CHAPTER 6

THE REGULATORY ENVIRONMENT

"Oftel's strategy is to match the level of regulation to the level of competition in the market, lightening formal regulation as competition develops, while continuing to protect and inform consumers where the market cannot do so."

Office of Telecommunications, Oftel (2001)

6.1 Introduction

Now that the Internet permeates virtually every branch of social and economic activity, there is growing interest and concern over its management and accountability. Who then governs the Internet? What approach should the authority undertake to set and enforce policy? The answers are far more complex than the simple nature of these questions indicate. The Internet policy environment is far ranging and highly dynamic in nature, presenting significant challenges to policy makers. Internet policy issues cover an extremely broad area of activity, ranging through operational service quality levels, name and address distribution structures, privacy issues, connectivity requirements, content regulation, taxation, and commerce, to name but a few. Obviously, not all of these areas are amenable to strict regulation, even if strict regulation were contemplated.

If so, which services in the context of interconnection should be regulated? The general rule is that only services regarded as essential facility shall be regulated. What then are the characteristics of these essential facilities? In short, they are facilities that are

essential for the interconnecting party to provide their services and these services cannot be provided by any party other than the owner of the essential facility under reasonable terms (under reasonable costs and within reasonable time frame). Origination and termination services generally would qualify as such services.

Why should the regulator intervene? The existence of incumbents' advantages such as consumer switching costs, an established brand name, detailed and accumulated knowledge of consumer taste, possessing essential facilities, etc. may provide a rationale for regulators to assist the entry of efficient new operators into the market. This can be justified if the expected benefits exceed the costs of assistance, and future competition as a result of entry acts to drive prices towards costs, hence increasing efficiency.

The next natural question to ask is when should the regulator steps in? Some countries favoured a policy of industry negotiations of interconnection agreements but operators may seek dispute settlement with the regulator as a mediator if negotiation fails. There is a growing consensus that advanced and flexible regulatory guidelines rather than law are better suited to the establishment of a proper environment for interconnection. In addition, ex-ante regulation of interconnection terms, conditions and charges (approval or establishment by the regulator) is much favoured to prevent incumbents from setting disadvantageous terms. Besides, ex-ante regulation tends to reduce time to reach a fair agreement.

The competition currently developing in the industry as we have seen earlier is not only between firms in the same line-of-business but also between those which use different network platforms such as fixed telecommunications networks, wireless networks, and perhaps, in the not-so-distant future, electricity cables. It is thus important to examine the existing regulatory framework in order to ensure that there are no biases in terms of market entry or by way of asymmetric market signals to a particular technology. In addition, the Internet is widely predicted to produce "digital convergence", in which computing or information technology, communications, and broadcasting will all merge into a single stream of discrete bits carried on the same ubiquitous network. For example, telecommunications today has already gone beyond voice and into data as well. In light of this, the MCMC is tasked to oversee these sectors under one roof.

In this section, I will briefly first trace the policy developments in the Internet industry, with specific reference to the MCMC and its plans. Then I will discuss the more specific regulatory strategies on interconnection and the regulation of access pricing.

6.2 Evolution of Regulatory Changes

6.2.1 The Earlier Days

The discussion of regulation in the Internet industry very often contains overlapping elements from the regulatory regime of the telecommunications sector, of which I will touch upon in passing. The Internet industry has undergone significant

physical and structural transformation over the past decades. Beside infrastructure provision, the government has also embarked on plans to liberalise and privatise the Internet sector. The corporatisation (and then privatisation) of the government telecommunications department in 1987, the formation of the National Telecommunications Policy (NTP) in 1994 and the enactment of the CMA mark such concerted efforts.

The current regulatory framework for the communications industry in Malaysia is governed by the CMA. The passage of the CMA is paving the way for much greater competition in the communications industry. Two main institutions are involved in carrying out the objectives of the CMA, that is, the Ministry of Energy, Communications and Multimedia (MECM) and the MCMC while others such as National Information Technology Council (NITC) and Multimedia Development Corporation (MDC) play important roles too.

6.2.2 Why are CMA and its Subsequent Amendments Unique?

For decades, regulators categorised firms and technologies into neatly defined boxes in order to keep voice separate from data, wireline separate from wireless, and long distance separate from local telephony. The consequences of such regulatory distinctions have been limited consumer choices, restricted output, restrained innovation and entrepreneurship, limited job opportunities and artificially generating high prices. The continued existence of such distinctions in the regulatory framework would impede the

progress of the telecommunications industry relative to other countries where these hindrances do not exist.

