll out of fixed line services that is much needed after many years of restrictive investment conditions under the concession schemes.

To conclude, the NTC displays clear incapability in setting telecom tariffs due to the lack of data and information. It set fixed line service fees well below cost. Fortunately, it has at least kept its hands off tariffs regulation in the mobile sector as the ceiling rates set were non-binding and hence, pose no market distortion.

4.6 Anti-competitive practices

Results from the survey indicates that the NTC has failed to establish proper rules to address anti-competitive practices in the telecom sector, in particular in the fixed line and cellular services. Most complaints concern the following issues:

- (1) the absence of a definition of a “dominant provider”
- (2) absence of rules addressing vertical restrictions such as discriminatory practices or refusal to deal and
- (3) unclear rules in general.

There are two legislations that provide safeguards for competition in the Thai telecommunications market: the Trade Competition Act of 1999 and the Telecommunications Business Act 2001 (TBA). The TBA requires that telecom businesses be subject to all provisions under the general competition law.

The Trade Competition Act contains provisions against 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 may 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 will restrict the freedom of a person in the country in 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, there are still no 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 can 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 to the discontent of those governed by it.

The TBA mandates that the telecom sector be subject to the Trade Competition Act. It also empowers the 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 passed Rules on Monopolistic or Unfair Trade Practices in the Telecommunications Market. The rule stipulates that all license holders as well as concessionaires are subject to the Trade Competition Act 1999, the national competition law. It also contains the 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*), the NTC's competition regulation *does specify* the definition of dominant service providers to be those with market share greater than 25 per cent or those that the NTC declares to be dominant. Perhaps it is the latter part that operators are not too comfortable with as it appears to be overly subjective in the absence of any guidelines.

Also, in contradiction to the concerns expressed by some respondents, the NTC's competition rule does address practices that are considered to be vertical restrictions. The languages used are very imprecise, however, which leaves broad discretion to the NTC.

For example, it is unclear what "unfair price discrimination", "unfair prices", "predatory pricing" and "unfair conditions in dealing with other operators" refer to. In the absence of implementing guidelines that clearly specify what "fair" or "predatory" means, service providers cannot assess whether say, a price cut, will be deemed unfair or anti-competitive rather than competitive. Perhaps it is the subjective and unpredictability of the rule rather than their absence that bothered most respondents about the NTC's competition rule.

4.7 Universal Service obligation

Survey results indicate that USO regulation receives the second lowest score, 2.6, after interconnection regulations. Major complaints expressed as shown in Table 3 includes 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 financial subsidy from the NTC, other operators complained about having to pay the hefty contribution fee when it prefers to deliver the services themselves. Perhaps, discontent on both sides result for lack of transparency in the implementation of the USO scheme.

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

The TBA provides a new framework for universal service provision by setting up a Universal Service Fund that can be dispensed for USO. 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 and should be the same for operators providing the same services. The NTC has the authority to decide how the Fund will be used to provide universal services. The Act is ambiguous on the mechanics for the disbursement of the Fund; this might be a source of contention in the future.

In August 2005, the NTC announced its USO Rule. The rule specifies the following:

- 1) the scope of universal service obligations that must be carried out by license holders, which includes
 - (a) the installation of at least 3 public phones per village, not exceeding 6,000 villages within 30 months after having obtained the operating license in areas and within the time limit specified by the NTC;
 - (b) the installment of at least 2 fixed line or public phones in education institutions, hospitals and other social service organizations not more than 4,000 sites within 30 months after having obtained the operating license in areas and within the time limit specified by the NTC;
 - (c) the provision of free telephone cards for not more than 1 million handicapped and elderly persons registered with the Ministry of Social Development and Human Security per month for 30 consecutive months.
- 2) all type 3 license holders and type 2 license holders with own network are required to contribute to USO by providing services as specified above or contribute the 4% of the revenue. So far TOT and the CAT are the only license holders that have chosen to provide USO instead of paying the 4% contribution by installing facilities in remote areas or in public places such as educational institutions, schools and hospitals. Other operators, most of whom are not in the position to provide the required social service obligations that often involve the installation of fixed line or internet services network have had to make financial contributions set at 4% of revenue. The figure has solicited widespread criticism from operators as it is rather high compared with 1-2% set in most other countries.

To sum up, the relatively USO score is a result of NTC unclear and opaque rules and regulations that leave all operators as well as academics and other stake holders dissatisfied with the regime.

4.8 Quality of Services Regulation

It is rather surprising that the quality of service ranked second highest after market entry given that QoS regulation by the NTC is basically non-existent today. Mobile service receives the highest score of 3.1, while broadband receives the lowest score of 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 held by TOT. The NTC has handed out several broadband licenses to new entrants, but the installation of network is time consuming. Competition in the market is likely to intensify in the near future, however. Hence, consumers can expect improved service quality then.

Prior to the TBA, quality regulation responsibilities rested with the state owned operators providing the service. Hence, dropped call and unsuccessful calls rates were monitored by the TOT. However, with the NTC, the TOT has ceased to monitor private operators quality of service altogether. Unfortunately, the NTC has failed to regulate QoS as it has not yet set up proper system to collect and monitor service quality. As a result, broadband users of certain private operator has had to put up with internet speed well below subscribed capacity because of provider's aggressive promotional campaign to expand customers 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 providers' overloading of the network as there is no monitoring of the subscriber to bandwidth ratio.

To sum up, QoS score reflects market forces rather than regulatory oversight of the NTC. The case of Thailand goes to show that market forces can substitute for regulatory failure.

5. Conclusion

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

- (1) unfavorable regulatory environment associated with the legacy of telecom concessions
- (2) political interferences in the setting up of proper institutions that facilitate effective regulatory regime and
- (3) NTC's capacity constraints.

The TRE performance assessment reveals the NTC's inability to deal with more complicated regulatory issues such as competition regulation, tariffs regulation, quality of service monitoring and universal service obligation. In all of these areas, the NTC has merely passed rules with broad guidelines with little detailed implementation regulation. It therefore has failed to establish a transparent, effective and predictable regulatory regime.

Handling out licensing appears to be the only regulatory dimension that the NTC was able to perform relatively well. But even here there has been much criticism about the vagueness and arbitrariness of assigning different types of licenses.

The lesson learnt 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 any regulatory success.

6. Recommendations

Although the NTC has contributed significantly to a more competitive telecom market with its relatively liberal licensing policy, unclear regulatory rules pose a major problem for telecom operators and absence of proper quality regulation has left consumers at the mercy of service providers. Nevertheless, the Thai experience shows that competition can go a long way in protecting consumers in the absence of proper regulatory oversight. High TRE scores for market entry, tariff regulation and quality of services can be linked to the level of competition in the market. On the other hand, in areas where regulatory rules are required as market forces fail to function, such as interconnection, universal service and anti-competitive practices, TRE scores are lower, reflecting the urgent need to improve the relevant rules and regulations.

It should be noted, however, that the low TRE scores in certain category, in particular interconnection and access to resources (frequency allocation) reflect to a large extent, constraints that are external to the regulatory body. Concession contracts written up over a decade ago during the era of state monopolies operators contain many clauses (such as access charges) that are inconsistent with modern regulatory rules. As these concessions are upheld by the country's Constitution, there is not much that the NTC can do. Similarly, the much delay in the planned promulgation of the Broadcasting Act that will establish a National Broadcasting Commission has left frequency allocation and assignment in suspension as the law requires that the task is to be carried out jointly between the 2 commissions.

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

The Thai Government

1. Devise a concession conversion scheme that will eliminate clauses that are consistent with NTC rules, in particular those concerning arbitrary access charges that are levied on certain mobile operators, price regulations by TOT and revenue sharing schemes between state enterprises and private concessionaires.