In view of this, the CMA came into effect on 1 April 1999 repealing the Telecommunications Act 1950 and the Broadcasting Act 1988. The CMA generally aspires to be pro-competition while aiming to achieve universal service. Along with the CMA, the licensing structure has also changed. The CMA stipulates that the Minister has ultimate discretion with respect to granting licences, but must give due consideration to the relevant recommendations of the MCMC. The new licensing framework not only separates the network from the services but also emphasises the activities rather than the technology. Besides, the CMA is technology neutral partly because of the rapid changes in technology which makes it impossible for MCMC to regulate based on technology. This restructuring, which results in eight categories of licensing, makes perfect sense because the sectors share common infrastructure, digital services and content. In accordance, the CMA, as noted earlier, introduces a 'class license' category, issued in cases where there is minimal regulation and the number involved is unlimited, and an 'individual' license where there is stricter regulatory control. For an illustration, please refer to Table 6.1.

Network facilities and network services will generally fall under individual licensing because they represent important national infrastructure assets and also because they impinge on public and private property (Mohamed, 2000). Since applications services operators generally involve in the value-added segment of the Internet market

where products are much differentiated, they will be licensed under class licensing to ensure minimum regulatory barriers for innovation and competition in service delivery. However, as provided for under the CMA, Internet content services[21] are not licensed.

TABLE 6.1: MAPPING OF OLD AND NEW LICENSE CATEGORIES

Old Category	New Category			
	Network		Applications Services	
	Network Facilities	Network Services	Applications Services	Content Applications Services
Telecommunications	•	•	•	
Broadcasting	•	•		•
Internet Service Providers		•	o	
Value Added Service Providers		•	o	o

• Predominantly Individual Licenses
o Predominantly Class Licenses

Source: Mohamed (2000), MCMC.

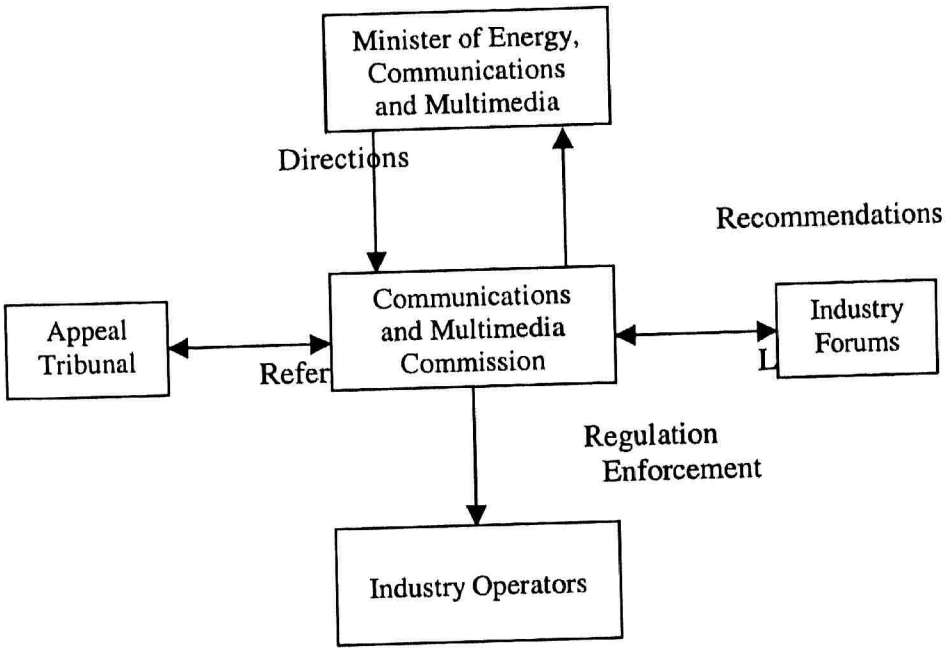
It also introduces the concept of self-regulation through the provision of an industry forum to develop voluntary codes for four areas of regulation[22] (that is, social regulation, economic regulation, technical regulation and consumer protection).

The institutions involved are entrusted to be both the promoter and regulator of the communications industry. Specifically, the CMA stipulates that the MCMC must undertake a policy implementation role while the role of policy decision-making lies with

[21] (Non-Internet) content application services will be subject to individual licensing because of the social impact and public importance of mass media (Mohamed, 2000).
[22] For a detailed discussion on this area, please refer to Cassey (2002).

MECM, which may also provide policy directions to the MCMC (see Figure 6.1 and Cassey, 2000).

Figure 6.1: The Regulatory Framework for the Communications Industry in Malaysia, 2000



Source: Cassey (2002)

6.3 Regulatory Strategies on Interconnection to Promote Competition

6.3.1 Introduction

It is accepted by even the proponents of laissez-faire economy that the Internet industry, like all network industries, exhibits varying degrees of market failure. Hence, regulation is necessary. With the progressive liberalisation of the communications industry under the CMA, the interconnection framework is increasingly regarded as a

cornerstone of regulatory safeguard that aim to ensure fair and effective competition between the incumbent and new operators. Although it is desirable to promote competition, it should not lead to network duplication and inefficient bypass of the incumbent's network. From the perspective of the incumbent, the framework on interconnection should also provide incentives to, or at the very least not discourage, the development, maintenance and investment in Internet networks. Juggling these goals is complex but extremely important in the context of interconnection.

How can competition be introduced without resulting in inefficient duplication? Besides effective interconnection framework, one other solution is to encourage competition in the non-natural monopoly components of a network while the natural monopoly segment is strictly regulated. This is akin to the granting class and individual licenses in Malaysia. Nevertheless the problems associated with the local loop may undermine the ability to promote competition in other areas. The regulator should require TMB to allow facilities-based operators to co-locate equipment at TMB's exchanges so that they can directly connect their own trunk circuits (from their data hub or facilities to TMB's exchanges) to TMB's tail-circuit local leased circuits, instead of having to purchase these trunk circuits from TMB.

Interconnection arrangements between operators are usually regarded as a commercial matter in which the regulator may intervene only if there is a dispute between the parties. As in most countries, the interconnection rules are laid out in the communications law or guidelines, which usually requires that all operators to negotiate

with parties who request interconnection to their network at any technically feasible points[23], and to provide interconnection or access on terms and conditions that are transparent and cost-oriented in order to promote effective and sustainable competition and maximise consumer benefits. Hence, each interconnection agreement shall contain mutual obligations and responsibilities to protect the interests of users.

In view of this, what options are available to the regulators? Basically, access to the local loop and improving the terms and conditions on which they are supplied can promote competition in the local loop market by creating conducive environment for the entry of efficient firms. In accordance, the regulator needs to establish a right to interconnect with the terms and conditions left to negotiations between operators. Chapter 3, Part VI of the Act (CMA) seeks to establish a regime to ensure that all network facilities providers, network service providers and applications service providers can gain access to the necessary facilities and services on reasonable terms and conditions in order to prevent the inhibition of the provision of downstream services (MCMC, 2001d). Even so, some industry observers pointed out that there is still a lack of regulation in the number of interconnecting lines, or feasible points of interconnection. In addition, the regulator should move a step forward by requiring the parties involved to make available the terms and conditions of the negotiated agreements to other operators or even the public.

It is important to note that the decision to peer, or to decline to peer, should be driven by market forces, rather than by government regulation. Conversations with ISPs

[23] These points are the local switching level, the tandem switching level, and the trunk connection.

reveal that some ISPs use their peering criteria as guidelines only, and peering criteria may change over time. In light of this, the regulator should exercise some amount of flexibility when evaluating conformance with peering criteria. Once agreed, the regulator should set the quality of service to be delivered by the network operator to another comparable to its own. There should also be a need to establish the terms and conditions for interconnection charges. Of particular importance is the regulation of interconnection charges, which I will discuss next.

6.3.2 The Regulation of Access Pricing

The problem of what principles and rules should guide the setting of access prices in network industries has commanded the considerable attention of many economists. The pricing on interconnection is very much a pricing on intermediate goods and services needed by a firm to provide its own services. In the Internet industry as in other communications industry, this is often known as access pricing, that is, the price charged by a service provider, normally the incumbent, for access to its network. The discussion on pricing in the Internet industry is thus rather generic in nature since the dial-up segment involves telephony.

Access pricing becomes complex when the firm accessing the network competes with the incumbent, and this gives the incumbent an incentive to establish barriers to entry by charging a very high interconnection price, of which the regulators are aware and concerned. If the interconnection charges are too high, it will discourage potential

competitors from entering the market. If the interconnection charges are too low and below cost, on the contrary, the incumbent cannot recover its investment on networks and it will discourage both the incumbent and new entrants from making future infrastructure investments. Thus, cost-based interconnection charges might be important to ensure effective competition in the local loop market, particularly when the local loop market is in essence a contestable market.

Whilst in theory the regulator could direct that access prices should be based on the incumbent's cost, in practice access prices are set for a specific period (quarterly, annually or longer) and reviewed at the end of each period[24] (MCMC, 2000d). According to the MCMC (2000d), cost-based access prices should be applied to all well-established interconnection services where that interconnection requires the use of bottleneck facilities, which is identified as the local loop and transmission network components. TMB being the incumbent, in the Statement on Access Pricing Principles (2000d), endorses the Analysys approach that only well-established services utilising bottleneck facilities should be subject to cost-based interconnection charges while its competitors in the same consultation paper, taking a broader approach, argued that such charges should apply to any services in the access list which are not subject to effective competition. Given this, the MCMC has argued that it is appropriate to depend on the concept of bottleneck facilities when it comes to assessing whether access prices should be cost-based.

[24] Costs, in principle, can be determined either on a historical or a forward looking basis. For more details, please refer to MCMC (2000d).

Even if it is appropriate to adopt cost-based interconnection charges, it is very often a time-consuming effort to undertake cost studies and information might be difficult to obtain, making such studies expensive. The presence of such incomplete information about a firm's costs may "give rise to a trade-off between maximising incentives for the regulated firm to minimise costs and ensuring that prices are in fact cost-based" (MCMC, 2000d). What should then be the appropriate access pricing methodology that the regulator adopts?

Since peering these days involves charges (unlike the Bill and Keep arrangement mentioned earlier which does not involve financial settlement), there are several methodologies adopted to determine interconnection charges for the telecommunications sector, which would apply to the Internet industry as well, particularly with the convergence taking place. These methodologies include cost-based methods of determining interconnection charges such as the Efficient Component Price Rule (ECPR), the Fully Allocated (or Distributed) Cost accounting methodology (FAC) and the LRIC, and other methods such as the Bill and Keep arrangement. Each approach is likely to result in different rates of reductions in prices, and could be implemented with different degree of speediness and effectiveness.

Since the Bill and Keep arrangement involves no inter-operator interconnection charges, it would be useful to first discuss it. This arrangement allows the originating fixed network operator to keep the local call charges paid by their access customers for inter-network Internet dial-up calls, without having to make a corresponding payment to

the terminating fixed network operator, and vice versa. It is then expected that the cost of interconnection between the two fixed networks be borne equally by both operators. Although this arrangement seems relatively simple to implement, it is only feasible and fair to the interconnecting parties if the traffic flows are quite balanced in both directions. Since this is unlikely, the application of a Bill and Keep arrangement provide protection to the new entrants.

The MCMC (2000d) believes that the choice of the costing methodology and its applications should be based on the principles of promoting the efficient build or buy decision whilst maintaining optimal incentives to invest in facilities or services which are subject to cost-based pricing. With these principles in mind, the MCMC (2000d) believes that the access price should be set equal to incremental cost.

The ECPR, which is basically the Baumol-Willig rule[25] plus any forgone revenue as a result of the loss in market share to the competitors. Asymptotically, the competitors under the ECPR must pay all the revenue lost by the incumbent, which is why the incumbents favour this rule. This rule basically stripped the effervescence from the market and that affects customers. However, it would require the incumbent to reduce its interconnection price if it lowers its retail price. It ensures that a rival producer of the complementary component can provide service only if that producer is at least as efficient as the monopolist in the production of the complementary component, that is, the ECPR ensures that production will not be diverted to an inefficient producer. In

[25] The Baumol-Willig rule states that an intermediate service should sold at its average incremental cost, the contestability equivalent to the marginal cost in economic theory inclusive of opportunity cost.

essence, there are little support within the communications industry for ECPR because it has not proved to be workable elsewhere, and its efficiency depends on the overall regulatory environment, technology and demand.

The EU, Oftel and the FCC have generally accepted the LRIC as best practice, which leads to a fully competitive interconnection charge. The MCMC is no exception, adopting the definition of cost as LRIC, which is in line with countries such as the UK, US, and France that have required their operators with significant market power to offer the local loop at cost-oriented prices under their Reference Interconnection Offers (RIO). This is because the LRIC is based on forward-looking costs of facilities and services provided to an interconnecting client, and this is in practice supplemented by a mark-up and a cost of capital to cover joint and common cost. Since this is the case, it reflects more accurate costs of capital than the FAC which is based on historical costs that come from the incumbent's ledger.

Oftel (1996), for example, has chosen to reform the current United Kingdom access price regime which is based on the regulator annually assessing charges using fully allocated historic costs to one based instead on forward-looking incremental costs and where British Telecom has much more discretion. Safeguards were proposed in the system while incentives appeared in the form of price caps. Although there is a consensus about the superiority of LRIC, many countries are still using the FAC approach simply because it takes a long time to design the LRIC model, to collect the required information

(if available) and to verify the results[26]. By the time the results are obtained, it might not be appropriate any more.

As reported in the Statement of Access Pricing Principles (2000d), it is implied that TMB would support the FAC methodology (the current interconnection regime is close to a FAC model) while its competitors favour the LRIC. This is as expected because the FAC is theoretically the LRIC plus the fully allocated joint and common cost incurred at the entity level, which means that modelling costs using the FAC would entail higher interconnection charges. Since the FAC model fails to shadow market prices, it would lead to higher interconnection charges which might deter new entry. In view of this, TMB's competitors do not prefer the FAC model because it may provide inefficient pricing signals which may result in the new entrants bearing the costs of past inefficient investment decision and any operating inefficiencies within the incumbent.

Laffont and Tirole (1996), however, argued that "a discussion of access rule without reference to the rest of the regulatory environment has limited interest". According to them, the determination of access price needs to account for optimal prices rather than just relying on cost-based methodologies. Laffont and Tirole (1996) approach the problem in hand by introducing a "global price cap" or what is commonly known as the Ramsey-Boiteux pricing, which they argue, is the optimal price structure for all prices. Under this approach, the global price cap would apply the weighted sum of price changes for the final products and price changes for intermediate goods sold to rivals

[26] TMB faced particular difficulties in providing sufficient cost data for the fixed interconnection model (MCMC, 2002).

including access. They argue that the regulator only require information about cost and demand but not information on marginal costs and demand elasticities. Nevertheless, it is still more information demanding than the ECPR and the FAC model.

Despite the practical difficulties in using the LRIC and possibly the Ramsey-Boiteux rule, a possible option might involve choosing an interim approach that could be implemented fairly quickly until the introduction of a more robust model, so that competition in the local loop market can be enhanced in a timely fashion to the benefits of consumers. Such an interim approach could appear as a benchmarking exercise of which MCMC would make reference to interconnection prices from a basket of countries. Even if we use the LRIC or the Ramsey-Boiteux rule, the traditional access pricing problem of information asymmetries between the regulator and the firm still remain.

6.3.3 Other Interconnection Regulatory Issues

6.3.3.1 Facility-based versus Service Competition

There is a general consensus that facility-based competition in the longer term would bring more benefits to consumers because this triggers competition in the wholesale market which in turn accelerates the rate of reduction in retail prices and brings about more new innovative products. Service competition, on the other hand, allows a faster introduction of competition, leads to retail price reduction, and greater consumer choices.

In assessing the lack of competition in the local loop market, some may argue that having different interconnection charges between facility-based and service operators is necessary to promote facilities build-out, such that there is no disincentive to the facility-based operators to invest in infrastructure. Under cost-based access pricing, there should be no difference in interconnection charges between facility-based and service operators since interconnection costs would be the same for the incumbent. In Malaysia, such cost-based charges only apply to selected interconnect call conveyance services, such as local call termination, single and double tandem origination and termination. However, the US experience suggest that interconnection policy should be considered in the broader context of resale policy, that is, regulators should provide a policy framework to support resale, but should not make discretionary distinctions among carriers with respect to ownership of facilities. This is because "preferential interconnection/resale terms for carriers designated as facilities based are not measures with a well-reasoned connection to the goal of encouraging facilities build-out" (FCC, 1997). Thus, the regulator has to optimise between an effective introduction of service-based competition and the seemingly longer-term objective of facilities-based competition

6.3.3.2 Access Deficit and Universal Service Obligations

The MCMC (2000d) believes that it may be appropriate to continue Local Access Funding (LAF) mechanism[27], and there should not be any contribution to the access

[27] This is to "fund any increase in the net cost of universal service provision arising from the introduction of indirect and equal access" (MCMC, 2000d).

deficit[28] while LAF is in operation, which is in line with Analysys' recommendation. Such a neutral funding mechanism does not distort competition or penalise any specific groups. Ideally, since the government imposes universal service obligations in order to achieve social goals, the provision of universal service obligations including access deficit should be partly financed from the fiscal budget. In sum, interconnection policies aimed at rectifying market inefficiencies and distortions resulting from the historical monopoly of the incumbent's local loop should be separated from universal service regulation, which aimed at ensuring all Internet users have access to basic Internet services at affordable prices.

[28] Access deficit "arises when the incumbent is constrained retail tariff regulations from increasing rental and connection charges to cover the incremental cost of access services" (MCMC, 2000d).