There has been no major progress in this area thus far since the last failed attempt back in 1999. Any conversion scheme would have to be perceived as transparent and fair, not only by the private concessionaires and the state owned enterprises, but also by the public. Past attempts at converting these concessions have become subject to alleged money politics and vested interests.

2. Urgently pass the draft amendment of the Frequency Allocation Act to establish the NTBC so that frequency allocation and assignment can be undertaken properly.

The NTC

1. provide clear definition of type 1 2 and 3 license in order to promote transparency in the granting of licenses.

2. urgently build up cost data base for key services that will allow effective cost-based price regulation, in particular for interconnection charges and fixed line services.

3. urgently build up industry's data base that contain detailed data about service providers, their revenues, output, prices, and quality of services.

4. clarify and pass clear rules regarding its anti-trust rules such as providing market share threshold for dominance and pre-merger notification requirement and provide implementing guidelines for vague prohibitions such as predatory pricing.

5. establish a clear and transparent accounting system for the management of the universal service fund.

7. Annex 1: Significant regulatory and policy events for Thailand (February 2007 – April 2008)

Date	Event
9 February 2007	Establishment of the Telecommunication Consumer Protection Institute.
8 March 2007	Commission Announcement regarding the permission licenses for phone-to-phone VoIP services.
16 March 2007	Issuance of Type 3 (owned-network) licenses for Fiber Optic and Low Voltage Power Line Services to EGAT (Electricity Generating Authority of Thailand), MEA (Metropolitan Electricity Authority) and PEA (Provincial Electricity Authority).
15 June 2007	CAT installed a fixed line regarding the universal service policy at Koh Pan-Yee.
15 June 2007	Issuance of an order for TOT to negotiate interconnection charges with DTAC (The latter's refusal to pay access charge to the former according to the terms of the concession since November 2006 is currently being examined by the court).
18 June 2007	Discussion of the possibility of emerging two regulatory body, the NBC (broadcasting) and the NTC (telecommunications)
19 June 2007	Approval of use of Short Range Radio Communication Devices 17 categories without licenses.
23 July 2007	Several telecom operators signed Interconnection Charge contracts.
17 August 2007	Allocation of 2 million mobile numbers to DTAC
14 November 2007	Regulations on the technical standard of the Next Generation Network.
26 November 2007	Reduction of Type 3 license fee from 3% to 2.5% of sales for year 2008.
3 December 2007	Delay of allocation of numbers for VoIP services since announced regulation in March 2007.
14 January 2008	Regulations on the quality and standard of voice telecommunication services.
4 March 2008	Regulations on the interconnection standards.
4 March 2008	Regulations on the technical standard of Time Division Multiplexer (TDM). Type interconnection.
4 March 2008	Regulations on the technical compatibility of interconnection nodes.
28 March 2008	Announcement of the Telecommunication Master Plan II (Year 2008-2010).
24 April 2008	Allocation of each 2 million mobile numbers to AIS and DTAC.

Source: NTC

8. Annex2: TRE Questionnaire

Questionnaire Number:

Respondent Name: Tel /Fax

Position: Company / Organization

Telecom Regulatory Environment for Thailand

You are kindly requested to make your frank assessments of the telecom regulatory environment (TRE) for the year 12 months ending April 2008 for the fixed, mobile and broadband telecom sectors on a five-point scale.

The dimensions used in this questionnaire are broadly based on the WTO Regulatory Reference Paper (GATS Protocol 4) and are briefly described below. A fact-sheet of key events in the Telecom Regulatory Environment is also attached for your reference for the period May 2007 – April 2008.

Completing the Questionnaire should take less than 5 minutes of your time. Please email the completed questionnaire or fax it to us.

Dimension	Aspects Covered
Market Entry	Transparency of licensing. Applicants should know the terms, conditions, criteria and length of time needed to reach a decision on their application. License conditions. Exclusivity issues.
Scarce Resources	Timely, transparent and non-discriminatory access to spectrum allocation. Numbering and rights of way: frequency allocation, telephone number allocation, tower location rights.
Interconnection	Interconnection with a major operator should be ensured at any technically feasible point in the network. Quality of interconnection comparable to similar services offered by own network. Reasonable rates for interconnection. Unbundling of interconnection. Interconnection offered without delay. Sharing of incoming and outgoing IDD revenue. Payment for cost of interconnection links and switch interface. Payment for cost of technical disruption of interconnection.
Tariff Regulation	Regulation of tariffs charged from consumers.
Regulation of Anti Competitive Practices	Anti-competitive cross subsidization. Using information obtained from competitors with anti-competitive results. Not making technical information about essential facilities and commercially relevant information available to competitors on a timely basis. Excessive prices. Price discrimination and predatory low pricing. Refusal to deal with operators and other parties. Vertical restraints. Technical disruption of interconnection. Sharing of towers and facilities by parent company and subsidiaries in different segments of the market.
Universal Service Obligation (USO)	Administration of the universal service program/fund in a transparent, non-discriminatory and competitively neutral manner and is not more burdensome than necessary for the kind of universal service defined by the policymakers.
Quality of Service (QoS)	The actual performance of a service with respect to what is promised, depending upon the network traffic control mechanisms. Specific criteria may be call quality (for mobile and fixed), connection speeds or throughput (for broadband)

FIXED SECTOR Telecom Regulatory Environment May 2007 – April 2008

Please **TICK** the number that best represents the **quality of the regulatory environment** for each dimension. The lower number represents Highly Ineffective and the higher number represents Highly Effective. If you feel you do not have sufficient information about a particular question, you may choose to leave it blank.

F1	Market Entry	Highly ineffective					Highly effective
		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	

F2	Access to Scarce Resources	Highly ineffective					Highly effective
		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	

F3	Interconnection	Highly ineffective					Highly effective
		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	

F4	Tariff Regulation	Highly ineffective					Highly effective
		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	

F5	Regulation of Anti-competitive Practices	Highly ineffective					Highly effective
		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	

F6	Universal Service Obligation (USO)	Highly ineffective					Highly effective
		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	

F7	Quality of Service (QoS)	Highly ineffective					Highly effective
		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	

Comments:

MOBILE SECTOR Telecom Regulatory Environment, for May 2007 – April 2008

Please **TICK** the number that best represents the **quality of the regulatory environment** for each dimension. The lower number represents Highly Ineffective and the higher number represents Highly Effective. If you feel you do not have sufficient information about a particular question, you may choose to leave it blank.

M1	Market Entry	Highly ineffective					Highly effective
		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	

M2	Access to Scarce Resources	Highly ineffective					Highly effective
		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	

M3	Interconnection	Highly ineffective					Highly effective
		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	

M4	Tariff Regulation	Highly ineffective					Highly effective
		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	

M5	Regulation of Anti-competitive Practices	Highly ineffective					Highly effective
		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	

M6	Universal Service Obligation (USO)	Highly ineffective					Highly effective
		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	

M7	Quality of Service (QoS)	Highly ineffective					Highly effective
		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	

Comments:

BROADBAND SECTOR Telecom Regulatory Environment, for May 2007 – April 2008

(Broadband = greater than 256kbps upload/download)

Please **TICK** the number that best represents **the quality of the regulatory environment** for each dimension. The lower number represents Highly Ineffective and the higher number represents Highly Effective. If you feel you do not have sufficient information about a particular question, you may choose to leave it blank.

B1	Market Entry	Highly ineffective					Highly effective
		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	

B2	Access to Scarce Resources	Highly ineffective					Highly effective
		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	

B3	Interconnection	Highly ineffective					Highly effective
		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	

B4	Tariff Regulation	Highly ineffective					Highly effective
		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	

B5	Regulation of Anti-competitive Practices	Highly ineffective					Highly effective
		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	

B6	Universal Service Obligation (USO)	Highly ineffective					Highly effective
		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	

B7	Quality of Service (QoS)	Highly ineffective					Highly effective
		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	

Comments:
