MALAYSIAN COMMUNICATIONS AND MULTIMEDIA COMMISSION

ASSESSMENT OF DOMINANCE IN COMMUNICATION MARKETS

PUBLIC INQUIRY

August 2004

PREFACE

In June 2003, the Malaysian Communications and Multimedia Commission (Commission or MCMC) launched an independent study to assess dominance within the communications and multimedia industry in Malaysia. The study was conducted as part of the Commission's role as industry regulator, a key function of which is to promote effective competition in said industry.

The study came to a number of findings in relation to the state of competition in the Malaysian communications and multimedia industry today. Given the significance of the findings, the Commission has decided to initiate this Public Inquiry (PI) to inform as well as invite the public to give their views on the study.

At the conclusion of the PI process, the Commission hopes to attain a better understanding of the state of competition in the industry which will form the basis of further work to be done in this area.

The Commission hereby invites submissions from interested parties on the contents of this PI document. Written submissions in both hard copy and electronic form should be provided to the Commission by 12 noon on 8 November 2004 and addressed to:

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Attention: Study on Assessment of Dominance in Communication Markets

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In the interest of fostering an informed and robust consultative process, the Commission proposes submissions received to be made available to interested parties upon request. Any commercially sensitive information should be provided under a separate cover clearly marked **'CONFIDENTIAL'.** However, for any party who wishes to make a confidential submission, it would be of assistance if a "public" version of the submission were also provided (if possible).

As required under section 65 of the Communications and Multimedia Act 1998 (CMA), the Commission will publish a report within 30 days of the conclusion of this inquiry.

The Commission thanks interested parties for their participation in this consultative process.

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SECTION 1: INTRODUCTION AND SUMMARY OF FINDINGS

1.1 Introduction

Malaysia's Communications and Multimedia Act 1998 (CMA) contains provisions that enable the Commission to monitor and promote competition within the communications and multimedia sector for the benefit of consumers at large. The CMA also facilitates the attainment of efficient industry performance through market forces as it would minimise the need for detailed and costly interventions by the government and the regulator.

Nevertheless, the CMA is designed and implemented to ensure that the industry is open for competition. It is recognised that market efficiency may be hindered by anti competitive behaviour. In this context, the CMA is formulated to prevent those behaviours. These include collusive agreements, mandatory tying arrangements and abuse of dominant position.

The CMA establishes a framework for regulatory intervention that is broader than merely focusing on market efficiency issues. The 10 National Policy Objectives (NPO) of the CMA guides the application of all principles and competition is no exception. Hence, market conduct shall be examined fundamentally from an NPO perspective with power for Commission to act when necessary.

The competition provisions in the CMA are given in Part IV Chapter 2 on "General Competition Practices". These provisions include rules that are applicable to all licensees as well as more stringent provisions that are only applicable to licensees that hold a dominant position. More specifically Section 139 of the CMA stipulates that the Commission may direct a licensee in a dominant position in a communications market to cease conduct which has or may have the effect of substantially lessening competition in any communications market and to implement appropriate remedies.

The test of a dominant position is important because it is a precondition of the Commission's powers to enforce Section 139. It paves the way for the Commission to direct a licensee to cease any conduct in a communications market which has or may have the effect of substantially lessening competition. There is nothing objectionable about a licensee being in a dominant position. In fact, there is a strong possibility in this sector that some licensees will be able to gain a dominant position. This would be in keeping with the economies of scale and scope and the network economies prevalent in the industry. However, as a dominant player, the licensee must ensure that it does not abuse its dominant position[1].

The objective of the Commission's study on the assessment of dominance is essentially to study selected communications markets in order to determine if there are licensees that occupy a dominant position. This will further enhances the Commission's ability to monitor and promote competition in the relevant communications markets and for the sector generally.

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[1] Determination of a 'dominant position' as per S.137 of the CMA 1998

Thus, an assessment of dominant position and subsequently possible determination opens up the possibility for the Commission to act more quickly to allegations of any abuse of their dominant positions. While this study itself is fundamentally an economic exercise, it is significant in that it lays the basis on which an actual determination may be made by the Commission

1.2 The Study

In May 2003, the Commission commissioned NERA Economic Consulting (NERA) to undertake a study to assess dominance in a number of markets within the communications sector in Malaysia. More specifically, the terms of reference identified the following areas for consideration:

- developing a broad strategy on the launching of an assessment of dominance on the Malaysian communications markets;
- identification and choice of particular markets for the conduct of an assessment of dominance;
- market definition, analysis and consideration of dominance thresholds;
- studying and defining the implications of pre-determining dominance in particular markets; and
- studying and defining the implications for possible review of the competition guidelines as currently drafted.

The first stage of the study focussed on data and information gathering about each area of the communications sector. An initial data and information request was sent to all major market players in the Malaysian communications sector (including Telekom Malaysia, Maxis, and Time). A copy of this request is provided in Appendix B. Subsequent to the issue of the information request, in August 2003, the study team met with licensees to discuss the study and the licensees' understanding and perceptions of competition in the communications sector in Malaysia. The list of licensees that were consulted in this process is given at Appendix A.

Following the information and data gathering phase of the study, the project team embarked on a process of identifying the candidate areas for consideration in the study. Recognising that there are a very large number of areas within the communications sector that are potentially relevant for the study, the study team sought to make a selection of markets to be investigated and scrutinised in detail. The methodology used to identify the areas of particular relevance for the study is detailed in Section 4. The study team concluded that the following seven areas were of most relevance for the study: fixed line access, mobile telephony, network facilities, leased lines, interconnection, broadband services, and broadcasting transmission.

In the third phase of the study the study team formally defined markets, for competition policy purposes, within these seven broad areas. The project team then analysed and made an assessment of whether any of the players in these markets hold a dominant position. The economic framework adopted as part of this phase is comprehensively detailed in Section 3. One interesting aspect of the methodology is the application of 'aggregation' for the purposes of market definition. As discussed in further detail in Section 3.3.1, if the structural conditions of competition policy markets are sufficiently similar, then the analysis of one of them carries over to all the others. In these instances, it is possible to assess several relevant markets collectively. For convenience

purposes, collections of such structurally similar competition policy markets have been labelled 'aggregation' markets.

As part of its assessment of market dominance, as discussed in Section 3, the study team analysed the market shares held by, and the market penetration of each of the players. In this regard, the study team recommended, taking into account international best practice that appropriate thresholds relating to dominance should be as follows:

- a 45 percent market share as an indication of a dominant position.
- a presumption of non-dominance for a market share of below 25 percent.
- for market shares of between 25 and 45 percent, no presumption in either direction, although, other things being equal, the higher the share the more likely it would be that a licensee would have substantial market power.

Furthermore, whilst mindful of the dangers of determining a licensee dominant purely on the basis of market share information, the Commission may propose to establish market share thresholds, for inclusion in its Dominance Guidelines.[2] The use of market share thresholds for competition policy purposes is consistent with best practices in other jurisdictions, including the EC, the United Kingdom, the United States, and Australia. . The Commission expects that thresholds would be used to assist in future assessments of market dominance.

The study team utilised these broad indicators of dominance. However, mindful of the dangers of relying solely on market share information, the study team also considered other factors relating to the structural conditions of the market, such as barriers to entry and exit, first mover advantage, economies of scale and scope, and vertical integration. As noted above, these aspects of the methodology are further detailed in Section 3.

NERA submitted a report to the Commission detailing the study findings relating to market definition and the assessment of dominance in November 2003. The findings contained in this report form the substantive part of this PI report.

In relation to conducting the study, the project team emphasised that the reliability and extent of the findings is highly dependent on the quality of data and information received as part of the initial phase of the study. In that respect the study team relied on the goodwill on the part of the industry players and the co-operation from stakeholders. While, in general, each of the players consulted with were found to be co-operative, the study team noted that one of the key benefits of the PI process will be to test the data and information gathered, as well as to provide further information to form the Commission final conclusions.

One other important qualification to the study is that it only represents a first step. In particular, a finding or indeed a determination of dominance does not necessarily prevent a dominant licensee from engaging in anti-competitive conduct. As such, it is not a guarantee of competitive outcomes.

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[2] Before inclusion in the Dominance Guidelines, the Commission will review and consult the industry on thresholds and other areas of the guidelines.

1.3 The Public Inquiry

Given the significance of the findings of the study, the Commission felt that it is appropriate under the circumstances to hold a PI under Section 58(2)(b). Section 58(2)(b) basically provides that the Commission may hold a PI on its own initiative if it is satisfied that the matter is of significant interest to either the public or to current or prospective licensees under the CMA.

The objectives of the PI will be to inform as well as invite the views of the public and licensees of the CMA on the findings of the above mentioned study.

Licensees and the public will be given 90 days to formulate and submit their views on the matter. The CMA stipulates a minimum time period of 45 days, however the extra time is proposed to allow licensees and the public ample time to formulate and submit their responses in light of the significance of the issue.

The Commission shall take those views into consideration before making any firm conclusions on the state of competition in the Malaysian communications and multimedia industry. An analysis of the views submitted and the conclusions made by the Commission shall be embodied in a PI Report which shall be published within 30 days of conclusion of the inquiry i.e. closing date for submissions. The PI Report shall then be entered into the Register of Reports which shall be accessible to the public.

1.4 Main Findings of the Study

In summary, the main findings of the study are as follows:

- Telekom Malaysia is likely to be dominant in the provision of all forms of fixed line access to the PSTN (in most localities and nationally) at the current time, given that it does not appear to face serious and effective competition in most areas of Malaysia, and where alternative fixed line providers exist it appears to retain a strong position with respect to its existing customers, and there are likely to be at least some barriers to entry in the market for fixed lines.
- There is insufficient support for a finding of dominance in the provision of mobile telephony services at this time. However, while past behaviour indicates a reasonably competitive market, the effects of the recent merger wave may not be fully reflected in the market at this time. Consequently, further analysis will need to be undertaken, observing the extent to which the combination of Celcom and TM Touch as well as Maxis and TimeCel has affected competition in the market.
- Dominance in the case of individual network elements should be assessed on a case by case basis, as specific issues arise. If the relevant market is found to be an individual network element or route that is supplied by a single provider, that licensee is likely to be dominant in that market. However, if the relevant market is found to be a route over which several providers compete, dominance is likely to depend on the structural characteristics of that market, including whether capacity constraints are present.
- In the case of interconnection, on the basis of the market definition derived, each provider with a network is a monopoly supplier in the provision of call termination on, and origination services from their network. Given that entry is highly unlikely, the study findings suggest that each licensee is dominant in the market for termination on and origination from its own network.

- Telekom Malaysia is likely to be dominant in the supply of analogue leased lines in Malaysia. With respect to digital leased lines, Telekom Malaysia is likely to be dominant in the supply of digital leased lines on the routes between peninsular and East Malaysia, and may be dominant on some routes within peninsular Malaysia.
- TMNet is likely to be dominant in the provision of retail data application and Internet services over broadband connections in Malaysia at the current time, given that it is the major provider by a very large margin and there are likely to be significant barriers to entry, not least brought about by the vertical integration of TMNet with Telekom Malaysia which is likely to affect access to bitstream and local network elements.
- Telekom Malaysia is likely to be dominant in the provision of transmission services for analogue television broadcasting (in most localities and nationally) at the current time, given that it does not appear to face significant competition in this market and there are likely to be at least some barriers to entry.

1.5 Structure of this PI Report

This consultation document is structured in the following manner:

Section 2: Legislative Context

Section 3: Economic Framework for Assessing Dominance

Section 4: Identified Markets

Section 5: Fixed Line Telephony

Section 6: Mobile Telephony

Section 7: Upstream Network Elements

Section 8: Interconnection

Section 9: Leased Lines

Section 10: Broadband Services

Section 11: Broadcasting Transmission

Section 12: Determination of a Dominant Position

Section 13: Dominance Thresholds

Section 14: The Way Forward

Appendix A: Interviews with Interested Parties

Appendix B: Information Request

Question 1 (A):

The Commission seeks views on the following:

i. **The need to promote competition as well as allow for National champions that would be able to compete in the global market.**

ii. **How can the dual objectives of promoting competition as well as the development of National champions be reconciled?**

iii. **What benefits does the policy of fostering National champions have on the domestic market and other market players as well as in the areas of consumer protection and quality of service?**

iv. **Should the Government take a more active role in fostering National champions or should market forces determine market leaders that will be globally competitive?**

SECTION 2: LEGISLATIVE CONTEXT

2.1 Overview

The CMA is written in terms of an evolving and converging communications and multimedia market. The importance and uniqueness of the Malaysian "convergence" model is a constant theme in the CMA.

The objects of the CMA are given in Section 3(1). These are:

> *"(a) to promote national policy objectives for the communications and multimedia industry.*
>
> *(b) to establish a licensing and regulatory framework in support of national policy objectives for the communications and multimedia industry;*
>
> *(c) to establish the powers and functions for the Malaysian Communications and Multimedia Commission; and*
>
> *(d) to establish powers and procedures for the administration of this [Communications and Multimedia] Act."*

The national policy objectives are given in Section 3(2) of the CMA. They are:

> *"(a) to establish Malaysia as a major global centre and hub for communications and multimedia information and content services;*
>
> *(b) to promote a civil society where information based services will provide the basis of continuing enhancements to quality of work and life;*
>
> *(c) to grow and nurture local information resources and cultural representation that facilitates the national identity and global diversity;*
>
> *(d) to regulate for the long-term benefit of the end user;*
>
> *(e) to promote a high level of consumer confidence in service delivery from the industry;*
>
> *(f) to ensure an equitable provision of affordable services over ubiquitous national infrastructure;*
>
> *(g) to create a robust applications environment for end users;*
>
> *(h) to facilitate the efficient allocation of resources such as skilled labour, capital, knowledge and national assets;*
>
> *(i) to promote the development of capabilities and skills within Malaysia's convergence industries; and*
>
> *(j) to ensure information security and network reliability and integrity."*

2.2 Competition Provisions

As noted in the introduction, the competition provisions are given in Part VI, Chapter 2 on "General Competition Practices". They include rules that are applicable to all licensees, as well as more stringent provisions that are only capable of applying to licensees that hold a dominant position.

2.2.1. Provisions applicable to all licensees: conduct with the purpose of substantially lessening competition

Purpose-oriented anti-competitive conduct

Section 133 is one of the key pieces of legislation:

> *"A licensee shall not engage in any conduct which has the purpose of substantially lessening competition in a communications market" (emphasis added)*

This constraint applies to all licensees. The Commission's guidelines on SLC address the practical difficulties in showing the purpose of a given action. Here the Commission states that they will attempt to infer purpose from inter alia:

- *"the nature of the conduct, including its scope to affect rivals in the market;*
- *the circumstances of the conduct, including the process of decision making which led up to the conduct; and*
- *the likely effect of the conduct, where likely refers to reasonable probability rather than probability"*

It should be noted that conduct which only has the effect, but not the purpose of substantially lessening competition would not be caught by this provision.

Collusive agreements

Section 135, again applicable to all licensees, is more explicit in its provisions and rules out any understandings/agreements/arrangements which provide for:

> *"(a) rate fixing;*
>
> *(b) market sharing;*
>
> *(c) boycott of a supplier of apparatus; or*
>
> *(d) boycott of another competitor."*

These aspects of collusive behaviour are ruled out per se. With reference to the provisions on boycott, it is also possible to, e.g. deny access if the access seeker is seeking access on unreasonable terms and conditions.

Tying/linking arrangements

In addition, Section 136 rules out tying/linking of products and/or services by any licensee. The Commission regards this as a per se prohibition.

Pricing provisions

Although not under the chapter on competition provisions, Section 198 is nevertheless relevant since it discusses the pricing of providers. Prices should adhere to the following four points:

> *"(a) rates must be fair and, for similarly situated persons, not unreasonably discriminatory;*
>
> *(b) rates should be oriented towards costs and, in general, cross-subsidies should be eliminated;*
>
> *(c) rates should not contain discounts that unreasonably prejudice the competitive opportunities of other providers;*
>
> *(d) rates should be structured and levels set to attract investment into the communications and multimedia industry; and*
>
> *(e) rates should take account of the regulations and recommendations of the international organisations of which Malaysia is a member."*

The Commission notes that this applies to prices of all providers, without the pre-requisite for a dominant position.

2.2.2 Dominant position: conduct with the effect of substantially lessening competition

Finding of a dominant position

There is no explicit basis in the CMA for the presumption of a dominant position. However, Section 137 allows the Commission to determine that a licensee is in a dominant position in a communications market. Section 137 refers to the test of a "dominant position" on which the Commission may publish guidelines, as discussed further below.

Guidelines on dominant position

Section 138 allows the Commission to publish guidelines to clarify how it will apply the test of dominant position, which it has indeed done. The guidelines may specify the matters that the Commission may take into account when assessing dominance, including the relevant economic market, global technology and commercial trends affecting market power, and the market share of the licensee.

Directions to cease conduct

Section 139 allows the Commission to direct licensees in a dominant position to stop conduct, which has or may have the effect of an SLC. Before doing this, the Commission must be sure that such a direction is both consistent with the objectives of the CMA and also consistent with any relevant instrument under the CMA. The due process for directions is described in Section 51.

When the Commission decides to take action in relation to the conduct of a licensee, it should have regard to the objects of the CMA as made clear in Section 139(2)(a).

Authorisations

Section 140 notes that, on application, conduct can be waived through if the Commission believes it to be in the national interest. That is, competition objectives can be traded off against the broader goal of the national interest. The Commission's guidelines on SLC state in Section 5.6 that they will use the policy objectives as a measure of the national interest.

SECTION 3: ECONOMIC FRAMEWORK FOR ASSESSING DOMINANCE

This section describes the analytical framework used in the study to define markets. The section concludes with an overview of the other aspects of assessing dominance within a market.

At the outset, the Commission notes that the assessment of relevant markets of Malaysia's communications and multimedia sectors is based on best practice in international competition policy, bearing in mind the particular characteristics of the Malaysian communications sector. Moreover, the analytical framework of market definition is founded on principles that are applied by the antitrust authorities of, *inter alia*, the United States, Europe and the United Kingdom.

3.1 Competition Policy Markets and Substitutability

An intuitive way of thinking about a competition policy market is to view a relevant market as something that is "worth monopolising", i.e. a set of products that confers market power.

Market power is generally viewed as the ability to act independently from suppliers, customers and/or end-users.[3,4] As a consequence, undertakings with market power are able to "*consistently charge higher prices, or supply goods and services of lower quality, than they would if they faced effective competition*"[5]. Firms with market power may also face less pressure to supply their services efficiently, and may enter into vertical restraints or integration in order to better exploit their market power. They may also aim to protect a position of market power through predation against entrants, foreclosure of essential facilities, or other actions aimed at raising their rivals' costs.

Market power is constrained most effectively if alternatives, to which consumers would be able and willing to switch to, already exist or could readily be made available by potential competitors. The relevant competition policy market for a given product/service can therefore be thought of as the set of close alternatives that provide competitive constraints on the behaviour of the supplier of the product/service in question. The exercise of defining such markets leads to the identification of effective competitive constraints.

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[3] For example *"[dominance] relates to a position of economic strength enjoyed by an undertaking which enables it to prevent effective competition being maintained on the relevant market by affording it the power to behave to an appreciable extent independently of its competitors and ultimately of its consumers."* From Case 27/76 [1978] ECR 207, [1978] 1 CMLR 429, *United Brands v Commission.*

[4] Customers and end-users may be different entities. For example, in the case of wholesale communications services (such as call termination or origination), in general, suppliers' customers will be other service providers (who will then offer services to final consumers or end-users). Typically however, in the case of retail services, suppliers' customers and end-users will be the same entity.

Throughout the report, the term "consumer" is used where the discussion could equally apply to "customers" or "end-users". This convention has been adopted for ease of reading. The term could equally be read as "customers and/or end-users". In instances that specifically concern "end-users" or "customers" these terms have been adopted.

[5] Office of Fair Trading (1999), Guideline on Market Definition, Section 2.1.

The key concept in market definition is substitutability. If one product/service is a close alternative to another product/service, it is, in economic terms, a substitute. Formally, a (demand side) substitute for product/service A is defined as a product/service, the demand for which increases in response to a rise in the price of product/service A.[6]

The central role of substitutability for market definition is highlighted in the Commission's guidelines. In the guidelines relating to the assessment of dominant position,[7] for example, the Commission emphasises that *"[d]etermination of market boundaries involves the use of the economic concept of "substitutability" as the basis for market definition within the definitional framework of the Act".*[8]

3.1.1 Demand side and supply side substitution

The key element in market definition is the economic concept of substitutability. The most direct mechanism of substitution occurs when customers switch to readily available alternative products, which is known as demand side substitution. In addition, there is the possibility of substitution on the supply side.

It is not necessary that two products belonging to the same market can be linked by both demand and supply substitutability. The definition of a competition policy market is widened as soon as at least one mechanism of substitutability represents a sufficient constraint.

3.1.1.1 Demand side substitution

Demand substitutes are such products/services that consumers would be willing to switch to if the price of the product/service under investigation rose above the competitive level.

It is not necessary that *all* the customers are able and willing to change to the alternative product/service in order to include it into the relevant market. As long as the number of customers who are ready to switch is sufficiently large to render a price rise unprofitable, the customers that are not able or willing to switch (the 'infra-marginal' customers) are 'protected' by the price-sensitive ('marginal') customers.

3.1.1.2 Supply side substitution

Substitution may also take place via alternative suppliers. If there are goods that are not demand substitutes but use similar production technologies, the producers of these goods may be able and willing to swiftly switch to supplying the product under investigation, and may find it profitable to do so in the case where its price rose above the competitive level. The goods that these firms normally produce should then also be included in the relevant market.

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[6] It is important to note that goods may be substitutes in the sense described here, but that in a market definition analysis this substitutability must be sufficiently strong to make price rises of one of the products unprofitable. If it is the case that the loss of business following a price rise is small, then the two goods are not substitutes to the extent required for their inclusion in the same market, even though they are still substitutes in the strict sense described here.

[7] MCMC Guideline On Dominant Position In A Communications Market, RG/DP/1/00(1), available at:

http://www.mcmc.gov.my/mcmc/facts_figures/codes_gl/guidelines/dp/dp.doc

[8] ibid., Paragraph 6.2(d).

A useful example comes from the paper industry. Assume that paper types of different thickness are not demand substitutes. Yet, if the price of, say, the 0.5mm paper increased, it is likely that producers of thicker and thinner paper would recalibrate their machines to produce the 0.5mm paper type.

In some cases the technical ability to switch production will not be sufficient to conclude that another product is a supply side substitute. It is also necessary that consumers consider the alternative provider's goods as a good substitute. For example, often this will involve advertising the alternative supplier's goods to consumers such that they are aware of the availability of the products and are persuaded that they are of acceptable quality. Advertising of this type may both be expensive (and these are sunk costs), and may take time to have an effect. Thus many products that are technical substitutes are not supply side substitutes in the meaning of antitrust market definition: supply side substitution in the antitrust sense also requires demand side substitution.

Figure 3.1
Demand side substitution

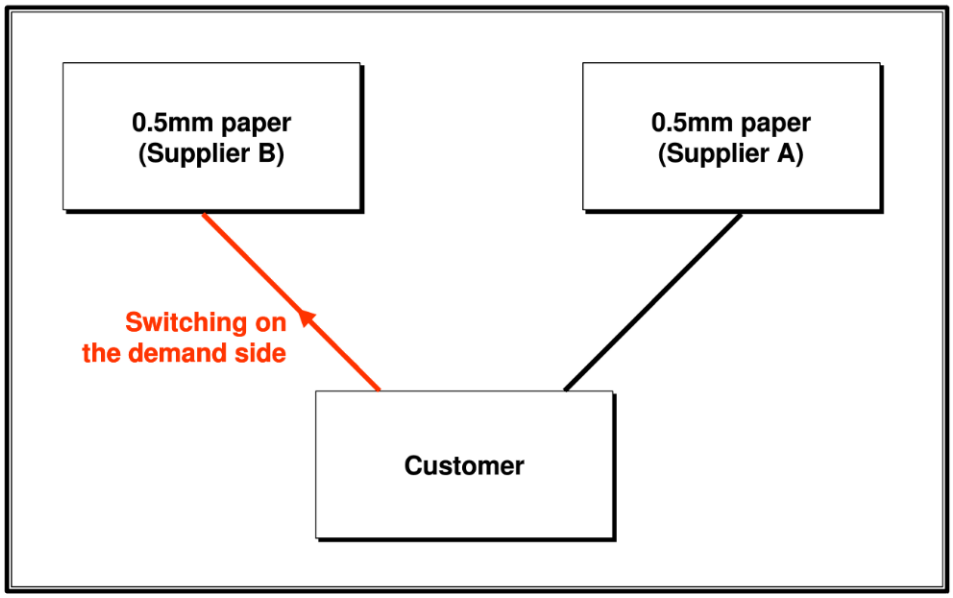
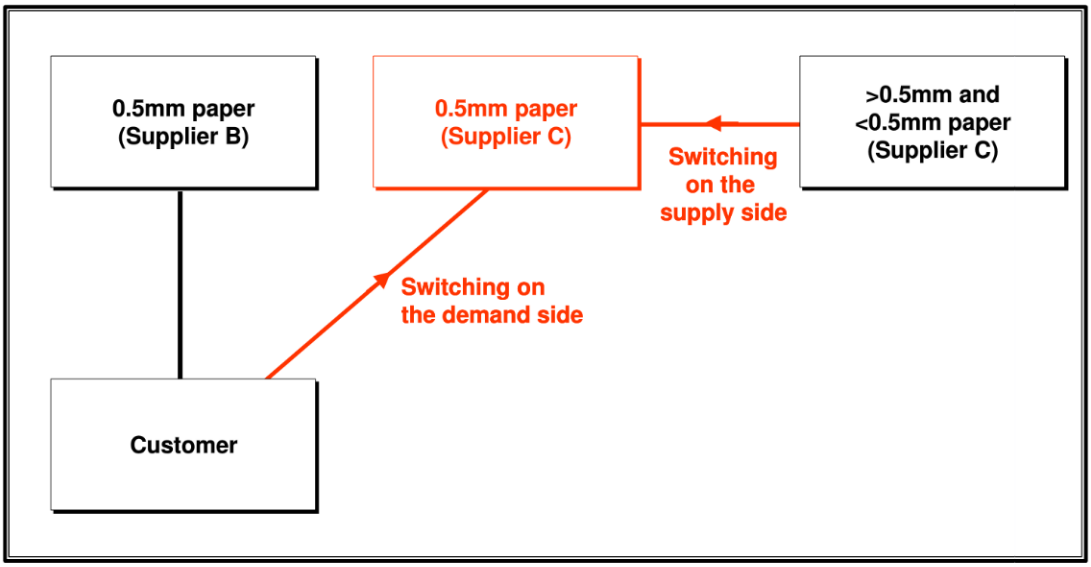


Figure 3.2
Supply side substitution



A second reason for caution when considering supply side substitutes is that it requires that firms are both able to *and will* switch their production in the event of a price increase. The question of whether firms will actually switch may be influenced by a range of strategic considerations. Indeed these strategic considerations and the nature of competitive dynamics are often the focus of antitrust investigations. To illustrate, suppose there are ten bus operators in a town with ten routes. As a matter of operational capability each could supply any or all routes in the town, but the investigative authority observes that each restricts its own operations to just one of the routes. On mechanical application of supply side substitution one might define the market as the whole town, and conclude that each provider has only 10 percent of the market. One might then conclude that the market is unconcentrated and no competition concerns arise. Alternatively, one might conclude that each individual route is a separate market because while it is technically possible for other operators to supply it, none of them choose to do so. The resolution of these questions will be found through a process of investigating the manner in which these bus operators compete. An excessive and mechanical focus on the precise market definition up front may lead to incorrect conclusions. In particular, market definition ultimately needs to be undertaken in the context of the specific questions and circumstances of an actual competition issue.

3.1.2 The role of technology

Technology is an important element of dynamic competition between communications providers. New technologies may permit new products, whether in combination with old technologies or otherwise. Alternatively, new products beyond telecommunications may spark important changes in customer preferences. The growth of the Internet, for example, is a key reason for the expanding use of ISDN lines and broadband connections. This is an important aspect of 'convergence'. It is also the case that new technologies can alter the types of providers that can compete in a particular market. For example, fibre optic cable can be used to supply multi-channel television, telephony and Internet connections, thus theoretically enabling suppliers who use it to compete in the markets for satellite television, fixed line telephony and Internet connections simultaneously.

In a “purist” sense, new technologies will often be deemed to be in a separate market from existing technologies. In some cases this can be so even before the new technologies are introduced (for example in Europe regulation was applied to digital conditional access platforms for multi-channel television even before digital services had been launched in most countries).

Furthermore, it may be the case that a new product is indeed separable from existing products on the demand and supply side, it is also important to stress the competitive dynamics of the market. In particular, if new technology allows a new product to be launched, and only one firm is prepared to take the risks involved in introducing it, it may be viewed as “dominant” under a mechanical application of market definition principles, but this “dominance” (or the possibility and prospect of “dominance”) may have been necessary to induce it to enter the market and establish the product in the first place. In such cases, even if the Commission decides that the firm is dominant, acting on that conclusion would be very carefully considered, and would typically focus on subsequent exclusionary behaviour rather than exploitation of a position of market power.

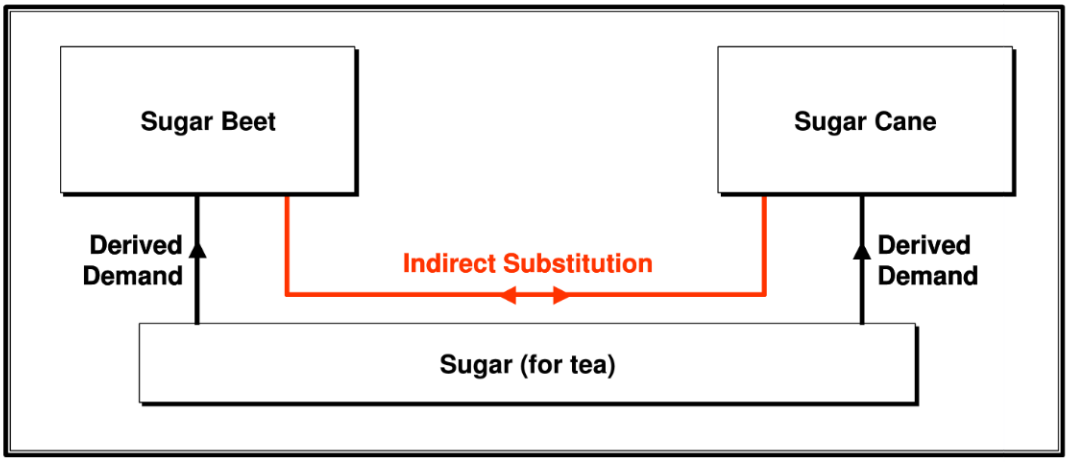
Technological advance can also result in markets for obsolete products or technologies diminishing in size, and perhaps ultimately disappearing over time. For example, traditional analogue transmission of terrestrial television may ultimately be replaced by cable, satellite or digital terrestrial broadcasting. While such developments can have a major impact on pre-existing technologies and products, it is important to note that this does not necessarily mean that the new technologies should be included in the same anti-trust market. While the new technologies may result in a reduction in overall demand for existing products and while this can certainly affect prices for the existing products, prices for the existing products may still be primarily driven by competition between providers of the existing products. A hypothetical monopoly provider of these products may therefore still be able to raise prices above the competitive level. This is especially so if a residue of customers cling to the old technology.

3.1.3 Indirect substitution in input markets

The discussion in Section 3.1.1 focussed on *direct* substitution, i.e. substitution that takes place at the same level of the supply chain. For example, if the price of apples were to rise, would consumers switch to pears, and/or would pear farmers be able to enter apple production in a timely and cost-effective manner.

Such an analysis works well for retail markets, i.e. for products/services that are not an input into another product/service, but instead are sold to final consumers or end-users. In the case of wholesale or input markets, the additional factor of *indirect substitution* needs to be considered. In other words, substitution may not only take place among the immediate customers, but also at the next level, i.e. among the customers of the immediate customers (i.e., end-users). This follows from the fact that the demand for the input is a derived demand.

Figure 3.3
Indirect substitution



For example, consider sugar beet and sugar cane. A hypothetical monopolist of sugar beet is likely to be in a very powerful position vis-à-vis its immediate customers, i.e. the sugar factories equipped with technology that requires sugar beet as its input (see Section 3.2 below on the hypothetical monopolist test). However, it may be substantially restricted in its price setting by the sugar factories' customers. In particular, if the price of sugar beet were to rise, and assuming that there is at least some pass-through of the price rise to final sugar customers, then sugar customers may well switch to sugar factories that use sugar cane as their input. Accordingly, there is a mechanism of substitutability via the downstream market, which may bring two upstream products into competition with one another even though they are not directly substitutable.

Indirect substitution will be most relevant where the downstream products in question are very close substitutes,[9] and where the markets for supplying them are highly competitive. If there are economic rents, then raising the price of an input need not result in a rapid reduction of demand for that input, but may instead simply reduce the downstream economic rents.[10]

3.1.4 Switching costs

Another relevant factor to consider is switching costs, since they inhibit substitution. Such costs can take several forms, and may arise from technology, regulation, psychological factors, transaction costs etc. In the presence of switching costs, consumers would only be willing to switch to an alternative product when the degree of market power exploitation is sufficient to outweigh the cost of switching.

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[9] If the substitutes are not very close, the effect of raising the costs of inputs into the production of one good will be reduced, since the resulting rise in price of the downstream product will have less effect on volume demanded.

[10] For example, suppose there is a coal mine that has very low costs of extraction. The coal mine earns economic rents because world coal prices are well in excess of its production costs. Suppose the coal mine does, however, require a specialised machine for extracting its coal. If there was only one supplier of that machine, it would be able to raise its prices to the coal mine because the coal mine would continue to demand it so long as its profitability was not wholly eliminated.

Switching costs thus have the characteristics of a lock-in device. Once a customer has chosen a product, he will tend to stick to it even when the price (or the general terms and conditions) departs from the competitive level.

A similar issue arises when the acquisition of one product/service is required in order to consume another product. For example, in order to make and receive mobile telephony calls, an end-user must first, *inter alia*, have a telephone connection. This connection comes with a designated telephone number. As soon as an end-user has been informed of that number, which he would typically then pass on to his contacts, he would face a cost of switching arising from having to change the number, if he wanted to switch away in response to an increase in the price for making calls.

However, if providers are not able to price discriminate between captive and non-captive customers and non-captive customers form a significant part of the market, then competition for non-captive customers may protect captive customers.

Even if price discrimination between captive and non-captive customers is possible, potential customers, who are at this stage non-captive, may observe the prices currently charged to captive customers, and therefore be reluctant to buy that product in the expectation that they will eventually be similarly exploited. Alternatively, customers may refuse to buy a product with switching costs unless they have contractual protection against future exploitation.[11]

In analysing the impact of consumer switching costs on competition, it is important to analyse the impact of "fore-market" competition and whether it provides an adequate constraint on "after-market" behaviour.

Switching costs may impact on the analysis of behaviour in a number of ways, and their importance may vary according to what is being analysed. For example, one might be concerned with straightforward exploitation of captive customers (simply raising prices to those with costs of switching). In this case, a key issue will be the existence and effect of fore-market competition on such behaviour, for example whether these customers were "refunded" in advance with "prebates".

Alternatively, one may be interested in whether there are barriers to entry into the market. Here switching costs may make rapid penetration by entrants more difficult. In the presence of sunk costs of entry, or other impediments, switching costs may under some circumstances therefore make entry far more difficult.[12] Switching costs may also affect the nature of competition between competitors in the market. For example, if the market for new customers is sufficiently small, switching costs may lead all competitors to set prices to exploit their existing (captive) customers, and "give up" on the new (non-captive) customers.[13]

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[11] For example, mainframe computers may be purchased together with long term servicing agreements with the supplier.

[12] Note that this concern is independent of the fore-market/after-market issue. It is quite possible that switching costs do not allow the particular exploitation of captive customers (e.g. because no price discrimination is possible), but the fact that a significant proportion cannot switch may still make entry more difficult.

[13] An extensive discussion of switching costs is contained in the discussion paper "Switching costs" of April 2003, prepared by NERA for the UK Office of Fair Trading and the Department of Trade and Industry.

3.1.5 Product versus part of a product

The framework of substitutability must be applied with reference to customer preferences. In particular, the analysis of substitutability should typically avoid an excessive degree of disaggregation. Consumers should still view the product/service under consideration as a *product/service*, rather than as *part* of a product/service.

For example, at the retail level, consumers would (typically) not make separate purchases of a steering wheel, a wind screen, an engine, brakes etc. and then combine them into a car. Instead, consumers buy "cars", i.e. they view a car as a single product, and they view a steering wheel as part of a car.

After lengthy discussion of substitutability and its central role in market definition it may appear odd to define a market that contains steering wheels and brakes, which are quite clearly not substitutable.

However, because customers view them as complementary parts of a single "bundled" product, rather than products in themselves, steering wheels, engines and brakes, as well as all the other parts that make up a car, should be viewed as belonging to the same market. By contrast, if the customer is seeking a *replacement* steering wheel, replacement brakes would not be a substitute.

In communications and multimedia markets this distinction can be important. For example, call termination is a service in itself at the wholesale level where interconnection services are traded at a disaggregated level between network operators. However, at the retail level, call termination is not a separate service. Rather, an end-user purchases a call, and call termination is an input into a call, which is being supplied, just as an engine is an input into a car.

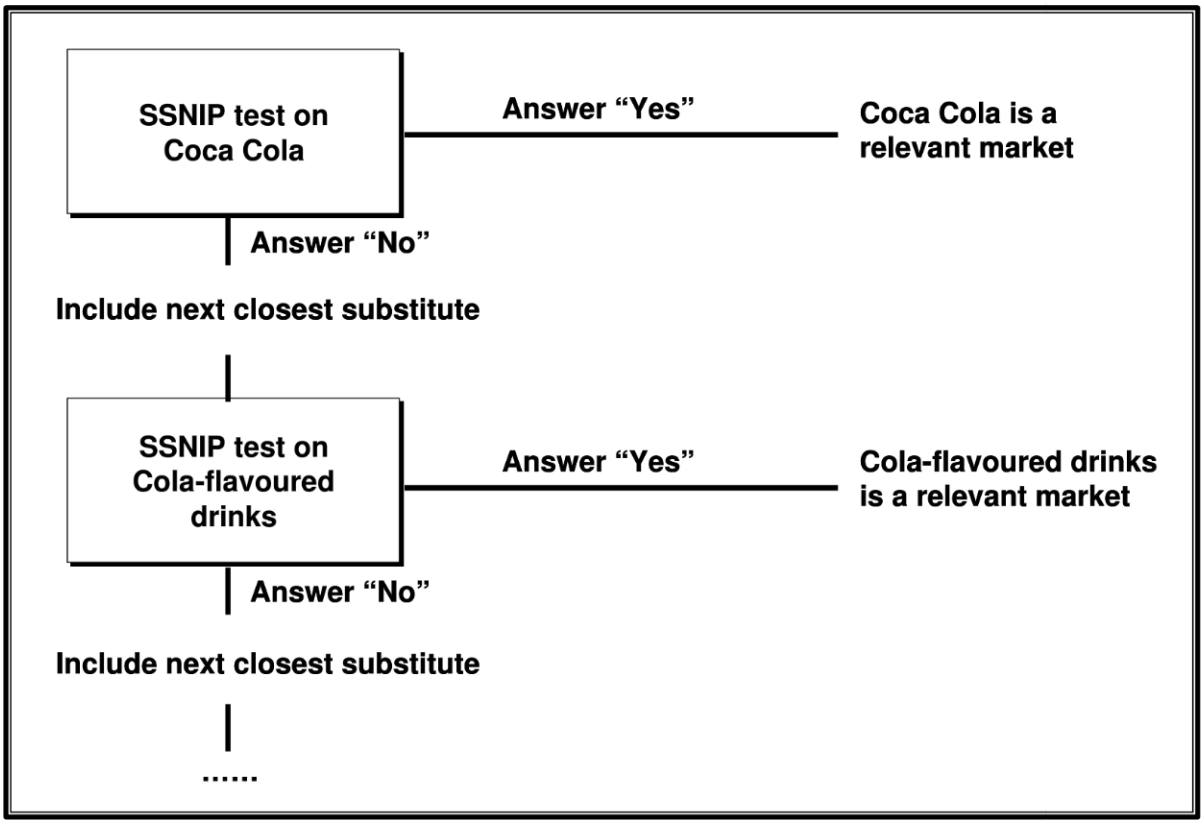
3.2 Methodology: Hypothetical Monopolist (SSNIP) Test

A well-established methodology to delimit relevant markets is the Hypothetical Monopolist Test or SSNIP Test. This test is an iterative procedure which starts by looking at the narrowest possible putative market and asks whether a hypothetical monopolist over that putative market could increase its profits by implementing a **S**mall but **S**ignificant **N**on-transitory **I**ncrease in **P**rice (SSNIP) above the competitive level. The threshold often used is 5 percent to 10 percent. If the hypothetical monopolist were to be prevented from doing so by a readily available substitute, this substitute is included into the relevant market. The test is then applied again to the wider putative market including the substitutes thus identified. The test is repeated until a set of products is reached where such a price increase would indeed be profitable. The smallest set of substitutes thus established is then defined as the relevant market.

For example, consider the Coca Cola product. Does a manufacturer of Coca Cola compete in the market for Coca Cola, the market for cola-flavoured drinks, the market for carbonated ('fizzy') drinks, the market for soft drinks, the market for non-alcoholic beverages, or some other collection of products? The SSNIP test investigates whether a monopolist over Coca Cola products could profitably charge a small but significant non-transitory price premium above the competitive level. If the answer to that question is yes, the relevant competition policy market is the market for Coca Cola products. If, however, the answer is no, a further iteration of the test is performed, but where the closest substitute is included. This may lead to the inclusion of Pepsi Cola, and thus the consideration of the putative market for premium cola-flavoured drinks. As in the previous iteration, the SSNIP test asks whether a hypothetical monopolist over all premium cola-flavoured drinks could profitably charge a small but significant non-

transitory price premium above the competitive price level. If the answer to this question is yes, the relevant competition policy market for Coca Cola is the market for premium cola-flavoured drinks. If, on the other hand, the answer turns out to be no, further products (e.g. Fanta, and eventually orange juice) are included, and the SSNIP question is asked again. This iterative process continues until the SSNIP question is answered in the affirmative.

Figure 3.4
SSNIP test



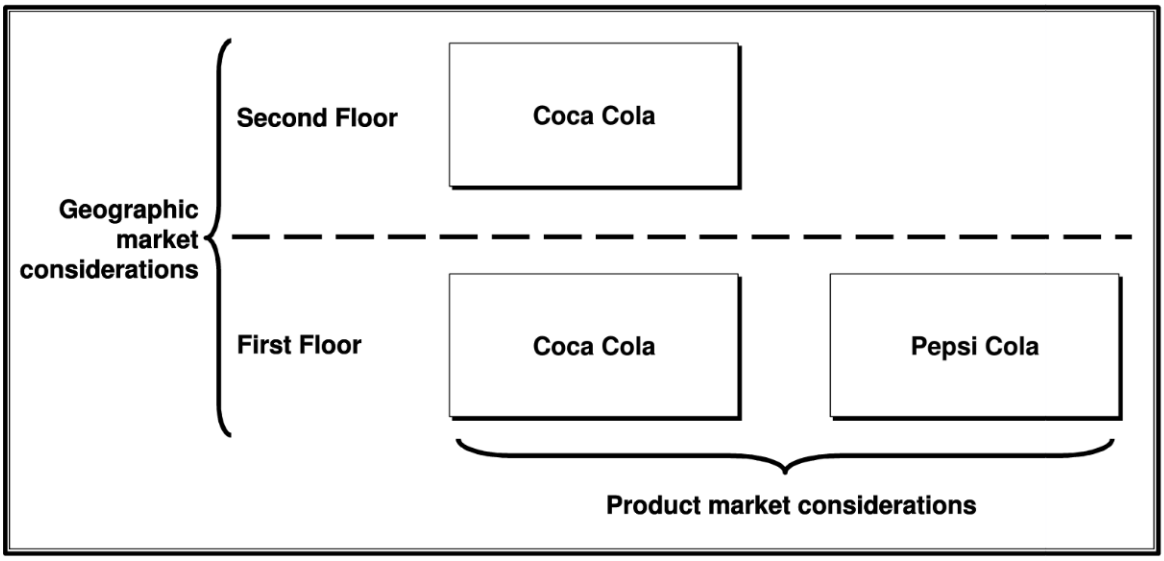
3.2.1 Product and geographic dimension

The relevant market has a product dimension and a geographic dimension. The relevant product market entails all those products that are demand or customer-acceptable supply substitutes of the product under investigation. The relevant geographic market describes the area over which substitution takes place.

The hypothetical monopolist test applies to all applicable dimensions of a relevant market, and the determination of the product and geographic dimensions should be seen as an integrated process.

In particular, if a monopolist over Coca Cola on the first floor of the KLCC shopping mall attempted to charge a price premium, consumers may switch either to Pepsi Cola on the first floor or Coca Cola on the second floor. The substitution to Pepsi Cola on the first floor would be a product dimension consideration, while the substitution to Coca Cola on the second floor would be a geographic dimension issue.

Figure 3.5
Product and geographic market definition



The European Commission guidelines on the definition of a relevant product market provide the following guidance in paragraph 3:

> *"A relevant product market comprises all those products and/or services which are regarded as interchangeable or substitutable by the consumer, by reason of the products' characteristics, their prices and their intended use."*[14]

With respect to the geographic dimension, abiding by the Commission's Guidelines on Dominant Position, the approach taken is consistent with that in competition law practice in the UK and EU. It is worth noting paragraph 56 of the European Commission's guidelines on market analysis and assessment of market power:

> *"The relevant geographic market comprises an area in which the undertakings concerned are involved in the supply and demand of the relevant products or services, in which area the conditions of competition are similar or sufficiently homogeneous and which can be distinguished from neighbouring areas in which the prevailing conditions of competition are appreciably different".*[15]

In some situations there may be the additional consideration of a time dimension. This is especially relevant in sectors with cyclical patterns of demand. In the communications sectors there may be a relevant distinction between on-peak and off-peak services.

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[14] Commission notice on the definition of relevant market for the purposes of Community competition law [Official Journal C 372 of 09.12.1997].

[15] Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services, [Official Journal of the European Communities, 2002/C 165/03, 11.07. 02].

3.2.2 Actual implementation of the SSNIP test

It should be noted that the SSNIP test is a conceptual reference framework for designing the analysis required to define a competition policy market. It is, in general, not a directly operational technique, since the data requirements to apply the test precisely are onerous and rarely available. Yet, it sets out useful general principles that can guide the exercise of market definition.

3.2.3 The hypothetical nature of the SSNIP test

It is important to recognise the hypothetical nature of market definition and the SSNIP test.

Competition policy can of course not afford to ignore the actual reality of the issue under consideration. However, in order to assess whether market power and market power abuse exist it is first necessary to establish a benchmark against which the actual situation can be assessed. Defining the relevant market can provide such a benchmark.

The comparison of the actual competitive conditions with the benchmark represented by the relevant competition policy market is performed at the stage of the assessment of dominance.

3.2.4 The "competitive" price level

The SSNIP test asks whether a hypothetical monopolist could profitably implement a small but significant non-transitory increase in price above the competitive level.

In unconcentrated sectors with a very large number of providers the prevailing price level is often used as a proxy for the competitive price level.

However, in many of the markets that the Commission is analysing in this assessment, the economic good in question is provided primarily by either one firm (often this is Telekom Malaysia) or a few firms (such as in mobile telephony). Using a SSNIP test in the presence of a high degree of existing market concentration is more complex because the current price cannot in general be assumed to be a proxy for a "competitive" price. (This point would be most potent if the possible abuse that has motivated the competition inquiry in question is excessive pricing.) In the following sections some of the consequential issues of this point, both methodological and empirical, are discussed.

While at the stage of market definition the prevailing price level should be considered with some caution, at the point of the dominance assessment the current price level becomes a more valid consideration. In particular, the presence of a price premium above the likely competitive level may in some circumstances be taken as an indication of a dominant position, while a price cap due to regulation may limit a firm's ability to exploit market power.

3.2.5 Cellophane fallacy

A well-known issue with the SSNIP test, often referred to as the 'cellophane fallacy' after the case of *United States v. E. I. du Pont De Nemours & Co. (1956)*,[16] relates to

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[16] U.S. Supreme Court UNITED STATES v. du PONT & CO., 351 U.S. 377 (1956) 351 U.S. 377UNITED STATES v. E. I. du PONT de NEMOURS & CO., Appeal From The United States District Court for the District Of Delaware. No. 5. Argued October 11, 1955. Decided June 11, 1956.

situations where the putative market is *already* controlled by a monopolist, or is characterised by cartel behaviour. In *United States v. E. I. du Pont De Nemours & Co. (1956)*, Du Pont was the monopolist over cellophane wrapping and argued that its pricing was constrained by other products since an increase in the price of cellophane would induce a sufficient number of customers to switch to other flexible packaging material to make the price rise unprofitable.

Applying the SSNIP test in such circumstances to the *prevailing* price level, rather than the hypothetical price at the *competitive* level, would lead to the rejection of the monopoly market as a relevant competition policy market, and the relevant competition policy market would be defined too widely. This is because in the absence of price regulation, any firm will raise its prices to the level where a further increase in price will not be profitable. This is obvious, since if such a further price rise were indeed profitable, the firm would have implemented it already. Similarly, a cartel would be expected to charge prices that maximise total joint profits for the cartel members so that a further price rise would not be profitable for the cartel as a whole. This point also has some validity in (non-collusive) oligopolies, where the prevailing price would be likely to lie somewhere between the monopoly price and the competitive price.

Accordingly, the prevailing price level should be treated with care, especially if there is a suspicion that market power exists in the sector under investigation.

3.2.6 Price regulation

In sectors of the economy that are subject to price regulation, the application of the SSNIP test might at first seem inappropriate, since prices are regulated and as such cannot be increased. However, again it should be noted that the SSNIP test considers a hypothetical situation. Accordingly, the presence of regulated prices is not inconsistent with the application of the conceptual framework of the SSNIP test.

Furthermore, while the question on a hypothetical price rise can be asked, the SSNIP question should in addition be viewed as an examination of the hypothetical monopolist's ability to exercise market power, be it through a price rise or any other means, including quality degradation, bundling etc.

Where price regulation has the intended effect of prices being cost reflective, this may be a reasonable proxy for the "competitive price" against which the hypothetical monopolist test can be calibrated. However, this will not always be the case. For example, incremental costs may be higher or lower than the regulated price, firms may not be cost efficient, or the price cap may have been set to reflect other considerations (such as a universal service obligation).

3.2.7 Different concepts of cost

The Commission has discussed some situations, e.g. a monopoly/oligopoly/cartel or price regulation where the prevailing price is likely to differ from the competitive level.

In order to avoid such pitfalls the competitive price is sometimes derived from cost information.

However, in industries with high fixed costs and low variable (or marginal) costs it is generally difficult to determine the appropriate cost to be used. In particular, large mark-ups above short term marginal cost are required in order for a firm with high fixed costs to make an adequate return in the medium to long run. But how does one include this in the analysis? On the one hand, it is patently absurd to use marginal costs as the "competitive" benchmark if there are large fixed costs, because clearly if those genuinely

were the prevailing prices no firms would have entered the market in the first place. Equally, firms may fail to cover their sunk costs, but are they then absolved from being found "dominant" in the future in all instances? To date no clear cut answers have emerged to these difficult questions which many antitrust authorities have faced.

One proxy measure that is sometime used in telecommunications is long run incremental costs ("LRIC"). Under this approach, the forward looking costs of supplying an additional volume of output (or maintaining supply of existing output) are assessed, taking into account the fixed and common costs involved in supply.

The treatment of fixed costs raises many difficult issues. Suppose that one adopts, as a proxy, the price necessary to make a normal return on assets. What is the value of the assets and what is a normal return? The Commission recognises that these are difficult and controversial issues, and notes that there are no simple answers.

Alternatively, marginal costs may be higher than average costs (for example because scarce resources are required). In this case, simply taking the "average cost" as a proxy is likely to understate the competitive price.

3.2.8 Products outside the SSNIP set should be assumed to be priced at the competitive level

When applying the SSNIP test for the very general purposes required in this analysis, the Commission has assumed in general that the products outside the SSNIP putative market are priced at the competitive level.

For example, if a firm is obliged, say by legislation, to supply a given product/service below cost, then this product/service is likely to be a competitive constraint on some other products/services. However, in the absence of this supply obligation, a hypothetical monopolist over those other products/services may be in a position to charge a small but significant non-transitory price premium above the competitive level.

Again, this approach is then dropped at the stage of the dominance assessment, since when investigating a possible dominant position one looks at the actual prevailing conditions. Departures from the competitive price level, say, in an upstream product or service market may have a substantial impact on the competitive landscape in the downstream market. This is especially the case if a competitor in the downstream activity faces a vertically integrated firm that is able to charge its downstream rivals a higher price for the upstream input than it charges its own downstream division.

3.2.9 Hypothetical versus actual ownership and control structure

The application of the SSNIP test should abstract from the actual ownership and control structure. In particular, it should be assumed that the hypothetical monopolist owns and controls all the products/services in the putative market, nothing less and nothing more. Confusing the hypothetical ownership and control structure that is relevant for the SSNIP test with the actual structure can lead to incorrect conclusions.

For example, assume for the sake of argument that Coca Cola in Malaysia constitutes a relevant competition policy market. In other words, a hypothetical monopolist over Coca Cola is able to profitably charge a small but significant non-transitory price premium. Of course, given that Coca Cola is already controlled by a single firm, this price premium would already be reflected in the prevailing price (see Section 3.2.5). One might then ask the question of whether, say 700 randomly selected cans of Coca Cola in Malaysia constitute a relevant competition policy market. When considering the price charged for those 700 cans one might come to the conclusion that the price contains a small but

significant price premium, and then conclude on that basis that the 700 cans constitute a relevant competition policy market. However, this clearly suffers from the methodological flaw that all remaining cans of Coca Cola are, in reality, also owned by the same firm, so that they do not provide a competitive constraint. If the remaining cans were all priced at the competitive level, it would be quite unlikely that the 700 cans could sustain a price premium.

3.3 Short-Cuts For the Purposes of a Particular Case

Competition policy markets are generally defined with a particular *end goal* in mind. For example, the final purpose may be the assessment of a merger, the investigation of a predation case, a bundling enquiry, *ex ante* regulation etc.

In the context of a particular case it is often, for purposes of exposition, possible to take short-cuts in defining the relevant market(s). This is the case when the conclusion is not affected by taking the short-cut.

A simple example of a short-cut would be as follows. Assume that only one apple producer supplies five adjacent localities. Instead of assessing dominance in each of the five localities separately, one could take a short-cut and assess dominance across the entire region, if the competitive conditions of those localities were sufficiently similar.

3.3.1 'Aggregation' Markets

There may be occasions where the application of the SSNIP test to a product/service leads to the identification of a large number of relevant markets. If each relevant market had to be investigated separately, the competitive assessment may become very onerous. The investigation of a particular abuse or conduct would accordingly become very tedious.

However, if the structural conditions of these markets are sufficiently similar that the analysis of one of them carries over to all the others it is possible to assess several relevant markets collectively. The Commission has chosen to label collections of such structurally similar competition policy markets 'aggregation' markets.

This is an example of a short-cut, as described in Section 3.3 above. As previously explained, whilst it might be valid to use such a short-cut for reasons of practicality, in a number of circumstances, one still needs to check thoroughly that the aggregation of markets does not affect the analysis. In particular, the Commission is mindful that care must be applied in the computation of market shares for aggregation markets. For example, consider ten markets of equal size, each of which represents a monopoly. Further assume that nine of the ten markets are controlled by provider A, and the tenth market is controlled by provider B. To the extent that the tenth market is a relevant competition policy market, provider B should be viewed as dominant in that market. Yet, the calculation of market shares on the basis of an aggregation market of all ten individual markets may convey the impression that provider B only has a 10 percent market share, which may be taken as an indication that it is not dominant. Thus, the calculation of market shares for aggregation markets should be handled with care.

3.4 Assessing Dominance in a Market

Once a market is defined, the next step is to consider whether there is a dominant firm in that market. This typically involves a review of the following matters:

- market structure and the nature of competition in the market; and
- barriers to entry into the market.

While market definition can be viewed as an indication of a benchmark of competitive conditions, the assessment of dominance explicitly analyses the prevailing market conditions.

3.4.1 Market structure and competition

Market shares are commonly used as a preliminary indicator of dominance. While there are no hard-and-fast tests, and dominance is always a matter of degree, precedents from established competition law practice point to market shares of 50 percent or above giving a presumption of dominance in the absence of exceptional circumstances,[17] shares between 40 percent and 50 percent being consistent with dominance if other factors are also indicative of it, and shares below 40 percent rarely being consistent with single firm dominance[18] (although not ruled out) for the purposes of Article 82 which is the provision that deals with the abuse of a dominant position under EC competition law.

A range of other factors may be taken into account. For example, the market shares of competitors may be relevant: a firm with say 35 percent of the market may still be dominant if it has 65 competitors each with 1 percent of the market. Where two firms have roughly equal market shares, even if they are high, then single firm dominance is unlikely to be found (although collective dominance, whereby a group of firms jointly occupies a dominant position, may be found under EC law). Similarly the degree of vertical integration may put a firm at an advantage relative to its competitors, especially if it controls an input that is required by its competitors.

Question 3 (A):

The Commission seeks views on the following:

i. **Whether there is a need to set numerical market share thresholds to indicate dominance in a relevant communications market.**

ii. **If yes, what would the recommended market share threshold for the communications market in Malaysia be?**

iii. **The appropriateness of adopting upper and lower market share thresholds of 45 percent and 25 percent, respectively.**

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[17] See for example the case before the European Court of Justice, *AKZO v Commission*, Case C-62/86 [1991] ECR I-3359, [1993] 5 CMLR215.

[18] The first Article 82 infringement decision with a market share below 40 percent is given by British Airways/Virgin (OJ [2000] L 30/1, 2000/74/EC) where BA had 39.7 percent of the relevant market. See the European Commission's decision IV/D-2/34.780 ó Virgin/British Airways available at. http://europa.eu.int/eur-lex/pri/en/oj/dat/2000/l_030/l_03020000204en00010024.pdf.

Question 3 (B):

The Commission seeks views on the following:

i. **Whether assigning a numerical threshold to determine dominance is sufficient?**

ii. **Will this result in an inaccurate assessment of a market player's dominance?**

iii. **What are the other factors that should be taken into account other than market share?**

3.4.2 Barriers to entry

High shares in a relevant market need not necessarily indicate dominance if there are low barriers to entry into the market. If there are no barriers to entry, attempts to exploit a large market position through, for example, excessive pricing, will tend to attract new entrants, restoring competition in the market. Barriers to entry may take many forms, which are not listed here, but they are discussed where appropriate in the following sections on the markets that have been reviewed.

One point to note is that some types of barriers to entry can affect firms differently. For example, the Commission observes that Telekom Malaysia (by virtue of its national position, presence in most localities and the economies of scope deriving from the portfolio of products it offers) may incur lower sunk investments to enter in areas where other firms have set up operations, compared to the investments that other firms may need to incur before being able to compete in areas where Telekom Malaysia is established.

Question 3 (C):

The Commission seeks views on the following:

i. **The types of non-regulatory barriers to entry which limits new players from competing in a given market.**

ii. **How these barriers to entry inhibit competition and the weightage of importance these respective barriers have in limiting competition.**

iii. **How would these barriers affect the incumbent and new players respectively from competing in a relevant communications market? Do these barriers confer an unfair advantage over any particular party?**

iv. **Would there be any benefits to the industry that might be brought about by having these barriers to entry? If so, how, to what extent would these barriers affect industry growth, as well as consumer protection and quality of service?**

SECTION 4: IDENTIFIED MARKETS

There are a very large number of potential markets in the communications sector that may be relevant. As such, while a series of likely markets can be identified, it would be impossible to provide an exhaustive list. Accordingly, it is necessary to make a selection of markets to be investigated and scrutinised in detail.

4.1. Market Identification Methodology

The following methodology was used to identify the markets for the purposes of the dominance study.

First, a range of activities (each of which may of course contain several relevant competition policy markets) was chosen to cover the majority of service areas in the Malaysian communications and multimedia sectors. While this does not guarantee that all problematic areas will be covered, it reduces the probability of failing to cover a major issue.

Second, the study has concentrated on the likely major and quantitatively significant areas. As such, there may in particular be some small aspects of products and services that are not the explicit focus of this report. However, this does not prevent the Commission from investigating complaints and alleged anticompetitive behaviour in markets which are not explicitly dealt with in this report.

Third, the study has attempted to analyse activities at all levels of the supply chain, in order to illustrate the economic considerations that underlie market definition and the assessment of dominance. While the broad theme of substitutability permeates the exercise of market definition across the economy, the implementation of the substitutability analysis will typically differ from case to case. Looking at several levels of the supply chain illustrates a wider range of competition policy considerations, which can be applied in future investigations and which provide broader and more complete guidance to industry players on how their market position is likely to be viewed.

A brief exposition of the reasons for considering a specific activity in further detail is provided at the start of the respective section. As noted in the introduction, however, the study has considered the following broad areas of the communications sector:

- fixed line narrowband access to the PSTN network;
- mobile telephony services;
- upstream network facilities;
- interconnection, encompassing wholesale call termination and origination;
- leased line services;
- broadband retail services; and
- analogue terrestrial television broadcasting transmission services.

Question 4 (A):

The Commission seeks views on the focus of the study, and in particular whether the study should consider any other relevant communications market where problems relating to dominance are likely to exist.

SECTION 5: FIXED LINE TELEPHONY

5.1 Market Identification

The Public Switched Telephone Network ('PSTN') is the traditional mode of communications. The great majority of consumers would potentially be affected by anticompetitive behaviour in relation to this activity.

Access to the PSTN can be viewed as the pre-requisite for many further communications activities like telephone calls, dial-up Internet use etc.[19] The price and quality of access has an effect on these subsequent activities and the benefits from high level service and value for money manifest themselves through a multiplier effect in the subsequent services that a customer may take up.

Access provision is also the first interaction between customer and fixed telephony provider. Once the choice of access provider is made, the customer in question would typically face a switching cost, which makes him potentially subject to some exploitation. Accordingly the Commission views that it is important to ensure effective competition at this first level.

5.2 Description of the Service

5.2.1 The distinction between access and calls

When consumers sign-up for a connection with a telephone company they are purchasing two categories of related products. The first is "access" – the ability to make a telephone call, send a fax, or connect to the Internet. The second category is the actual utilisation of that access – i.e. actually making the calls, sending faxes, or "surfing" the Internet. These two dimensions are linked through their complementarity – the cost of making telephone calls, for example, might influence what link to purchase. One might surmise, for example, that the relatively low cost of fixed link telephone calls (compared to the high cost of mobile calls) is one reason why the vast majority of consumers retain a fixed link, even though they may also choose to purchase a mobile phone.

The decision of which forms of access to adopt, and whether to adopt multiple forms of access (e.g. have a fixed link connection and a mobile phone), will depend on the consumer's preferences and the costs of the various options. Thus consumers with a need for Internet connections are unlikely to rely entirely on mobiles, while consumers who wish to be contactable whilst "on the move" are unlikely to be satisfied only with a combination of a fixed line and public pay telephones.

Once a consumer has chosen what types of access to adopt, the decision on how to actually make calls, send faxes, or access the Internet, will depend on a variety of factors, including the relative costs of the services. Suppose for example that a consumer has a fixed line and a mobile. If the consumer is at home when the need to make a call arises, they are likely to use the fixed line (since the call quality may be superior and the fixed network calls will generally be far cheaper unless the customer has a certain number of free off peak local calls, for example, as part of his mobile subscription package). If they are outside the home, they will either use their mobile, or

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[19] In this section, narrowband access to the PSTN is considered (i.e., those access services that offer speeds of less than 128kbit/s).

if they are cost sensitive, use a public pay telephone, or delay the call until they return home.

This section focuses on the provision of access (rather than the market for calls). At the same time it should be noted that demand substitutability in some instances between the various forms of provision may be influenced by the costs of the calls. In particular, the ability to make a low-cost call is a different economic product/service from the ability to make a high-cost call.

Within the context of the Malaysian licensing framework, this access service is provided by Network Service Providers.

5.2.2 Pricing arrangements

Direct exchange lines in Malaysia are provided to subscribers on a rental basis. For new connections, the network service provider will charge the subscriber for the initial cost of installation. At the time of the study, the installation tariff varied between RM30-50 for residential subscribers and RM0-50 for business subscribers, depending on the applications service provider.

Once the connection is made, subscribers are required to pay a deposit (to protect the network service provider in case of customer default), and a monthly rental charge. Rental charges are different for residential and business customers. These charges vary according to the PSTN tariff rates based on the main exchange to which the subscriber is connected. In addition, rental charges for business lines vary slightly depending on whether the premises are located in Peninsular Malaysia or in Sabah/Sarawak.

A summary of rates as at 31 March 2003 for direct exchange lines is provided in Table 5.1.

Table 5.1
Direct Exchange Line Tariffs in RM (as at 31 March 2003)

Licensee	Residential			Business		
	Deposit	Installation	Monthly rental	Deposit	Installation	Monthly rental
Telekom Malaysia Berhad	75	50	25	200	50	45
Celcom Transmission (M) Sdn. Bhd.	75	50	20	200	50	35
Digi Telecommunications Sdn. Bhd.	70	30	20	200	50	40
Maxis Broadband Sdn. Bhd.	75	50	22	200	50	45
TT dot Com Sdn. Bhd.	75	50	22	-	-	20

Source: Communications and Multimedia, Selected Facts and Figures - Q1 2003

Connection charges, reconnection charges, and line rental charges (as well as call rates) are regulated for direct exchange lines in the Communications and Multimedia (Rates) Rules 2002, under the powers conferred to the Commission by subsection 201(1) of the CMA. The Rules provide ceilings for call rates and rental charges, and specific charges for connections and reconnections. Deposits are not regulated.

For Telekom Malaysia's fixed wireless exchange lines, deposit charges are higher than for direct exchange lines. However, rental charges are very similar to those for direct exchange lines, and call charges are the same as those for direct exchange lines.

Other fixed line network service providers including Time, Maxis and DiGi have similar line rental and installation charges to Telekom Malaysia's but different structures for call charges.

For Telekom Malaysia's basic ISDN package, connection charges are considerably higher than those for direct exchange lines, at RM150 for each business line and RM100 for each residential line. Rental charges are also slightly higher, at RM60 for business subscribers and RM30 for residential subscribers. Call charges are the same as for direct exchange lines.[20] For primary ISDN, Telekom Malaysia charges RM900 per month, plus a deposit and connection charge of RM1000 respectively.[21]

Maxis does not appear to offer ISDN services for residential customers. For business, Maxis' standard charge for primary ISDN is currently RM900 a month, requiring a deposit and connection fee of RM5000 and RM1500 respectively.[22]

Time does not offer an ISDN service for residential subscribers. For business customers, Time's primary ISDN deposit and connection fee are both RM1000, and rental is RM750.[23]

5.2.3 Supply structure

Telekom Malaysia is the leading provider of fixed lines in Malaysia by a large margin. It currently accounts for 97 percent of fixed residential direct exchange lines and 93 percent of fixed commercial direct exchange lines.[24] Telekom Malaysia's competitors – Celcom, Maxis, Time and DiGi - in fixed line provision have only small numbers of subscribers, and these tend to be concentrated in a few localities where these competitors have extended their networks to provide local loop connections. Typically, this is limited to new property developments, where a contract is signed with the property developer or owner/manager to supply the new properties. However, for these buildings, these providers may be the only provider, notwithstanding the companies' small presence on a national scale. Information obtained from service providers suggests that the number of subscribers to fixed wireless exchange lines is very small compared with the number of direct exchange line subscribers.

5.3 The Relevant Market

5.3.1 Alternative types of fixed narrowband lines as substitutes

5.3.1.1. Demand side substitution

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[20] Source: Telekom Malaysia website: http://www.tmisdn.com.my/homeprice.htm

[21] Source: Telekom Malaysia's website: http://www.tmisdn.com.my/price.htm

[22] Source: Maxis' website: http://www.maxis.com.my/corporate/voice/charges/call_charges/cc_montly.asp

[23] Note the connection and installation charges of RM1000 are currently waivered by Time. Source: Time's website: http://www.time.com.my/business/fixed/data/time_isdn.asp

[24] Source: Time series data collected by MCMC.

There are essentially four types of narrowband exchange lines, which are used in Malaysia:

- **Direct exchange lines**

  This wireline service provides a single 64 kbit/s channel to be used mainly for voice services, but also for low bandwidth Internet access (up to 56 kbit/s) and facsimile services. This is the most common line type used in homes and small businesses across Malaysia;

- **Fixed wireless exchange lines**

  Telekom Malaysia offers fixed digital wireless services using both CDMA (where service coverage is available), as well as Wireless Local Loop ('WiLL') and Radio Local Loop ('RiLL') technologies, which are deployed, in specific rural and suburban locations where normal exchange lines are not available;

- **Basic Integrated Services Digital Network (ISDN) exchange lines**

  These are copper pairs that allow digital transmission in the local loop and offer a means to deploy a variety of data and voice services over two 64 kbit/s channels (and a 16 kbit/s signalling channel). They are typically supplied to high use residential and small business subscribers; and

- **Primary ISDN exchange lines**

  These offer the opportunity to use even higher bandwidth voice and data services, over a 2 Mbit/s bearer, using thirty 64 kbit/s channels (and a 64 kbit/s signalling channel). Such lines can be found in businesses, which use private branch exchanges (PBXs).

Direct exchange lines tend to be used by the vast majority of residential and small business. Application tends to be for voice telephony, although many subscribers also use their line to access the Internet, using dial-up services such as 151x.

Those subscribers who use fixed wireless line types to access the PSTN, employing technologies including WiLL and RiLL, tend to be subscribers in rural and suburban areas, where it is not technically feasible and/or economically viable to lay cables.

Subscribers who require higher bandwidth Internet services will use basic ISDN services, which have the additional advantage of allowing voice calls to be made at the same time as accessing the Internet.

Larger businesses use multiple direct exchange lines or ISDN lines, with the number depending on the number of employees and requirements for use of data services. By combining multiple lines with either a PBX or a Centrex (centralised exchange) service it is possible to benefit from a number of enhanced product features and services. Large businesses will also use leased lines for data services and access to the Internet, and are more likely to use narrowband access lines for voice telephony only.

5.3.1.1.1. Substitutability between access via direct exchange lines and access on fixed wireless links

Direct exchange lines and fixed wireless links offer similar functionality, both enabling basic voice telephony and low bandwidth Internet access. Currently, however, the cost of providing access via direct exchange lines and fixed wireless links is distinctly different. In some situations, particularly rural locations, fixed wireless links are much cheaper to establish than other technologies, while direct exchange lines are much

cheaper to establish in urban areas compared to wireless. This conclusion is supported by current practice. For example, Telekom Malaysia offers direct exchange lines in most urban areas in Malaysia and wireless exchange lines are only offered in rural and some suburban areas that are not already wired up with direct exchange lines. Thus it appears that fixed wireless technologies are not likely to be cost competitive in many urban areas, while direct lines are not likely to be competitive in some rural areas.[25]

Based on the evidence available, it appears that consumers do not have a genuine choice between access via a direct exchange line and access via a fixed wireless link. On this basis, the Commission's preliminary view is that in general the two types of access do not represent demand side substitutes in Malaysia.

The Commission is mindful, however, that technological improvements over time are likely to bring the competitive price of the two technologies closer together. Over time, therefore, fixed wireless and direct exchange lines are likely to become demand substitutes.

Question 5 (A):

The Commission seeks views on the following:

i. **The current competitiveness of wireless technologies, relative to direct exchange lines, in both urban and rural regions of Malaysia.**

ii. **To what extent can wireless technologies be considered substitutes for direct exchange lines?**

iii. **How does the cost of wireless technologies vis-à-vis direct exchange lines affect competitiveness in rural and urban areas respectively.**

[25] The Commission recognises that the prices for access via direct exchange lines and fixed wireless links are currently established at the same level (due to objectives relating to technological neutrality). The Commission notes however that the SSNIP test requires substitutability to be analysed with reference to the competitive price, which may not necessarily coincide with the regulated/existing price (as in this case).

5.3.1.1.2. Substitutability between access via direct exchange lines and access via basic ISDN lines

Basic ISDN lines offer a number of additional capabilities to direct exchange lines/fixed wireless technology, including:

- higher bandwidth Internet access;
- simultaneous voice and Internet access; and
- a wider range of 'enhanced facilities' including BRI hunting and call bumping.

The implication of these additional functions is that residential and business subscribers of basic ISDN lines who use the lines for both voice telephony and Internet access are unlikely to find direct exchange lines effective demand substitutes, because these lines are unable to provide the level of service they require. In addition, those business subscribers of basic ISDN who use the lines solely for voice telephony would also not be likely to view direct exchange lines as effective substitutes, as basic ISDN lines offer the capability to support up to eight voice phone lines at the same time when connected to a PABX, whereas direct exchange lines only offer one, and also cannot be used with many digital PABX systems.

Likewise, the price differential between basic ISDN and direct exchange lines, as illustrated in Table 5.2 is likely to prohibit subscribers from considering basic ISDN as a feasible substitute for direct exchange lines. For example, the price differential between basic ISDN and direct exchange lines is RM50 and RM100 for initial installation, and RM5 and RM15 per month for rental, for residential and business customers respectively, which amounts to a differential of at least 20 percent.

Table 5.2
A comparison between the rates for Direct Exchange Lines and ISDN in RM

Licensee/Type of line	Residential)		Business	
	Installation	Monthly rental	Installation	Monthly rental
Direct Exchange Lines				
Telekom Malaysia Berhad	50	25	50	45
Celcom Transmission (M) Sdn. Bhd.	50	20	50	35
Digi Telecommunications Sdn. Bhd.	30	20	50	40
Maxis Broadband Sdn. Bhd.	50	22	50	45
TT dotCom Sdn. Bhd.	50	22	0	20
ISDN Lines				
Telekom Malaysia (basic)	100	30	150	60
Telekom Malaysia (primary)	n/a	n/a	1000	700
Time (primary)	n/a	n/a	1000	750

Source: Communications and Multimedia, Selected Facts and Figures - Q1 2003

This is consistent with past subscription patterns in Malaysia, whereby over the past three years, the numbers of customers subscribing to basic ISDN relative to the number subscribing to a basic exchange line has remained unchanged. The Customer Satisfaction Survey indicates that between 9 and 12 percent of commercial subscribers

to fixed line services have used basic ISDN lines over the past three years, while between 97 and 99 percent have used basic exchange lines.[26]

Therefore, on the basis of different capabilities and the price differential, it appears that basic ISDN lines and direct exchange lines are not currently demand substitutes for one another.

Question 5 (B):

The Commission seeks views on whether customers are likely to switch from subscribing to an ISDN line to a direct exchange line, or vice versa. If so, the Commission would be interested to obtain actual evidence of customer switching from the licensees, if this is available.

5.3.1.1.3. Substitutability between access via direct exchange lines and access via primary ISDN lines

The analysis of substitutability between direct exchange lines and basic ISDN in general terms also applies to the substitutability between direct exchange lines and primary ISDN. There are clear differences in terms of the two products' functionality, and the price differential is again significant.

5.3.1.1.4. Substitutability between access via fixed wireless links and basic ISDN lines

Fixed wireless technology offers very different capabilities compared to basic ISDN lines. These differences are similar to the differences discussed in the analysis of direct exchange lines versus basic ISDN, including higher bandwidth Internet access, simultaneous voice and Internet access and a wider range of 'enhanced facilities' including BRI hunting and call bumping.

In addition, as discussed in Section 5.3.1.1.1, the choice of fixed wireless technology is largely driven by the terrain of the area.

Accordingly it appears that access through fixed wireless technology and access on basic ISDN lines are not demand substitutes.

5.3.1.1.5. Substitutability between access via fixed wireless links and primary ISDN lines

The discussion of Section 5.3.1.1.4 on the substitutability of fixed wireless links and basic ISDN also applies in this section.

On the basis of different functionalities and the fact that fixed wireless technology is generally chosen on the basis of the terrain of an area, it appears that access through fixed wireless links and access on primary ISDN lines are not demand substitutes.

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[26] Taylor Nelson Sofres, Consumer Satisfaction Study for the Malaysian Communications and Multimedia Commission, Commercial Study Wave 4, September 2002, page 20.

5.3.1.1.6. Substitutability between access via basic and primary ISDN lines

As detailed previously, residential subscribers in general do not use primary ISDN lines (given its price and functionality). Therefore, primary ISDN lines will not provide an effective demand substitute for basic ISDN lines. This is also the case for smaller business subscribers.

Larger business customers are the only subscribers that could possibly consider primary and basic ISDN as demand substitutes. However, since primary ISDN offers much higher bandwidth capabilities than basic ISDN lines, their functionality is unlikely to be considered comparable. For data services with high bandwidth requirements such as video streaming and video conferencing, multiple basic ISDN lines would never be able to provide the same quality of service as a single primary ISDN line. Therefore basic ISDN is unlikely to provide an effective demand substitute for primary ISDN. Similarly the price differential between primary and basic ISDN – RM850 upfront and RM640 per month – imposes a significant hurdle on substitutability, suggesting that primary ISDN will not provide an effective demand substitute for these large business subscribers.

Accordingly, it appears that access on basic and primary ISDN lines are not demand side substitutes.

5.3.1.2. Supply side substitution

To summarise the discussion of demand side substitution, the following four groups have been established which are not demand substitutes for one another, but within each of which demand side substitution takes place:

- access on direct exchange lines;
- access through fixed (narrowband) wireless technology;
- access through basic ISDN lines; and
- access through primary ISDN lines.

The following sections consider whether any of these groups are linked on the supply side.

5.3.1.2.1. Substitutability between access on fixed wireless links and access on ISDN lines

For fixed wireless access and ISDN lines, there are marked differences on the supply side, stemming from different infrastructure and technological differences in terms of microwave versus cable transmission. This in turn necessitates that a fixed wireless operator needs to hold spectrum rights. On the basis of such technological differences, access through fixed wireless technology and access via ISDN lines are not considered supply substitutes.

5.3.1.2.2. Substitutability between access via fixed wireless links and direct exchange lines

The difference in infrastructure and technology discussed in Section 5.3.1.2.1 equally applies to supply side substitution between direct exchange lines and fixed wireless lines. Accordingly, it appears that they are not supply substitutes.

5.3.1.2.3. Substitutability between access via basic ISDN lines and access via primary ISDN lines

The relevant question in this case is whether basic and primary ISDN lines are supply substitutes. To the extent that providers of access via primary ISDN lines also have spare copper pairs (which the Commission understands is nearly always the case), then the provider could easily move swiftly into the provision of access via a basic ISDN line. All that the provider would need to do is install relatively inexpensive piece of equipment at the customer's premise, and a line card at the exchange. By the same token, a provider of basic ISDN access could easily provide primary rate access using spare copper pairs. Accordingly, it appears that primary and basic ISDN lines are supply substitutes.

5.3.1.2.4. Substitutability between access on direct exchange lines and access on ISDN lines

Following on from the arguments presented in Section 5.3.1.2.3, the cost implications of providing a direct exchange line versus an ISDN line are similarly relatively trivial. Accordingly, it appears that access via direct exchange lines and access via ISDN lines are supply side substitutes.

5.3.1.3. Conclusion on alternative types of fixed narrowband lines

The following groups emerge from substitutability on the demand side:

- access via direct exchange lines;
- access via fixed wireless links;
- access via basic ISDN lines; and
- access via primary ISDN lines.

On the supply side, almost the same partitioning has been found, with the exception that direct exchange lines, basic and primary ISDN lines can be linked on the supply side.

It therefore appears that there are two distinct markets with reference to alternative types of access:

- access via copper wires (i.e., direct exchange lines and ISDN lines); and
- access via fixed wireless links.

5.3.2 Constraint from Mobile Telephony

In this section, whether mobile telephony services represent a substitute for fixed narrowband access to the PSTN is analysed. Note that the analysis applies to all types of fixed line access and therefore does not make a distinction between fixed wireless and wired technology.

5.3.2.1. Demand side substitution

It can be asked if a sufficiently large proportion of prospective subscribers of fixed lines would consider other options in the case of a significant price rise.[27] While a number of

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[27] Note this section considers the extent to which *access* via the mobile telephone network is a close substitute to *access* via a fixed line.

network service providers have asserted that mobile telephony does provide a viable substitute for fixed line narrowband access, there are significant differences in functionality between the two which are likely to prevent most customers from viewing them as close substitutes.

At a fundamental level, with reference to making calls, access via a telephone gives a customer the ability, inter alia, to make calls, but these calls may come at different costs. The large differential between the cost of calls from a fixed line and from a mobile phone would leave a hypothetical monopolist in fixed line access significant scope to increase price before a significant amount of customers decided to switch to mobile access. For example, the cost of making a local call from a Telekom Malaysia direct exchange line is 8 sen for the first 2 minutes or part thereof and 4 sen for each subsequent minute or part thereof, whereas the cost of making a local call using TMTouch Pre-paid mobile services starts at 39 sen per minute. Whilst absolute price differentials do not necessarily determine separate markets, differences of this magnitude are likely to give consumers a strong financial incentive to continue to have a fixed line link, even if they also wish to have a mobile phone for other purposes (e.g. making calls while on the move).

In addition, some services are not readily available on mobile phones. Transmission of faxes, for example, is not possible at the same speed or format via the mobile network, compared to the fixed network. Therefore, customers who wish to purchase a fixed line for the purpose of, inter alia, sending and receiving faxes will not regard the mobile phone services as a substitute. Indeed, the Consumer Satisfaction Surveys carried out by TNS for the Commission asks for what purposes existing mobile phone subscribers use their phones. Since 2001, the Commission has conducted five surveys, namely, Wave 1 to 5, since the first Wave, only one person out of the 3,777 people surveyed in Waves 1,3, 4 and 5 has claimed to have used their mobile phone for faxing.

A similar argument applies to those customers who wish to use their fixed line for connecting to the Internet. Although connecting to the Internet is possible from mobile phones (using WAP/IP applications and GPRS applications), this option is very onerous compared to connection via a fixed line, and much less functionality is available from mobile phones: data and Internet services on mobile phones are severely restricted by the type and size of information viewed. Therefore only a very small part of the Internet is currently accessible from mobile phones. In addition, the lack of a keyboard on mobile phones restricts interactivity with Internet services. It can therefore be expected that most customers who use their fixed line to connect to the Internet would not regard mobile phone services as a viable substitute. Again, the results of the Commission's Consumer Satisfaction Survey show that only seven people out of the 3,777 people surveyed in Waves 1,3, 4 and 5 have used their mobile phone for accessing the Internet.

The analysis of substitution between mobile and fixed telephony conducted in other cases also suggests that mobile and fixed lines are likely to be in separate markets. For example in Telia/Telenor:[28]

> *"As to the question of 'convergence', namely the tendency for mobile telephones to become substitutable for fixed line telephony, many respondents made the point that mobile telephony services cannot be considered yet as substitutable for fixed line telephony as, inter alia, fixed*

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[28] Telia/Telenor, Case COMP/M.1439.

lines can be used for purposes, such as internet access, for which mobile phone services do not provide the same functionality."

Similar conclusions were reached in Wind/Enel STC,[29] and Vodafone/Mannesmann.[30] Oftel also reached the same conclusion in October 2000, in setting out proposals for future retail price and network charge controls in the UK:

"1.12 The main findings of the competition analysis were that…

in the future, the extent to which mobiles substitute for fixed calls and perhaps lines would increase but was by itself unlikely to be an adequate constraint on BT's prices;

2.10 There are now over 34 million mobile phones in use in the UK. Around 5 percent of homes now have a mobile phone instead of a fixed line. Prices are falling although the price gap with fixed lines remains large, especially for calls in peak hours. Third generation mobile phones will significantly increase the overall traffic capacity of the mobile networks and may lead to new tariff packages. However, large-scale substitution seems unlikely to occur while significant price differences remain."[31]

Evidence from Malaysia, in terms of subscribers switching from fixed lines to mobile phones, also appears to support this conclusion. None of the mobile service providers interviewed by NERA and Commission staff believed that the number of subscribers switching from fixed line to mobile phones was significant. And whilst the number of disconnections from residential fixed direct exchange lines has risen slightly over the last year, as can be seen in Figure 5.1, the trend is thus far not considered to be sufficiently strong to provide concrete evidence of substitution.

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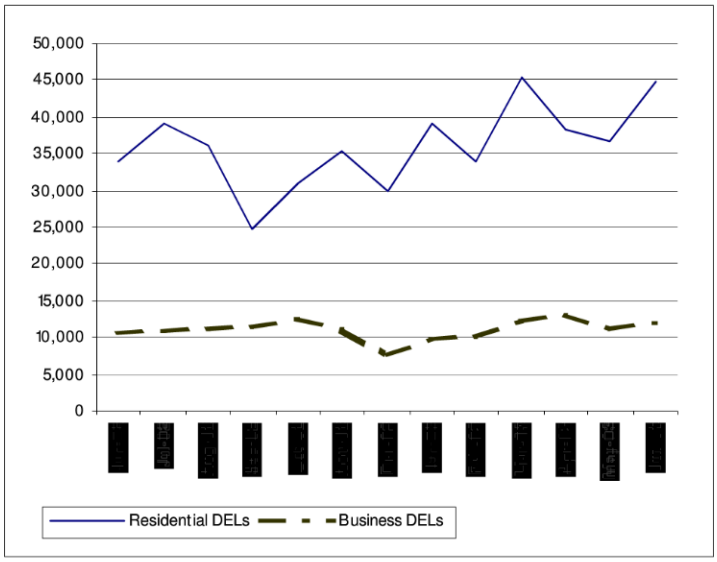
29 Wind/Enel STC, Case No IV/M.1536

30 Vodafone Airtouch/Mannesmann, Case No COMP/M.1795

31 Oftel, Price Control Review: A consultative document issued by the Director General of Telecommunications setting out proposals for future retail price and network charge controls, October 2000. Available at http://www.oftel.gov.uk/publications/pricing/pcr1000.htm

Figure 5.1
Number of DEL Disconnections

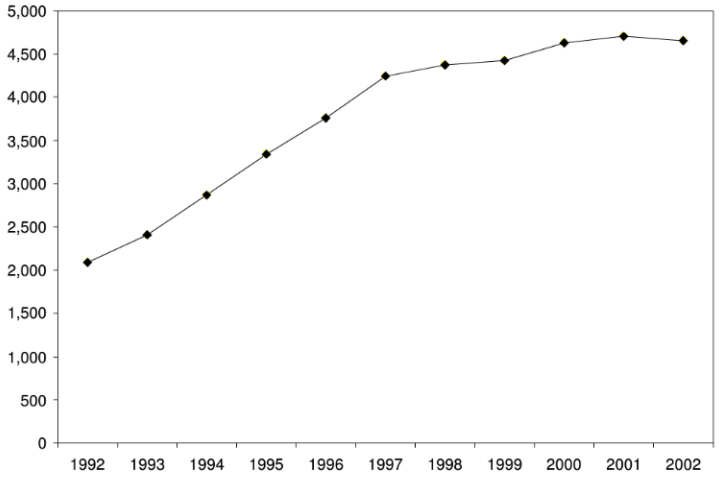


Source: Based on data provided by the Industry Development Division, MCMC

Similarly, as illustrated in Figure 5.2 and Figure 5.3, the declining trend in connections to direct exchange lines does not coincide with the increase in the rate of growth penetration of mobiles in recent years.

Figure 5.2

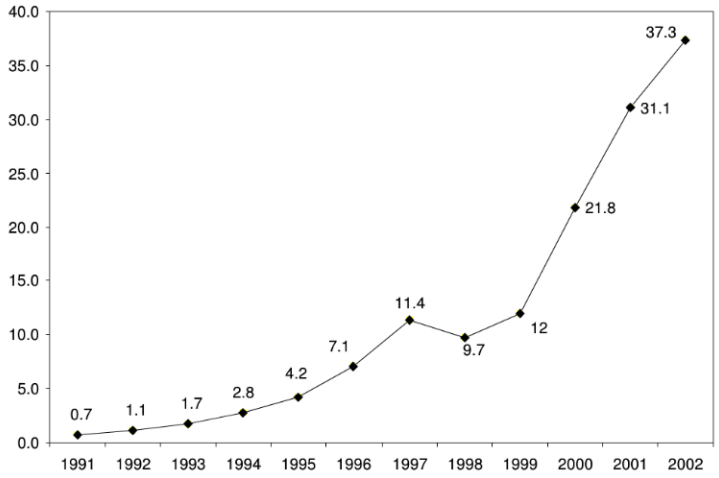
Talian Ibusawat Terus (DEL)
DEL connections



Source: Communications and Multimedia – Selected Facts and Figures

Figure 5.3

Kadar Penembusan Telefon Selular
Cellular phone penetration rate



Source: Communications and Multimedia – Selected Facts and Figures

In the longer term, it is possible that mobile technologies may offer greater opportunities for substitutability with fixed lines. In particular, the introduction of more advanced packet switched service technologies such as GPRS, EDGE and UMTS (3rd Generation) mobile systems over the next few years may require that substitutability is reassessed following the bedding down of the technologies. However, unless these services are priced at much lower levels, or Malaysian consumers display a surprising propensity to drop fixed line connections in favour of mobile only connections, it appears highly unlikely that mobile telephony will displace fixed lines to a significant extent in the

near future. The current norm that the vast majority of mobile users retain a fixed link is likely to remain unchanged.

5.3.2.2. Supply side substitution

Although in some cases fixed and mobile telephony operators share a core network, the connections to end users do not have any similarities.[32] If a mobile phone operator wanted to offer fixed line services, they would need to invest in the local loop infrastructure (which is quite different from the towers and masts with mobile phone aerials or the transmitters and receivers for mobile signals), or alternatively negotiate agreements to use another licensee's infrastructure.

Clearly the two are not supply side substitutes as there are significant differences in technology, and – to the extent that another licensee would be able and prepared to grant access to his infrastructure, negotiations over terms and conditions for access are likely to be prolonged and costly.

5.3.2.3. Conclusion on mobile access

Neither significant demand nor supply side substitution could be expected to take place in case of a price premium above the competitive level. Consequently, it appears that mobile telephony is not in the market for fixed line narrowband access to the PSTN.

Question 5 (C):

The Commission seeks views on the following:

i. **The extent to which mobile telephony is a demand substitute for fixed line.**

ii. **What are the factors that prevent mobile telephony from being a substitute for fixed line?**

iii. **What would the net effect be of mobile telephony being accepted as a close substitute for fixed line on the telecommunications market and market players?**

5.3.3 Access through broadband technology as a substitute

In the following sections, whether any of the types of fixed narrowband lines should be placed in the same market as broadband access is considered.

5.3.3.1. Demand side substitution

[32] Fixed and mobile operators of different company groups in Malaysia may not share a core network, depending on capacity constraints. However, if operators belong to the same parent company, they will share a core network.

Narrowband and broadband connections offer significantly different functionality. Broadband access to the Internet (whether using xDSL, fibre or wireless technologies) has a number of distinguishing functionalities:

- Speed:

  Access is generally at least ten times as fast as with a dial-up connection on a standard direct exchange line.

- 'Always on':

  By definition, no dial-up is required as the connection – once made – remains lit.

- Application uses:

  Because of the speed, broadband access can be used for a much wider variety of purposes than narrowband access, including streaming video and audio (e.g. radio) on the Internet, taking part in multi-player interactive gaming, video-conferencing and other 'content rich' applications.

- Voice and Internet access at the same time:

  Using some broadband technologies, it is possible to make voice calls at the same time as accessing the Internet, which is not possible using dial-up on standard direct exchange lines.

Broadband access also comes at a significantly higher cost than narrowband access. This is reflected in current rates. Despite the fact that in most cases the cost of installing the necessary infrastructure is waived by service providers, the ongoing rental rates for broadband services are between four and ten times greater than the rental charges for a direct exchange line (see Table 5.3).

It therefore appears that broadband access is not an effective demand substitute for the provision of fixed line narrowband access.

Table 5.3
Broadband Packages

	Technology	Download Speed	Upload Speed	Installation fee (RM)	Monthly fee (RM)
			TMNet[33]		
Home Streamyx					
60 hours Usage (Without Modem)		384k			44.00
Unlimited Usage (Without Modem)		384k			66.000
Unlimited Usage (With Modem)		384k			77.00
Unlimited Usage (Without Modem)		512k			88.00

[33] Broadband rates quoted are the rates offered by TMNet as a result of the Budget 2004 announcement. These rates are effective 1 November 2003.

Unlimited Usage (With Modem)		512k			99.00
Enterprise ADSL[34]					
Unlimited Usage (With Modem)	ADSL	1.0Mbps			415.00
Unlimited Usage (With Modem)	ADSL	1.5Mbps			618.00
Unlimited Usage (With Modem)	ADSL	2.0Mbps			688.00
Corporate ADSL[35]					
Unlimited Usage (With Modem)	ADSL	1.0Mbps			618.00
Unlimited Usage (With Modem)	ADSL	1.5Mbps			1,048.00
Unlimited Usage (With Modem)	ADSL	2.0Mbps			1,188.00
		Time Broadband			
HomeNET 256	SDSL	256kbps	256kbps	399.00	99.00
HomeNET 384	SDSL	384kbps	384kbps	399.00	129.00
HomeNER Pro*	SDSL	448kbps	448kbps	399.00	199.00
BizNET 500	SDSL	512kbps	512kbps	99.00	599.00
BizNET 2000	SDSL	2048kbps	2048kbps	99.00	1399.00
SoNET 250	SDSL	256kbps	256kbps	99.00	339.00
		Maxis Broadband			
Hink (Super)	ADSL	128kbps	64kbps	Waived	300.00
(With Modem)	ADSL				
Hink (Power)	ADSL	512kbps	128kbps	Waived	740.00
(With Modem)	ADSL				
Hink (Turbo)	ADSL	2Mbps	512kbps	Waived	2400.00
(With Modem)	ADSL				

Source: MCMC, Communications and Multimedia, Selected Facts and Figures, Q1 2003 and information relating to the government's Budget 2004 announcement

5.3.3.2. Supply side substitution

The Commission understands that broadband in general requires different technology at the local exchange and at customers' premises compared to direct exchange lines, fixed wireless and ISDN lines. Accordingly, it appears that broadband access is not a supply substitute for narrowband access.

5.3.3.3. Conclusion on Broadband Access

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[34] The enterprise service relates to 1 fixed IP address.

[35] The corporate service relates to 5 fixed IP addresses.

It appears that broadband access does not in general represent a viable demand or supply substitute for fixed line narrowband access, and that therefore they should be viewed as belonging to separate markets.

5.3.4 Residential exchange lines vs. commercial exchange lines

5.3.4.1. Demand side substitution

It is necessary to analyse whether prospective purchasers of a residential exchange line would be able and willing to switch to purchasing a business exchange line, and vice versa, if a hypothetical monopolist tried to raise the price in either segment.

Residential subscribers tend to use direct exchange lines solely for voice telephony, although many subscribers also use the line to access the Internet, using dial-up services such as 151x. Some, who require use of higher bandwidth Internet services will use basic ISDN services, which offer Internet access at downstream speeds of up to 128 kbit/s and the ability to make voice calls at the same time as accessing the Internet.

Telekom Malaysia also offers a number of enhanced facilities to residential customer which can be provided over analogue narrowband lines, including call waiting, call transfer, three-way calling, and last number redial, although generally the amount of enhanced facilities required by residential subscribers is not thought to be as high as for business subscribers.

The access services required by business subscribers tend to vary depending on the size and type of business. Small businesses will generally use similar services to residential subscribers. Larger businesses are more likely to use either multiple direct exchange lines or ISDN lines, depending on the number of employees and requirements for use of data services. These lines will tend to be connected to a PBX or a Centrex (centralised exchange service), which would offer a number of enhanced product features and services. Large businesses will also leased lines for data services and access to the Internet, and are more likely to use access lines for voice telephony only.

Rental rates for both types of exchange line are regulated in Malaysia. The Communications and Multimedia (Rates) Rules 2002 distinguishes between the 'residential rate' which is defined as:

> *"the rate applicable for the rental of an exchange line provided for social, private and non-business purposes situated at the private residence of a subscriber"*

and the 'business rate', which is defined as:

> *"the rate applicable for the rental of an exchange line provided for business purposes".*

The Rules direct different rates for business and residential subscribers for both Internet access dial-up calls and line rental charges.

Price discrimination between residential and commercial customers is possible for the service providers. Network service providers can readily identify which of the two segments a new customer belongs to by the type of premises to which the line is connected, and therefore can, in the main, prevent a commercial customer from purchasing a residential line and vice versa. Arbitrage and resale is thus not possible on a large scale.

It therefore appears that access to residential customers is not a demand substitute for access provided to business customers.

5.3.4.2. Supply side substitution

To the extent that business and residential customers require different types of access lines, this would have been taken into account in the relevant sections on technology types. The question here is whether, other things being equal, access for residential customers and access for business customers are substitutable on the supply side.

It is clear that while arbitrage may be prevented on the demand side, this is not possible on the supply side and the provision of a line to a residential customer is almost identical to that line to a business customer.

It therefore appears that no distinction needs to be made between access for residential customers and access for business customers.

5.3.4.3. Conclusion on residential lines vs. commercial lines

On the basis of supply side considerations, it appears that access for residential customers and access for business customers are part of the same market.

5.3.5 Geographic aspects

Consumers wish to have a fixed line to a particular place (normally their home or place of work) and in most cases will not consider links to other places to be substitutes. On the demand side, therefore, it is unlikely that much substitutability will exist. There may be some exceptions in the business sector where large companies might have some discretion on where to route their calls to, especially if the telephone numbers in question are not known widely so that the switching costs from the absence of number portability are small. On the whole, however, demand side substitutability is likely to be limited.

On the supply side, however, competition is driven by which providers are capable of supplying a particular customer. This ability to supply may in some instances also be fairly localised. In most localities only Telekom Malaysia has the requisite localised facilities to supply direct fixed line access to the PSTN. The fact that other operators supply some other localities is not an effective competitive constraint. Thus the supply side can also point to localised geographic markets.

However, while strictly speaking the geographic markets are likely to be smaller than Malaysia as a whole, for analysis purposes, these markets have been aggregated into a single national aggregation market.

As argued later in the report, in Section 5.4, it appears that Telekom Malaysia occupies a strong position in the entire area of Malaysia. The degree and exact magnitude of this apparent strength may differ across the country. Yet, it appears that there are no major areas in Malaysia where Telekom Malaysia's market position is subject to major competition. As this analysis applies across the country, as will be explained in Section 5.4, the Commission is minded to conclude that there is a national (aggregation) market.[36]

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[36] The concept of aggregation markets was discussed in section 3.3.1. It should be borne in mind, however, that this aggregation constitutes a short-cut. In particular, there are likely to be a small number of locations in Malaysia where the conditions of supply are sufficiently distinct to

5.3.6 Future developments and implications for market definition

At the moment, technologies other than those currently being used in Malaysia are unlikely to be able to offer comparable functionalities at comparable costs. In the future, however, the Commission recognises alternative technologies, including mobile technologies and fibre technologies, are likely to fall in cost, implying that further substitution may be feasible. There may also be technological developments that make the provision of telephony services over electricity cables feasible and cost-effective. However, this is not considered likely in the next three years, and therefore is not assessed here.

Question 5 (D):

The Commission seeks views on the types of emerging or alternative technologies that are likely to compete in the same markets as fixed line networks within the next two to three years.

5.3.7 Conclusions on Market Definition

The study has established that competition in fixed line access to the PSTN is likely to take place nationally, within the following two distinct product markets:

- access via copper wires (direct exchange lines and ISDN lines); and
- access via fixed wireless links.

The Commission assesses dominance in these markets in Section 5.4 below.

5.4. Assessment of Dominance

In this section, the Commission performs an assessment of dominance on the basis of the aggregation markets at the downstream level of fixed line narrowband access to the PSTN.

In most areas of the country it appears that Telekom Malaysia does not yet face effective competition. While there may be a degree of competition in some areas of Malaysia, this does not appear to undermine Telekom Malaysia's strong position in the major part of Malaysia. Moreover, it appears that in general Telekom Malaysia will be better placed to compete in areas where other firms are also supplying services, than the other firms will be placed to compete with Telekom Malaysia in areas where Telekom Malaysia is currently the only provider. This asymmetry derives from Telekom Malaysia's role as the national incumbent with the widest backbone network, the strongest brand name, and a

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warrant a separate market, in particular high-rise buildings and similar developments that have alternative providers of fixed line access to the PSTN compared to Telekom Malaysia. While it is impossible to provide a complete list of such locations, in the event of a particular issue arising in such an area, market definition should be reassessed for the purpose of that particular issue to ensure that the geographic peculiarities and the conditions of competition in those areas are fully captured in the analysis.

wide portfolio of services. Existing customers are likely to face switching costs,[37] which will limit the potential for substituting to competing providers in response of deterioration in the terms and conditions, even if there was a choice available. Thus even in localities where Telekom Malaysia faces a competing provider for narrowband fixed line connections, it is possible that Telekom Malaysia would continue to enjoy considerable market power over its captive customers.

More generally, it appears that Telekom Malaysia's existing customers account for the large majority of connections in most markets. Aggregated to a national level, according to data collected by the Commission, Telekom Malaysia accounted for 97 percent of residential narrowband fixed direct exchange line connections, and 93 percent of commercial fixed narrowband direct exchange lines connections at the time of the study. While it may be misleading, as set out in Section 3.5, to interpret these figures as market shares, Telekom Malaysia's subscriber base does provide an indication of its very prominent role as a fixed line access provider in Malaysia.

Nevertheless, in some areas, notably Klang Valley, Penang and Johor Baru, some new customers may have more of a choice of providers. In these areas, and in some other cases where, for example, a new development or property refurbishment gives rise to effective competition "for the market", Telekom Malaysia may not be considered dominant.[38] However, the fact that there may be some small areas where new customers have some choice may not counter balance Telekom Malaysia's very strong position and strength in relation to captive customers in those areas where there is some potential competition.

This evidence suggests that Telekom Malaysia may occupy a dominant position.

There may also be areas where Telekom Malaysia is not a current provider and another firm is the only provider. While there are some such small areas, in most instances the Commission expects that this was the result of actual or potential competition "for the market", whereby ex ante a number of operators could have become the sole provider for the area or development in question. The competition at this early stage before access to the PSTN was provided was likely to have ensured that market power was not exercised. Thus, while the respective operator may possess some market power against its customers, it is likely that if this market power were very significant, some other operator would have undercut at the stage of competition "for the market". Due to this struggle to enter the market in the first place, it appears that even though the firm may in some cases have some degree of market power in relation to its customers, this is insufficient to make a finding of dominance for the purposes of this exercise. Rather, the Commission is minded to assess the position of local providers on a case by case basis, as and if specific allegations of abuse of dominance arise in such localities.

Given the limited and localised emergence of competition thus far, and the combination of sunk infrastructure costs and switching costs, it appears that there are entry barriers

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[37] Some existing customers will face switching costs such as the costs of changing telephone numbers (including the costs arising from the risk of transitional service disruption, notifying contacts of the change in number and the associated inconvenience to them), as well as general transaction costs like changing payment arrangements. These represent significant and often intangible switching costs.

[38] This observation is without prejudice to the possibility that Telekom Malaysia may nevertheless have scope to leverage its dominance in other markets into these markets.

consistent with a finding of dominance for Telekom Malaysia. Telekom Malaysia's vertical integration and its control over the backbone network and infrastructure adds to the extent of barriers to entry for operators other than Telekom Malaysia.

Question 5 (E):

The Commission seeks views on the extent to which (and reasons for which) any of the network service providers of fixed telephony in Malaysia (Telekom Malaysia and also other providers) are likely to hold a competitive advantage over other providers.

The finding of a dominant position for Telekom Malaysia also appears robust to the hypothetical case of significant substitution between fixed and mobile telephony. Even if mobile telephony were to represent some competitive constraint on fixed line access, the Commission is mindful that Telekom Malaysia, which now controls Celcom and TMTouch, would enjoy much of any spillover from fixed to mobile telephony through its control of approximately half of the mobile telephony market. Accordingly, while it does not appear that fixed and mobile telephony services are effective substitutes at this point in time, the Commission believes that a finding of dominance with respect to Telekom Malaysia is likely to be robust to the case where some competitive constraints are present between fixed and mobile telephony.

This finding is not compromised by the presence of regulatory provisions which may represent a constraint on the ability to exercise market power. As discussed earlier in the report, charges for fixed line access to the PSTN are regulated in Malaysia through the Communications and Multimedia (Rates) Rules 2002, under the powers conferred to the Commission by subsection 201(1) of the CMA. The Rules provide ceilings for call rates and rental charges, and specific charges for connections and reconnections.

As discussed in Section 3.3.1.2, it is possible to find a firm dominant, even though its ability to exploit that dominance will be constrained to some degree by regulation. Price regulation is not in itself likely to be a complete tool for addressing the range of potential abuses of dominance that may occur, particularly those aimed at preventing or restricting the emergence of effective competition. For example, while regulation may prevent excess pricing or the delivery of poor service quality by a potentially dominant firm,[39] it is unlikely to be effective in constraining other types of abuses such as bundling or predatory pricing.

[39] Indeed this is the objective of the Commission's Mandatory Standards on Quality of Service (PSTN).

Question 5 (F):

The Commission seeks views on the following:

i. **Whether price regulation is an adequate measure imposed to ensure that a dominant player does not abuse its position and also protect consumer interest in the relevant communications market?**

ii. **What are other regulatory measures apart from pricing that can be used to contain the abuse of a dominant position?**

In summary, based on the evidence available the preliminary findings suggest that, in most localities Telekom Malaysia may well be a dominant provider of fixed lines. Further, in those localities where there is a degree of competition, the fact that it has a large established base of customers who face costs of switching to competing providers suggests that Telekom Malaysia may also be dominant.

5.4.1 Barriers to entry

Barriers to entry are a critical aspect of the market which needs to be considered in any dominance assessment. If barriers to entry are high then market power held by a firm will be reinforced. Evidence suggests that there are high barriers to entry in the market for fixed line access, which would support a finding of dominance with respect to Telekom Malaysia.

Fixed line telephony features significant sunk costs of entry. In addition, the economics of communications networks are characterised by economies of scale and density externalities, which put the largest player at an advantage relative to smaller operators. Since Telekom Malaysia has the largest network, it is likely to benefit from lower transmission costs when transmitting a call across its network (compared to its competitors). The overall costs of an end-to-end call is therefore on average likely to be lower for the largest network.

There are several competitors to Telekom Malaysia in the provision of narrowband fixed line access to the PSTN, but they have had minimal success in attracting significant shares of the market. As discussed above, most have focused on providing connections in new developments, or have focused on commercial customers.

The reasons are unsurprising. In those areas where only Telekom Malaysia has a local network, the sunk costs of entry (regardless of the technology used) would be significant. Nor does there appear to be any emergent technology that is likely to change this situation in the medium term. Moreover, existing customers are likely to face switching costs of changing provider, thus providing a further hurdle for new

entrants to overcome.[40] This is especially true in a mature market with a limited amount of new business. In this respect, the Commission notes that the number of new fixed line subscriptions has slowed over last few years (as discussed in Section 5.3.2.1).

Question 5 (G):

The Commission seeks views on the following:

i. **What new developments, if any, are likely to reduce the barriers to entry for fixed line access?**

ii. **The extent to which existing fixed line customers are likely to face "switching costs" in changing service providers.**

In areas where there are potential competitors, discussions with Telekom Malaysia' competitors lead the Commission to believe that the roll-out of their distribution networks are, to a large extent, limited to particular buildings and developments. Rolling out the networks in these areas to cover all consumers would also involve very substantial sunk costs.

Question 5 (H):

The Commission seeks views on whether the existence and support of National champions in introducing new services/ networks is of vital importance.

5.4.2 Findings on the assessment of dominance

Based on the information available the study found that:

- the relevant product markets are given by the provision of fixed line access to the PSTN, with separate markets for access via copper wires (direct exchange lines and ISDN lines) and access via fixed wireless links, and that localised geographic markets can in broad terms be viewed as a single aggregation market;

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[40] Some existing customers will face switching costs such as the costs of changing telephone numbers, including the costs arising from the risk of transitional service disruption, notifying contacts of the change in number and the associated inconvenience to them, as well as general transaction costs like changing payment arrangements represent significant and often intangible switching costs.

- Telekom Malaysia does not appear to face serious and effective competition in the provision of fixed line narrowband access to the PSTN in most areas of Malaysia, and where alternative providers exist it still retains a very strong position with respect to its existing customers;
- there are likely to be at least some barriers to entry; and consequently that
- Telekom Malaysia is likely to be dominant in the provision of all forms of fixed line narrowband access to the PSTN (in most localities and nationally) at the current time.

Question 5 (I):

The Commission seeks views on whether the relevant market is highly regulated, thus preventing any dominant party from abusing its market power.

SECTION 6: MOBILE TELEPHONY

6.1 Market Identification

Mobile telephony is an increasingly important mode of communication in Malaysia. There are approximately 10 million subscribers to mobile telephony services and the market continues to grow very rapidly. Therefore the great majority of consumers would potentially be affected by anticompetitive behaviour in relation to this activity.

Mobile telephony services are also critical to the convergence process, as explained in the discussion above on fixed to mobile substitution.

6.2 Description of the Service

Retail mobile telephony entails the full series of retail communications services involving the mobile phone network. The services offered to mobile phone users include sending and receiving text and voice messages; data services such as WAP over GSM and GPRS, sending and receiving multimedia messages, and information services provided over SMS and MMS.

This section focuses on the downstream retail level of the mobile telephony supply chain. Within the context of the Malaysian licensing framework, this is the set of services provided by an ASP.

6.2.1 Pre-paid and Post-paid

Two basic forms of subscription – pre-paid and post-paid – to mobile telephony services are available. Pre-paid contracts are primarily designed for those who are unable or unwilling to secure credit agreements, and for those who prefer to have the ability to carefully control their spending. For a pre-paid contract, credit for a certain number of calls and services is bought before the phone can be used, and when a service is used the credit is reduced accordingly. Credit can be acquired in a variety of ways – using a credit or debit card, by purchasing vouchers, or by payment on an Internet site. There is no monthly rental, and no signed contract.

Post-paid contracts often include additional services when compared to pre-paid. For example, many pre-paid phone contracts will not allow data services, or will have only a limited range (for example, WAP over GSM and not GPRS). Post-paid contracts in Malaysia generally require a monthly fee, which allows the user to make a certain number of calls or text messages free of charge, and call charges are generally lower than pre-paid rates. The user receives a bill each month detailing their use over the previous month. Contracts are typically for a twelve-month period, which means that users have a higher switching cost away from these contracts towards the start of the contract (since if they change phone provider, they must continue to pay the monthly line rental regardless until their contract expires). Mobile handsets for post-paid customers appear in general to be subsidised to a small degree.

6.2.2 Market Dynamics

Competition in mobile telephony has a number of features that need to be given due importance in arriving at conclusions on the dominance or otherwise of current market providers.

The first observation is that this market appears to be characterised by rapid growth. In markets that are growing at a high rate, providers are more likely to price in order to capture a large part of the market expansion.

Second, mobile telephony has been characterised by rapid technical change and innovation. Indeed, the rapidity with which providers are able to roll out new services at reasonable cost is an important dimension of competition in itself. More generally, one would expect markets subject to rapid technical change and innovation to be characterised by periods of short term, but potentially unsustainable, "market power" as providers earn a reward for their investments. Not only does the possibility of temporary market power being eroded by competitors weaken the case for findings of dominance in itself, it must also be borne in mind that the high risks and uncertainty associated with these markets mean that preventing firms from exploiting temporary market power through excessive regulatory or antitrust intervention may run the considerable risk of undermining future investment and innovation. Thus, while at any point in time competition may be less than perfect, the assessment of dominance must take into account the potential medium and long term vulnerability of firms' positions.

Third, the industry in Malaysia is currently subject to significant mergers. Once these mergers have been completed the industry will change from five to three firms with roughly balanced market shares, to two firms with around 40 percent of subscribers each, and one with around 20 percent.[41] Since this development is occurring simultaneously with this study, it is too early to say what the impact of these mergers is likely to be. However, the Commission is mindful that economic theory suggests that markets with five firms will tend to be significantly more competitive than markets with three firms.

Fourth, bearing these other factors in mind, it is quite possible that definition of the relevant market, and assessment of whether there is sufficient market power to support a dominance finding, may change over a relatively short interval of time. The information in the remainder of this section suggests that there is insufficient evidence to draw a finding of market power to support a dominance finding at the present time. However, this could change in the future.

6.3 The Relevant Market

6.3.1 Mobile telephony services should not be further disaggregated into their components

Providers sell mobile telephony services as a package, and the Commission understands that consumers in general perceive them as inseparable, similar to consumers' perception of a car as a whole rather than a combination of wheels, an engine, air conditioning, brakes etc.

Providers appear to recognise this consumer perception. For example, TMTouch offers a monthly subscription package which includes free text messaging, multi-way conference calling, and discounted calling rates included in the monthly fee. Although text messaging and voice minutes may have a certain allowance packaged with monthly subscriptions (and access to these services is standard on all rates), data services (such as WAP content and GPRS) are generally sold separately but typically by the same provider.[42]

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[41] Source: MCMC's quarterly buletin

[42] Potentially, it would be feasible for a consumer to purchase voice services from one provider and data service from another provider. Note however that this does not currently occur in practice.

In view of consumers' perception of mobile phone services as a single economic good, rather than a collection of goods, the analysis does not treat the components of the service in isolation.

6.3.2 Mobile services versus fixed telephony

In Section 5.3.2 it was suggested that mobile telephony was unlikely to provide a strong competitive constraint on the supply of fixed line connections. It does not automatically follow that the reverse holds – i.e. that fixed line connections do not provide a strong competitive constraint on mobile telephony. However, as discussed below, while fixed line connections influence overall demand in the market for mobile connections and for the various services provided to a certain extent, they are insufficiently close substitutes to form more than a weak competitive constraint.

6.3.2.1. Demand side substitution

The key issue here is whether a significant number of mobile customers would be willing to switch to fixed telephony in response to a price increase. The Commission notes that, while there are some overlaps in the functionalities of fixed and mobile telephony, mobile phones offer some different attributes. Most obvious is the ability to make a call or receive a call wherever one is located and while on the move (at least where there is mobile reception and network coverage). Various other functionalities of the mobile service are also distinguishably mobile services – e.g. text messaging.

Further, in discussions with a licensee, it was suggested that the usage of fixed lines was relatively insensitive to the price of calls. Drawing on their experience of pricing promotions, the licensee indicated that for fixed line telephony "when we lower our price, our volume does not increase significantly"; "demand is not elastic". This indicates that a relative increase[43] in the price of mobile phone services is unlikely to result in a sharp rise in demand for fixed line telephony services.

The Commission also notes that the vast majority of mobile users also have a fixed line at their homes or work premises. Thus mobile users have not chosen to adopt a mobile as a substitute for a fixed line, but instead have chosen to have one in addition to already having and retaining a fixed line. Since the costs of calls on mobiles are far higher than for fixed lines this is suggestive that customers view mobiles as offering a substantially different product.

For these reasons, it appears that fixed line telephony is unlikely to provide an effective demand substitute for mobiles. This finding is consistent with a series of findings from other antitrust authorities, which have also found that fixed telephony was not a demand substitute for mobile phone services (e.g., the EC rulings in Telia/Telenor, Wind/Enel STC, and Vodafone/Mannesmann).

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[43] It should be noted that a decrease in the price of fixed line calls relative to mobile calls is equivalent to an increase in the price of mobile calls relative to fixed line calls.

Question 6 (A):

The Commission seeks views on the extent to which consumers are likely to view fixed line telephony as an effective substitute for mobile telephony.

6.3.2.2. Supply side substitution

As noted in Section 5.3.2.2, although fixed and mobile telephony operators share a core network, the connections to the end users do not have any similarities. If a fixed operator were to want to offer mobile services, they would need to invest in a large amount of additional equipment, including:

- towers and masts to hold mobile phone aerials;
- transmitters and receivers for mobile signals; and
- base stations to connect masts to the network.

In addition, the switches and technology connecting mobile telephones to a network are very different to those connecting a fixed line. Operators would also require a licence for the necessary spectrum, which is a scare resource. Clearly the two are not supply side substitutes.

6.3.2.3. Conclusion on mobile services versus fixed telephony

It appears that fixed telephony services do not represent either a demand or a supply substitute for mobile telephony services. Accordingly, they should not be included in the market for mobile telephony services.

6.3.3 Pre-Paid versus Post-Paid

In general, calling costs on post-paid contracts are lower than those for pre-paid customers. This applies to voice calls, text messages, and data services. In addition, many post-paid rates include a certain allowance of 'free' call minutes and text messages, which offset the monthly rental charge.

In general, pre-paid rates are aimed at two distinct consumer bases:

- low-use customers, such as those who carry the phone for emergencies only, or who are close to a landline all day and merely want a mobile phone to be contactable, and
- those who are unable or unwilling to sign up to a post-paid contract.

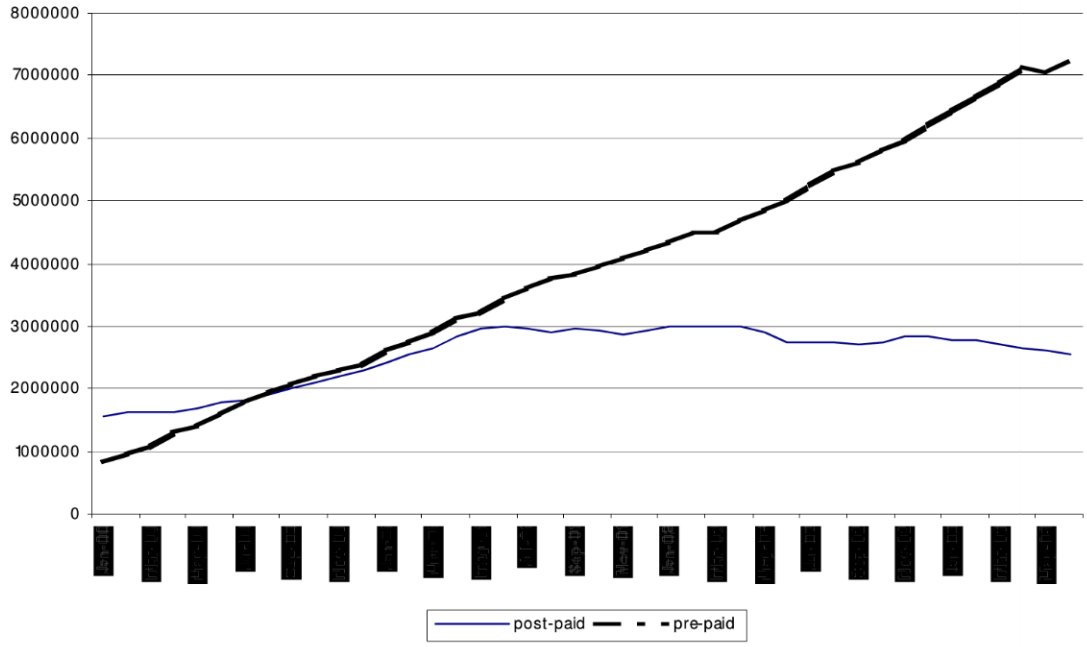
Other than for customers restricted to pre-paid contracts for financial reasons, there are no exclusions preventing a consumer from choosing one type of tariff over another.

6.3.3.1. Demand side substitution

The study has found some evidence to support the view that a number of customers regard pre-paid and post-paid services as substitutes. For example, there is evidence based on consumer surveys by existing service providers that suggests that a number of Malaysian subscribers who held post-paid packages in the past three years have now

switched to pre-paid packages. This is consistent with the fact that the number of post-paid subscribers has fallen slightly in recent months (see Figure 6.1).

Figure 6.1
Numbers of Pre-Paid and Post-Paid Mobile Subscribers



Source: Based on time series data collected by the MCMC

Regarding the increase in pre-paid subscribers, it is unclear whether this is accounted for primarily by new customers or whether it also includes a substantial number of customers that switched from post-paid. In particular, the Commission has not been able to ascertain whether the surge in pre-paid subscribers was accompanied by a relative price rise for post-paid services.

However, whether demand side substitution is strong enough to place the two segments into the same market can be left open since the mechanism of supply side substitution (see Section 6.3.3.2) appears to be sufficient for the conclusion that pre-paid and post-paid services should be regarded as part of the same market.

6.3.3.2. Supply side substitution

The difference between pre-paid and post-paid services on the supply side is small and does not present any barrier to a supplier of one service who wanted to provide the other. The distinction mainly comes down to the payment mechanism, and the Commission understands that it would not be difficult for an operator to make the necessary minor changes to this administrative aspect of the mobile telephony business (which would involve some minor changes to the billing system and internal operations).

The actual telecommunications technology is effectively identical for pre-paid and post-paid, so that no modifications to the telecommunications infrastructure would be required.

As a matter of fact, all Malaysian mobile service providers appear to offer both types of services. Were the price to rise in one of the segments, it appears that supply switching would be very easy, low-cost and swift.

6.3.3.3. Conclusion on pre-paid versus post-paid

Given the likely presence of supply substitutability between pre-paid and post-paid mobile telephony services, it is concluded that pre- and post-paid mobile services are in the same relevant market.

It is not necessary that there be strong demand side substitution between pre-paid and post-paid for the two types of mobile telephony services to belong to the same market.

Question 6 (B):

The Commission seeks views on the extent to which pre- and post-paid mobile services are likely to be supply substitutes.

6.3.4 Geographic Aspects

Mobile telephones are by their very nature mobile, so that geographic aspects would appear to be less important. There are however two areas that require brief discussion: network coverage, and the pricing structure of mobile calls.

6.3.4.1. Network coverage

Network coverage is a factor to be considered in defining the relevant market. The Commission notes that there are differences in the coverage by the various operators. This may be expected to lead to different market conditions in areas where some operators cannot offer coverage, relative to areas that are covered by all operators, suggesting separate geographic markets. However, even areas where all providers offer adequate reception may be affected by differences in coverage: mobile phones are characterised by the fact that they can move, such that residents of KL may want to use their mobile phone outside KL as well. This would suggest that network coverage is more relevant in defining the product market.

Nevertheless, it appears that differences in coverage are of limited importance for customers in areas where all providers are present. First, no operator has 100 percent coverage and large parts of rural Malaysia remain uncovered. Second, domestic roaming allows customers in some areas to make use of another provider's network. In areas like Kelantan and Terengganu, the competitive conditions may differ from the rest of Malaysia. However, the number of such areas is small and all operators are constantly improving their network coverage. As such, this distinction is likely to decrease further in importance over time.

6.3.4.2. Pricing structure

In Malaysia mobile phones are registered in a particular call area and call charges differentiate between calls in the same call area, calls to an adjacent call area and calls to non-adjacent call areas. This geographic 'flavour' may at first sight appear to have implications for the geographic aspects of the relevant market.

However, the relevant question for geographic market considerations is where the service is purchased. As such, the destination of a call is really a product characteristic rather than a geographic consideration. Accordingly, this issue has no relevance for the geographic market definition.

6.3.4.3. Conclusion on geographic aspects

Mobile phones are by their nature mobile. The implications of network coverage and pricing plans do not appear to be sufficiently strong to warrant a segmentation of the relevant market into particular regions of Malaysia. Accordingly, the Commission is minded to conclude that competition takes place on a national basis.

6.3.5 Conclusion on market definition

The information the Commission has considered to date, suggests that the relevant market is the national supply of services in mobile telephony. Despite there being some impediments to switching for some customers, the evidence does not appear to support a further segmentation into pre- and post-paid services.

6.4. Assessment of dominance

There are currently five mobile telephony licensees. However, there are only three independent providers since Celcom and TM Cellular as well as Maxis and TimeCel recently merged their respective mobile telephony businesses. There are now two corporate groups in this market with roughly equal shares of around 40 percent of subscribers.

The assessment of dominance in the mobile telephony sector is complicated substantially by this recent merger wave. In particular, the current three-firm market structure is not reflected in past data. The Commission therefore also considers some general features of the market that may provide an indication of whether dominance is likely.

6.4.1 Market features

There are a number of characteristics that would be expected to have an important effect on the degree of competition.

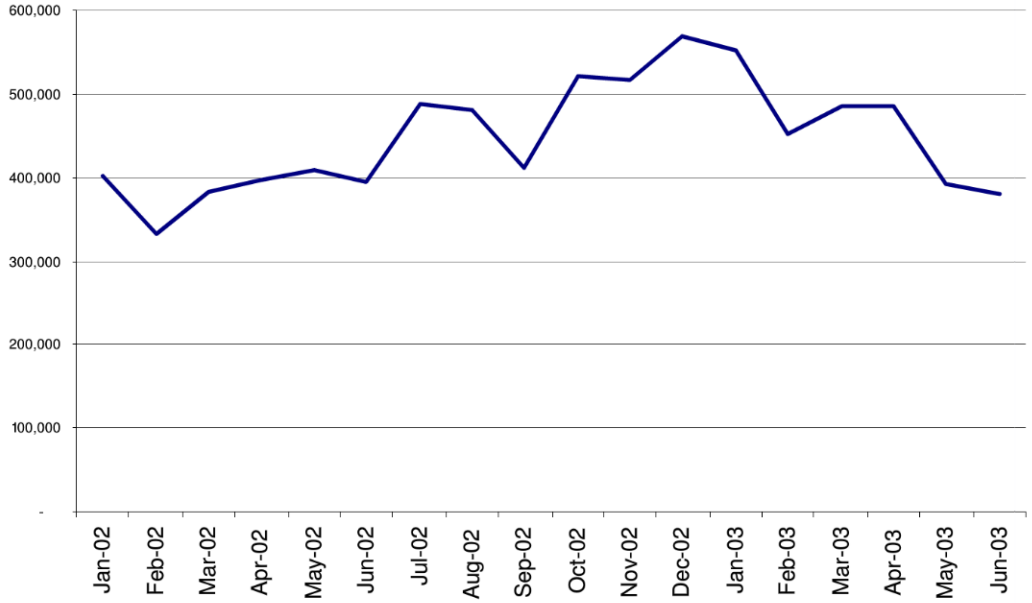
6.4.1.1. Market expansion

Rapid market growth and the presence of some switching costs are likely to lead to aggressive competition as providers seek to grow the number of their customers (which would be expected to deliver high profits in the future). This is analytically very similar to the concept of "competition for the market".

In Malaysia growth in new mobile subscribers appears to have slowed somewhat in recent months. However, mobile penetration stands at around 40 percent of the population of the country. While this is not low, based on experience in other countries there is still good reason to believe there is potential for more growth in Malaysian mobile penetration, especially in view of country's policy to encourage the roll-out and development of sophisticated technology.

Whilst it was not possible to obtain data on usage per subscriber, anecdotal evidence also suggests that the usage of mobile phones continue to rise in Malaysia. New mobile phone subscriptions also continue to grow in Malaysia (see Figure 6.2).

Figure 6.2
Numbers of New Mobile Subscribers



Source: Based on time series data collected by the MCMC

6.4.1.2. Innovation and technology

Existing service providers in the Malaysian mobile market use the GSM mobile standard to provide their services. This technology is generally thought of as a mature technology.

First, the popularity of GSM worldwide and the large number of providers of GSM equipment would mean that it is unlikely that any single existing mobile service provider in Malaysia has a technological advantage over the other service providers.

Second, a number of existing service providers have indicated that they intend to roll out new mobile technologies in the relatively near future that would enhance existing services. Such technologies include EDGE and GPRS. Whilst the precise impact these technologies might have on the market is unclear, the implication of such investments is that the market for subscribers is reasonably competitive.

Again, the presence of technological development introduces an element of competition "for the market" since with each new technology significant and radical changes in competitive conditions may be brought about.

6.4.1.3. Pricing

Evidence has also been presented by the service providers that suggest that pricing competition is strong, both for pre-paid and post-paid subscribers. A number of service

providers have even claimed that there have been 'price wars' for new subscribers, especially in the pre-paid market.

Based on anecdotal evidence of the number of advertising promotions in the print and electronic media over the last year it appears that mobile service providers spend large amounts on advertising promotions and marketing activities. This can be viewed as another indication of strong competition for new subscribers between the existing providers.

Question 6 (C):

The Commission seeks views on the following:

i. **The recent price competition between mobile operators (and further evidence, if available).**

ii. **What is its net effect in terms of quality of service to consumers and the industry as a whole?**

6.4.2 Barriers to entry

Constraints on the allocation of spectrum mean that any new entrant who wished to build a new network to compete for new subscribers would require an NFP licence with spectrum allocated to the licence. Whilst it cannot be formally ruled out, the awarding of such a licence in the near future cannot be relied upon.

However, there are no regulatory or legal restrictions on service providers entering the mobile telephony market for new subscribers with only an ASP licence, using the mobile network facilities (and spectrum) of an existing mobile telephony service provider. Such service providers are usually called 'Mobile Virtual Network Operators' (MVNOs).

This would still require investment in a retail distribution network, marketing (to establish a reputable brand – especially in view of the heavy advertising by existing mobile operators) and sales network, a support services network, as well as investment in a billing system capable of handling mobile telephony services.

However, as has been the case in other countries such as the UK, large well-branded retail companies such as supermarket chains and retail goods stores which already have the retail distribution and sales network in place would face fewer barriers to entry into the market. They may also be capable of leveraging their brand name into the mobile telephony sector.

The entry into the market by MVNOs in Malaysia in the near future has been raised as a real possibility by a number of the existing mobile telephony service providers, on whom MVNOs would depend for use of their networks. The Commission notes that the establishment of an MVNO is actively being considered.

Question 6 (D):

The Commission seeks views on the following:

i. **The extent to which regulatory features in the mobile market are likely to constitute barriers to entry.**

ii. **Whether any of the regulatory features (e.g. "Domestic Roaming") in the mobile market will increase barriers to entry. How would increased barriers to entry affect the consumer?**

6.4.3 Recent Consolidation

The mergers have resulted in a three-firm market structure, with two clear leaders with 40 percent market share each on the basis of subscribers. However, the mergers have not been completed for sufficient time to judge whether any change in competitive intensity will result.

It should be noted that the assessment of dominance is mainly based on past evidence, and an analysis of the market features in mobile telephony. The analysis should accordingly be considered with some caution, in the light of the recent radical changes in industry structure.

Question 6 (E):

The Commission is interested to obtain further information concerning the possible impacts on competition in the mobile telephony market of the recent consolidation in the industry. What would the likely net effect for consumers and domestic players be?

6.4.4 Findings on the assessment of dominance

On the basis of the above analysis the study's findings indicate that:

- the relevant market is given by the supply of retail mobile telephony services, and that competition in that market can be viewed to occur nationally;
- there is a 40:40:20 market structure by number of subscribers in broad terms;
- while past behaviour indicates a reasonably competitive market, the effects of the recent merger wave may not be fully reflected in the market at this time;

- there appear to be barriers to entry into fully integrated provision of mobile telephony services, although less so for MVNOs at the ASP level;
- on the basis of the information currently available on the merger there appears insufficient support for a finding of dominance in the provision of mobile telephony services; and
- the analysis may not be applicable for much longer to the extent that the combination of Celcom and TMTouch as well as Maxis and TimeCel might have profound effects on competition in the market.

SECTION 7: UPSTREAM NETWORK ELEMENTS

7.1 Market Identification

The communications infrastructure at the upstream level is the fundamental basis for the provision of midstream and downstream retail services. It is also arguably characterised by the highest degree of entry barriers. Most investments are sunk (i.e. they cannot be used for many other purposes) and often building and planning restrictions as well as the regulatory regime may further limit new entrants. Economies of scale are very significant, potentially leading to natural monopolies.

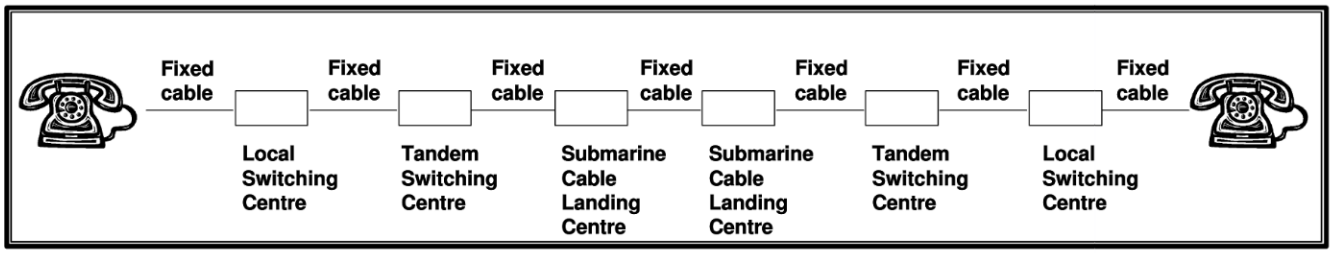
As such, it is important to consider whether there are any issues of market power and dominance in the provision of network elements.

The Commission notes that while it has made considerable progress in relation to "Access to Network Facilities", judging on the experience in other countries, it may be some time before an effective access regime is in place. Moreover, while such a regulatory regime may be able to constrain potentially anti-competitive behaviour such as excess pricing, poor service quality, or refusal to supply, as noted in Section 5.4, regulatory arrangements are unlikely to be able to constrain other potentially anti-competitive behaviour by a dominant firm (such as bundling). As such, an assessment of dominance in relation to network elements remains important.

7.2 Description of the Service

By their very nature, communication services need to link or connect two or more points. The upstream infrastructure that is required for a given call can thus be thought of as a chain along which communication takes place. A possible call path for a fixed line connection is illustrated in Figure 7.1. Similar pictures could be drawn for mobile to fixed calls and other combinations.

Figure 7.1
Possible Call Path



The inputs into a particular call are characterised by the fact that they are required in fixed proportions,[44] i.e. a telephone call in general requires at least one and no more than a single item at each stage. For example, there is no need for two or three customer line cards at the same telephone connection, and a twisted copper pair is typically not connected to many local exchanges.

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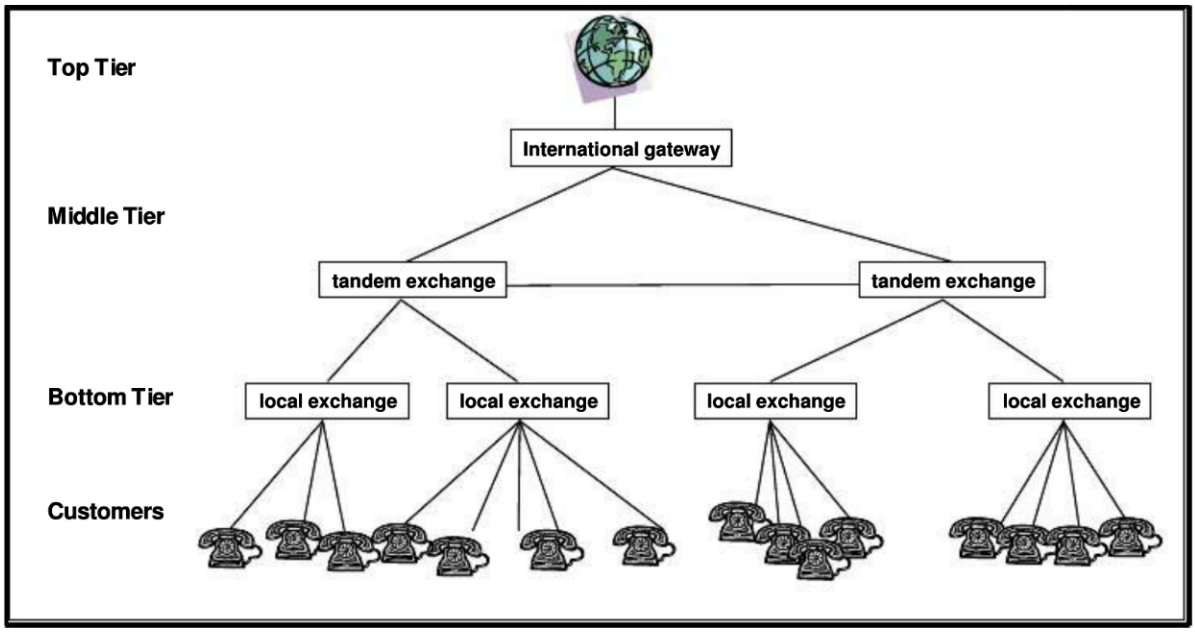
[44] In economics, this type of production technology is known as a Leontieff production function.

As the various elements that are required to provide communications services in general are governed by the CMA, they are summarised by the licensing provisions for NFPs. In those provisions the following categories are listed:

- earth stations;
- fixed links and cables;
- public payphone facilities;
- radiocommunications transmitters and links;
- satellite control stations, satellite hubs, and space stations;
- submarine cable landing centre;
- switching centres;
- towers, poles, ducts and pits used in conjunction with other network facilities; or
- such other network facilities, which are, not exempt or subject to a class license.

While the licensing provisions classify the network facility infrastructure according to the types of equipment, industry experts often follow a categorisation according to local loop, core network and international network. This distinction is guided by the tier system of the communications network as illustrated in Figure 7.2.

Figure 7.2
Network Tiers



7.2.1 Local loop

Sometimes also known as the access network, this is essentially the network of lines that run from subscribers' premises to the local exchange.[45] Typically the local loop is a two-wire twisted copper pair. However, optical fibre is increasingly being used, e.g. for large business customers.

The physical shape of the two wires between subscriber and exchange can be thought of as a loop, consisting of one elongated piece of wire which starts on the main distribution frame and runs down to the subscriber, is connected across the handset, and returns via the return wire to the main distribution frame, where all the loops from that exchange area are connected. When a call is made, it is necessary to set up a complete voice path by connecting the loop of the originating subscriber to the loop of the intended recipient. If the recipient is connected at the same local exchange as the originating subscriber, the two callers can be connected at that exchange.

As detailed earlier in Section 5, the following key types of narrowband exchange line are currently available in Malaysia to access the PSTN:

- direct exchange lines;
- fixed wireless exchange lines;
- basic ISDN exchange lines; and
- primary ISDN exchange lines.

7.2.2 Core network

This consists of the switches in the local exchanges, the network of trunk cables (or in some places microwave links) that connects the local exchanges to each other or to higher levels of exchange known as tandem exchanges, the tandem exchanges themselves, and the equipment which connects the tandem exchanges to each other. Depending on the amount of traffic on a particular inter-exchange link, cables of different capacity are used. Traditionally multi-circuit coaxial copper cables were used but now these have been largely replaced by optical fibre.

A call destined for a subscriber on a different local exchange will normally be sent first up to one or more tandem exchanges, from which the call will then be directed back down the network to the relevant local exchange and hence to the subscriber. As the call is set up, an appropriate connection must be made across each intervening bridging point or switch in order that a complete voice path from originator to recipient can be constructed. Once made, this circuit has to remain in place for the duration of the call,[46] irrespective of how much voice traffic is actually carried during the call.

7.2.3 International network

This is the top tier of the network hierarchy. It is the network of trunk cables and/or satellites and related switching equipment which leads traffic from the international gateway (switch), via 'backhaul' transmission to the international cable head or landing point, and hence out of the country.

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[45] Strictly speaking, the local loop is normally defined as ending at the main distribution frame at a local exchange whereas the access network also includes the customer line card.

[46] For VoIP telephony, the voice path circuit is typically not constantly established for call duration.

7.3 The Relevant Market

The previous section provides a description of the categorisation of network facilities according to the Malaysian licensing regime and the often used classification of the communications network into the local loop, the core network and the international network as they relate to the provision of fixed line telephony.

Competition policy markets are, however, governed by considerations of substitutability. Accordingly, it needs to be examined whether these classifications reflect considerations of substitutability, and whether it is necessary to further disaggregate or further widen the relevant competition policy market.

The following sections outline the competition policy markets for network facilities with reference to fixed telephony. This analysis would equally extend to network facilities used to provide other communications services such as mobile telephony or broadcasting transmission.

Further, the Commission notes that the assessment of market definition and dominance in the area of network facilities is likely to vary on a case-by-case basis. Conclusions will depend on the network facility or facilities in question, geographical considerations, and also the use to which the network facility or facilities will be put. For example, one might come to different conclusions when assessing dominance in the provision of dark fibre core in Central Malaysia, compared to the supply of space on a specific broadcasting tower in KL, compared to mobile aerials in Johor Baru, and so forth. As such, the assessment of dominance really needs to be done on a case-by-case basis.

Nevertheless, the broad framework that the Commission is considering to apply in such an assessment is outlined in the sections below. The Commission seeks comments on this framework from the public and licensees as part of this public inquiry process.

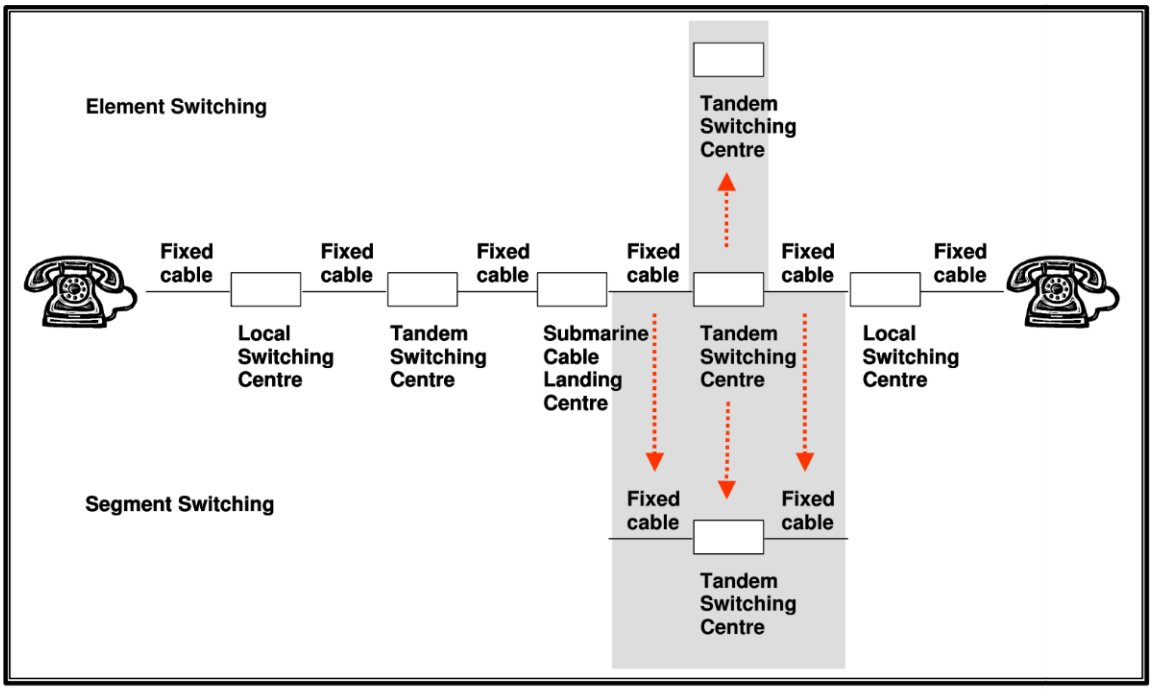
7.3.1 A single network element

The relevant starting point is a single network element. This could be a local switching station, a trunk cable, a transmission tower, a space station, a fixed link and so on. The key feature to bear in mind, however, is that the location of a given item of equipment is a product characteristic, i.e. a local switch in KL is a different product from a local switch in Johor Baru.

Whether two infrastructure facilities are substitutes depends, as in all competition policy markets, on whether customers view them as substitutes and/or whether suppliers would switch their supply between them in response to price changes.

There are two levels of switching that need to be considered: substituting for the single item of equipment only; and substituting for a longer segment of the communications path. These two possibilities are illustrated as “element switching” and “segment switching” in Figure 7.3.

Figure 7.3
Element Switching and Segment Switching



7.3.1.1. Element switching

When examining an individual item of equipment in isolation, say, a particular tandem exchange, it is clear that only another tandem switch would be a demand substitute, and that the other tandem switch would have to be in close geographic proximity. Accordingly, there would in general not be a demand substitute. Equally, supply substitutability appears very difficult in that the sunk cost of establishing a new tandem switch in the particular location would be non-trivial.

Similar considerations apply to most single items of equipment, especially at the bottom tier of the communications network where considerations of scale economies dictate that it would in general be inefficient to duplicate equipment.

7.3.1.2. Segment switching

It is also necessary to consider whether there is a mechanism whereby a single item of equipment can be avoided by not only switching away from that particular item, but from the entire segment of the communications path that includes the item in question. For example, a trunk cable that connects two switching centres might be avoided if the communications circuit can be completed via a different route that does not involve the trunk cable in question.[47]

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[47] The "length" of the segment may vary, depending on the type of network element, geographic considerations, and ultimately the use to which the element would be put.

An analogy can be given by reference to transport economics. In many ways airports, train stations and bus stops can be seen as "switching equipment" similar to local exchanges and tandem exchanges. Plane journeys, train rides and bus trips on the other hand can be viewed as "transmission" services that would correspond to the cables or wireless wave connections between the switching equipment. While it is clear that there is no immediate and direct substitute for KLIA, customers may choose to fly to their destination from a different airport and therefore by taking an alternative route. For example, instead of flying out of KLIA to Sydney, they may fly out of Singapore to Sydney, especially if they live in the Southern part of peninsular Malaysia. However, this would involve a switch of airport but also a switch of plane journey.

As in transport economics, in the field of communications and multimedia the underlying economic service is a connection and that may occur in a number of ways. Accordingly, the extent to which there is a choice in routes for getting from one point to another should be considered.

For trunk cables there may be several cables that cover effectively the same route. The Commission understands that for the major corridors there would typically be several links, which would be substitutable to an extent, and that often there are alternatives, at least in technological terms, on how a particular call could be routed from the origination point to the termination point.

Whether this technological feasibility is sufficient to make two routes substitutable depends on the relative efficiency of the routes in question. For example, a plane journey from KL to Singapore via New York might be seen as a technological substitute for getting from KL to Singapore on a direct flight. However, in view of the difference in cost and time the two would hardly appear to be effective demand substitutes.

Similarly, in the communications and multimedia sectors the degree of cost savings that are derived from least cost routing have a significant bearing on whether a number of routes should be considered as part of the same market or whether they should be placed in separate markets. The Commission understands that in general there is a single optimal route for a given communications circuit. The differences in cost between the best and the next-best route are typically non-trivial. On that basis it considers that there would be limited demand substitutability. Supply side substitution is not applicable in that once a cable is installed it cannot easily be moved from one route to another.

However, in cases of close geographic proximity, where two links effectively cover the same route it may be possible to interconnect at sufficiently low cost so that the two links could be considered as part of the same market. Equally, alternative transmission technologies may in some cases provide a sufficient constraint to be considered as belonging to the same market. While such cases are not infrequent at the upper tiers of the network hierarchy they are less likely at the very start and the very end of a call path, i.e. at the stage of the local loop. This is because the call path must include the two particular telephone connections at either end, and as such also the respective cables that link them to their respective local exchanges.[48]

In summary, it appears that there is likely to be little switching in response to small but significant price changes, so that individual network elements may be viewed as distinct relevant markets. However, where a network element is an input to a particular route

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[48] This consideration equally applies to wireless communications equipment since for a particular call a mobile aerial in KL would not be a substitute for a mobile aerial in Penang.

that is covered by more than one link, the route should be considered the relevant market, rather than the individual network element.

7.3.2 Geographic Aspects

The geographic aspects of the relevant market follow from the discussion in Section 7.3.1. In particular, since it appears that the relevant market will be either, depending on the case in question, the individual network element or the route within which that element resides, the geographic aspects of market definition would follow accordingly.

7.4 Assessment of Dominance

Where the relevant market is defined as the individual network element, it is clear that a single operator would have a monopoly. This would provide a reasonably strong indication of market power. This view is further corroborated by the presence of barriers to entry, arising from the need to obtain a licence, building and planning permissions in many areas, the fact that the incumbent operators are likely to have secured the best locations (e.g. for mobile aerials or broadcasting transmission towers) and the non-trivial investments for many types of equipment. Scale economies in the provision of the vast majority of individual network elements would reinforce this conclusion further.

In situations where the relevant market is considered to be a particular route, dominance will depend on the specifics of the case. Where a single operator supplies a route, it is clear that the operator would have a monopoly. Further, significant scale economies in the supply of network segments indicate high barriers to entry. Drawing on past cost analysis of the Malaysian telecommunications network, the Commission finds that fixed costs comprise between 60 and 90 percent of the long run incremental cost of individual network segments.[49] This implies that, if the price of a network segment were to rise by 10 percent, a new entrant would need to acquire more than 80 percent of traffic in order to enjoy similar cost advantages as the incumbent.[50,51] While these figures may not be fully accurate, even a large change would not alter the conclusion that an entrant would need to capture a substantial share of the market in order to be viable. This would suggest that entry is unlikely to occur at the competitive price level, and as such the single operator will hold a dominant position over that route or network segment.

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[49] Such as an individual tandem or local switch, a transmission link, or combinations of these network elements.

[50] This is calculated by way of a simple example. Assume that total incremental costs of the incumbent are 100 units, comprising of, say, fixed costs of 60 units and variable costs of 40 units. Also assume that existing traffic is 100 call minutes. Average incremental costs are therefore 1 unit per call minute, which will be equal to the competitive price (in the long run). Assume the price then rises by 10 percent (to 1.1 units per call minute). The new entrant would therefore need to acquire 86 percent of traffic (i.e. revenue = cost $\Rightarrow$ 1.1 x Q = 60 + 0.4 Q $\Rightarrow$ Q = 60/(1.1-0.4) = 85.7 or 85.7 percent of the original traffic).

[51] This does not factor in any cost advantages that a new entrant may hold compared to an incumbent. A new entrant is likely to use smaller switches compared to the incumbent, for example, which are relatively less expensive to purchase. However, on the other hand, a new entrant may not be able to purchase equipment units at the same price as the incumbent.

Question 7 (A):

The Commission seeks views on the following:

i. **The extent to which there are likely to be barriers to entry in the provision of network elements.**

ii. **How these barriers may be lowered, the means by which this may be achieved, and what the likely net effect would be to the market players and consumers.**

Where several players compete over a particular route however, dominance is less clear. In general the Commission would expect no single provider to be dominant, although the assessment of dominance should be done on a case-by-case basis. In particular, the Commission notes that the presence of capacity constraints may reverse this finding.

In summary, it appears reasonable to conclude that the relevant market will be either an individual network element or a point-to-point route. If the relevant market is an individual network element or route that is supplied by a single provider, that provider is likely to be dominant in that market. However, if the relevant market is a route over which several providers compete, dominance is likely to be less clear. The study proposes to assess dominance in these instances on a case-by-case basis.

Question 7 (B):

The Commission seeks views on the proposed analytical framework for the assessment of dominance in relation to upstream network elements.

SECTION 8: INTERCONNECTION

8.1 Market Identification

Retail customers expect to be able to speak with or send data to any other retail customer irrespective of the network to which the called party is connected. Alternative network service providers therefore need to interconnect with each other to allow calls to be seamlessly delivered between them.

Interconnection services can be prone to anticompetitive behaviour, since in a large number of cases the paying party does not coincide with the party who makes the choice on which provider to use. This introduces an "externality", i.e. the decision of one person affects other people as well. The person who makes the choice may then not take into account the preferences of the other affected people and the effect of a particular choice on those other people.

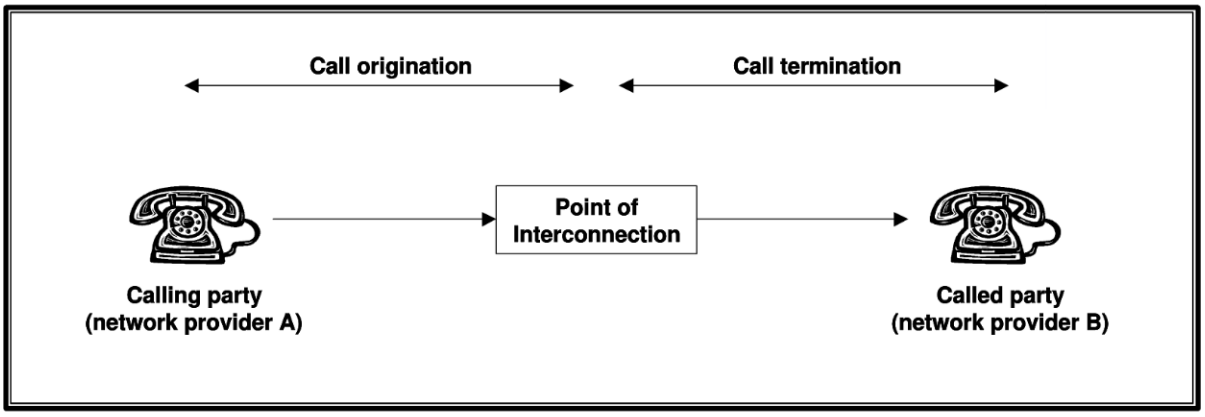
For example, customer A may sign up as a subscriber on provider B's fixed network. Provider B may then choose to increase the price of termination. Since customer A is not immediately and directly affected by this price increase (which is borne by people who place calls destined for customer A), he has little incentive to change provider (or not sign up with provider B in the first place).

This feature is different from most markets, where the consumer who makes the purchasing decision is also the person who bears all the costs of that purchase (i.e. there are no externalities). For example, if a consumer makes the choice of an apple over a pear, this has little effect on other people. Accordingly, if the price of apples goes up this will have an immediate effect only on apple consumers and they may switch to pears or some other substitute.

8.2 Description of the Service

As different customers may not use the same telecommunications network, networks need to interconnect. The call segment from the originator of the call to the point of interconnection is known as 'call origination', whereas the segment from the point of interconnection to the party for whom the call is destined is known as 'call termination'. This is illustrated in Figure 8.1 (for expositional clarity the stylised Figure ignores the potential stage of call transmission).

Figure 8.1
Fixed Call Origination and Termination



8.2.1 Call termination

The termination service is a service for the carriage of telephone calls from a point of interconnection to an end-user's premises where the call is initiated by another end-user.

There are three types of fixed network termination services sold and purchased by operators in Malaysia to allow calls to cross networks. These are:

- local call termination;[52]
- single tandem termination (where the point of interconnection is at a tandem switch or associated with a tandem switch); and/or
- double tandem termination (where the point of interconnection is at a double tandem switch or associated with a double tandem switch).

Each can apply to calls from fixed network to fixed network, calls from mobile network to fixed network and international incoming calls to fixed network.

Termination of incoming calls to mobile networks is analytically equivalent to call termination on fixed networks.

8.2.2 Call origination

The origination service is an interconnection service for the carriage of calls from a customer to a point of interconnection, where that customer initiates the call.

There are two types of fixed network origination services sold and purchased by operators in Malaysia. These are:

- single tandem origination (where the point of interconnection is at a tandem switch or associated with a tandem switch); and/or
- double tandem origination (where the point of interconnection is at a double tandem switch or associated with a double tandem switch).

Both can apply to fixed network-to-fixed network, fixed network-to-mobile network and fixed network-to-international outgoing calls where they relate to free phone 1800, toll free 1300 number services, and other special services. The Commission has therefore only considered origination for 1800 and 1300 services.

The interconnection arrangement for 1800 and 1300 services is structured such that the terminating network provider will purchase an origination service from the originating provider.

Mobile network origination is analytically equivalent to fixed call origination.

8.2.3 Regulatory framework

In the context of the Malaysian licensing framework, it is the NSP licensees, which provide each of these origination and termination services.

Each of the interconnection services is included on the Commission's Access List, meaning that NSPs are under an obligation to provide access to these services, upon written request, on reasonable terms and conditions.

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[52] Or its variant, local termination.

Current interconnection termination and origination rates were established in 2003 by the Commission. Rates are chargeable on sen per minute basis.

8.3 The Relevant Market

At the outset, it is worth noting the distinction between downstream and midstream services. Since interconnection is not an end product in itself, but rather an input into a telephone call or data transmission, it should be viewed as located on the midstream level, between the upstream telecommunications infrastructure that is necessary to establish connectivity and bandwidth, and the downstream product of retail voice and data communications.

However, given that the demand for an input service at the midstream level is derived from the demand for downstream retail services, possible effects at the downstream level must also be considered.

Accordingly, it is necessary to consider demand side and supply side substitution possibilities at the immediate midstream level, but in some cases also at the downstream retail level.

8.3.1 Origination and termination as substitutes

The analysis begins by considering whether origination and termination services are substitutable for one another.

Origination and termination are both individually necessary (possibly together with transmission or transit services) in order to provide connectivity between two points. They are therefore not substitutable on the demand side. Rather, they represent complements.

On the supply side, while both origination and termination may occur on the same network segment, at any single point in time only either origination or termination can be supplied. Accordingly, supply side substitution does not appear possible.

It therefore appears that origination and termination are neither demand nor supply substitutes, and belong to distinct markets.

8.3.2 The relevant market for call termination

The Commission begins by considering call termination to a single specific telephone line and number.

8.3.2.1. Substitutability at the downstream retail level

Any telephone call, depending on the number that the calling party dials, will result in the call being delivered to a specific telephone number, in a particular location, and to a particular end-user's telephone. As that telephone number is unique to one end-user at any time, the caller will generally know whom they are calling. However, most callers probably do not know the identity of the network provider of the called party, even though, in the absence of number portability, a number is normally identifiable with a network and, more importantly, does not have much if any influence over the call recipient's choice of network.

8.3.2.1.1. Demand side substitution

At the downstream retail level, a subscriber will not purchase a separate termination service. Rather the customer purchases an end-to-end call service from a particular operator, and then it is up to that operator to purchase the necessary termination services if the subscriber makes calls to lines on another operator's network.

Therefore, when a subscriber wishes to make a particular end-to-end call, to a given party, that call needs to be terminated on that party's number. Calling someone other than the desired party is unlikely to be an effective demand substitute. This would suggest that calls to an individual party's numbers are distinctly separate markets.

Before making this conclusion however, an analysis of whether there is substitutability with calls to mobiles or calls to the desired party's other fixed lines (assuming they subscribe to more than one line) must be conducted.

Calls to a mobile and calls to a fixed line

Clearly, instead of calling someone on their fixed line, a subscriber could call the desired party on their mobile phone. As detailed in Section 6.3.2 however, there is a large price differential between calls to a fixed line and calls to a mobile phone. This would leave a hypothetical monopolist significant scope to increase the price of termination before a significant amount of end-users would decide to switch away from calling fixed lines. In addition, not all subscribers with a fixed line have a mobile phone and hence there is no alternative means of access. It therefore seems reasonable to conclude that calling a mobile is not a demand substitute for calling a fixed line.

On the question of whether calling somebody on their fixed line is a substitute for calling them on a mobile, the price differential is again important. If there was a possibility that the person in question could be reached on the fixed line, then the calling party could be expected already to use the fixed line. It follows that in general, if a call is made to a mobile, the calling party has good reason not to call the person in question on a fixed line (e.g. because the person being called is not at home or is out of the office). Accordingly it appears that calling a fixed line is not a demand substitute for calling a mobile.

Substitution between fixed lines

Most retail subscribers in Malaysia only have one fixed line connection. Moreover, of those that do have more than one fixed line, these additional lines are likely to be used for alternative purposes (e.g. one line is dedicated for voice, one line for fax, data or Internet applications, etc). Moreover, it is reasonable to expect that additional lines would be supplied by the provider of the fixed line under consideration. It is therefore unlikely that second line connections will provide an effective substitute.

Possible exceptions may exist with businesses that use multiple lines. However, while theoretically valid, this possibility is unlikely to affect our conclusions to a substantial extent. In particular, to the extent that the competitive analysis on one line readily carries over to the remaining multiple lines, the lines can be viewed as an aggregation market.

It therefore appears that there is insufficient demand substitutability between calls to different numbers at the downstream retail level.

8.3.2.1.2. Supply side substitution

Similarly, it is clear that there is no supply side substitute for calling a specific number, since that number is unique. This would suggest that there are no supply side substitutes.[53]

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[53] Note that although the calling party may be able to make calls using alternative providers, (e.g. through equal access), the potential for competition at the retail level does not have an effect

8.3.2.2. Substitutability at the midstream input level

8.3.2.2.1. Demand side substitution

In most cases, the calling party, rather than the called party, in Malaysia, generally pays for telephone calls.[54] As noted previously, the retail price that they pay for these calls will then generally reflect the cost of call termination (as it will form part of the originating provider's cost base). Therefore, if the call termination charges increase, this is likely to lead to higher retail prices for calls.

Given that increases in call termination charges will have less consequence to the called party (as the called party does not pay them), terminating providers are likely to have the ability to charge a price premium for call termination to maximise their call termination profitability. By doing so, the provider will be able to raise its revenues, and will also be able to increase its competitors' end-to-end retail costs.

Accordingly, as at the retail level, when purchasing fixed call termination, the originating network provider will not be able to terminate a call on a network other than the one that its retail customer wishes to call. It then follows that a hypothetical monopolist in the supply of fixed call termination for a particular call would find a price increase above the competitive level profitable.

8.3.2.2.2. Supply side substitution

On the supply side, alternative network service providers cannot offer an equivalent termination service, given that they cannot technically terminate services over each other's networks. There is therefore no supply substitutability at the midstream input level.

8.3.2.2.3. Conclusion on the relevant market for call termination

Since it appears that there are neither sufficient demand side substitutes nor supply side substitutes for call termination to a given customer, at either the midstream input or the downstream retail level, call termination to that customer can be viewed as a distinct competition policy market.

For the purposes of analysis, however, the Commission has aggregated these individual markets for call termination by network service provider. Accordingly, there will be separate aggregation markets for call termination on each network.

It should be noted that this conclusion, whereby each operator is in a separate market for call origination, makes it superfluous to consider whether fixed and mobile call origination should be viewed as in the same market.

8.3.3 The relevant market for call origination

The Commission starts by looking at call origination from a single specific telephone line to either a 1300 or 1800 number. At the outset, however, note that the analysis for call origination services for these particular numbers is analytically equivalent to that for call termination (just in mirror image).

8.3.3.1. Substitutability at the downstream retail level

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on competition for wholesale call termination. The call will still need to be physically terminated on the called party's designated network.

[54] With the exception of free phone or toll free services, as discussed in Section 8.2..

8.3.3.1.1. Demand side substitution

Calls to free phone 1800 numbers are paid for by the called party rather than the calling party. Calls to toll free 1300 numbers are also paid for by the called party with the exception of the local call charge, which is paid for by the calling party. As a result, and as was the case for termination, a party will call a 1800 number and to a lesser extent a 1300 number without reference to the cost of making that call (and therefore the charges involved with originating that call).

The called party (the merchant or the VoIP) will have no option other than to pay for originating that call from the network serving the calling party. This would be the case even if the price of origination were to rise. No feasible demand substitute exists. This would suggest that individual calls to 1300 and 1800 numbers are distinctly separate markets.

8.3.3.1.2. Supply side substitution

Equally, there is no supply side substitute for call origination from a given customer's telephone line since origination from other lines would require the customer to switch telephone connection. No switching would occur even in the event of an increase in the price of origination given that this increase would not be felt by the calling party (who makes the choice of originating network provider). It therefore appears that there are no supply side substitutes at the downstream retail level.

8.3.3.2. Substitutability at the midstream input level

8.3.3.2.1. Demand side substitution

When a provider has signed up a merchant/VoIP to use its network to service a toll free or free phone number, that provider has no choice other than originating each call from the calling party's originating network. Another network or another provider is not a feasible demand substitute. Accordingly, it appears that there is no substitutability on the demand side at the midstream level.

8.3.3.2.2. Supply side substitution

Equally, there is no supply side substitute for call origination from that customer's telephone line since the provider in question would be unable to originate the call in question from another network. This suggests that there are no supply side substitutes at the midstream level.

8.3.3.3. Conclusion on the market for call origination

Since there are neither any demand side substitutes nor any supply side substitutes for call origination from a given customer's telephone connection, either at the midstream or the downstream retail level, call origination for an individual customer is likely to represent a distinct competition policy market.

However, given that within the network of a given operator the competitive analysis and conditions that apply to a given customer would also carry over to all other customers, the Commission considers it valid to aggregate the individual call origination markets for single customers into aggregation markets by operator. Accordingly the relevant competition markets are likely to be call origination services from a single operator's network.

It should be noted that this assessment, whereby each operator is in a separate market for call origination, makes it superfluous to consider whether fixed and mobile call origination should be viewed as in the same market.

8.3.4 Geographic aspects

The geographic dimension of the relevant market follows directly from the product market analysis.

8.4 Findings on Assessment of Dominance

As detailed in Section 8.3.2, once a customer has subscribed to a particular network, anyone wishing to call that individual needs to have his or her call terminated on that network. Thus, aggregation markets are appropriate for call termination on each network. Defining the market in this way implies that each operator with a network is a monopoly supplier in the provision of call termination services to their network. As entry is unlikely, it appears that each of the providers is dominant in the market for call termination on its own network.

Similarly, as concluded in Section 8.3.3, since there are neither any demand side substitutes nor any supply side substitutes for originating calls to a 1300 or 1800 number, call origination for each individual represents a distinct competition policy market. These individual markets have then been aggregated by network service provider. Defining the market in this way would imply that each operator with a network is a monopoly supplier in the provision of call origination services from their network. Thus, it appears that each of the providers is dominant in the market for call origination on its own network.

Question 8 (A):

The Commission seeks views on the extent to which existing regulatory arrangements constrain the behaviour of providers of interconnection services. In particular, whether regulation is likely to be able to constrain all potential types of abuse by a dominant provider of interconnection services.

SECTION 9: LEASED LINES

9.1 Market Identification

Leased line services provide a dedicated point-to-point communications link for the exclusive use of the customer. Leased lines are secure, reliable in the sense that the associated capacity is always available to the customer and flexible in terms of what they can be used for and are therefore essential to the operation of many large and medium sized businesses in Malaysia. In view of the National Policy Objectives it is important to ensure that customers are faced with competitive services, with high quality at a reasonable and affordable price.

Leased line services are also sold to operators on a wholesale basis, and therefore have implications for competition in downstream communication markets.

International leased lines and domestic leased lines are offered in Malaysia. This study has focussed on domestic services, although the analytical framework contained in the following sections applies equally to international leased line services.

9.2 Description of the Service

9.2.1. Wholesale and retail services

Both wholesale and retail leased line services are offered in Malaysia. A retail leased line is a permanent point-to-point communications link between two premises which is dedicated to the customer's exclusive use. Leased lines can be used to transmit voice, data and video services. As they involve point-to-point connection, they are appropriate for use by a customer with high voice and data traffic volumes between specific locations – for example, between two offices of a company, between a customer and a supplier or between a customer and an ISP etc.

Unlike retail services, wholesale leased line services are generally purchased from an operator by another operator. These services can offer point-to-point (or "node-to-node") connectivity and bandwidth or simply dark fibre core,[55] and can therefore be used by operators either to provide retail leased line services to end-users or to augment their own existing networks. The wholesale service can therefore be viewed as an upstream input. While the wholesale leased line service may be provided by NSP licensees, it still in general represents a building block or an input to the provision of retail leased lines services and other communications services. The analysis is therefore similar to that contained in Section 7. In this section, the focus is on retail leased lines.

When a provider receives a request from a customer for the supply of a new leased line, the provider will typically connect the customers' premises using an already existing transmission link in the core network. The connection from the local exchange to the customer's premise(s) is generally made using the copper access network (for lower bandwidth services), microwave or fibre optic cable (for bandwidth of over 2 Mbits) or fibre optic cable (for bandwidth of 155 or 622 Mbits). If the customer's premises are very close together, the leased line provider may bypass existing networks altogether and connect the two (or more) customer's premises directly.

The primary advantages of leased lines are their reliability and flexibility. They provide guaranteed bandwidth, that is available all the time and a secure communications

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[55] Ancillary services (such as cabin space and tower space) are also often offered in conjunction with leased lines.

channel. Moreover, it is normal for leased lines to be supplied with high levels of customer care. The service facilitates flexibility given that users can determine and manage what services are carried over it. Leased lines therefore represent one of the most versatile and highest quality electronic communication services available to customers.

9.2.2. Supply structure

In Malaysia, there are several providers offering leased line services. Telekom Malaysia has an extensive network of fibre optic cable, and uses this to provide leased line services. Telekom Malaysia's services provide a range of bandwidths of up to 2 Mbits/second, and also speeds of 34, 45 and 155 Mbits/second. In some business districts, Telekom Malaysia also offers speeds of 4, 6 and 8 Mbits/second. Telekom Malaysia also offers analogue leased line services.

Charges for Telekom Malaysia's leased line services typically involve a one off installation charge for connection at each end of the leased line (between RM500 and RM1000 depending on bandwidth). Ongoing charges include an annual rental 'port' charge, and an annual 'local line' charge, each differentiated by bandwidth. There is no per unit charge for the usage made of the line. Over the past few years, Telekom Malaysia has reduced its leased line prices by 50 percent. This has been partly due to competition from other providers of leased lines.

Time and Maxis also provide digital leased line services in Malaysia. Time's rates are similar to those of Telekom Malaysia, although typically there is no installation charge. Charges are differentiated by bandwidth, and consist of an annual fixed charge and an annual line fee charged according to bandwidth and the distance between the subscriber's premises and the local switch. Discounts are also offered on standard rates.

Maxis' subscribers are required to pay a 3 month deposit and an installation charge (either RM1000 or RM4000 depending on the bandwidth of the connection). Ongoing rental charges are also payable, as for Time and Telekom Malaysia.

9.3 The Relevant Market

9.3.1. Substitutability between analogue and digital/broadband leased lines

Analogue leased lines allow the transmission of analogue signals typically in the frequency range 300 Hz to 3.4 kHz. They are therefore only suitable for voice transmission or for transmission of low-speed data. They involve the lease of a copper pair connecting the customer to the exchange and, depending on the point to which the customer wishes to be connected, the lease of a voice channel on the transmission link between exchanges and a second local end. Digital and broadband leased line services are available in a range of different bandwidths up to 155 and 622 Mbit/s, and offer considerably greater functionality to analogue lines.

Given the low capacity requirements of analogue leased line customers the added investment of upgrading to a narrowband digital leased line is unlikely to be cost-effective, even in response to a 5-10 percent price increase in the price of analogue leased lines. Telekom Malaysia's charges for analogue lines are currently about half those for the lowest bandwidth of digital leased lines. Similarly, a digital leased line customer is unlikely to switch to an analogue service, in the event of a 5-10 percent increase for the digital leased line, given the already large price differential and restricted functionality of analogue lines.

With respect to supply side substitutability, before providers of digital leased lines could supply analogue leased lines, they would require their own local copper access networks. Constructing such a network would be very expensive and time intensive. Similarly, provision of an analogue circuit using equipment intended for digital circuits is also highly unlikely to be cost effective. Digital and analogue lines are therefore not likely to be supply substitutes.

Accordingly, it appears that analogue leased lines and digital leased lines constitute separate relevant markets.

9.3.2. Alternative services as substitutes for analogue leased lines

The most obvious demand substitute for analogue leased lines would be switching to using the public network (the PSTN). Whilst substitution to the PSTN network is possible, the customer's requirement for guaranteed availability service involving a large number of calls to a particular location means that even with a 5-10 percent price increase in the cost of a leased line, it is unlikely to be a cost-effective option compared with paying PSTN rates. For example, the annual rental charge for an analogue leased line from Kuala Lumpur to Damansara would be RM3,420.[56] A customer would only need to make 13 national calls or more per day before the price of a standard PSTN service would exceed this charge.[57] Similarly, the annual rental charge for an analogue leased line from Kuala Lumpur to Ipoh would be RM14,880.[58] A customer would only need to make 23 national calls or more per day before the price of a standard PSTN service would exceed this charge.[59]

On the supply side, it would be possible for a provider of PSTN services with its own access network to move swiftly into the provision of analogue leased line services (as they have access to a local copper network). The two services are therefore supply substitutes. Note however that, as Telekom Malaysia is the only provider of both PSTN and analogue leased line services,[60] this feature makes little difference to the Commission's assessment of dominance, and therefore analogue leased lines and PSTN services are treated as being in *separate* markets for the purposes of analysis.

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[56] Source: Illustrative price quoted on Telekom Malaysia's website at http://www.tmdata.com.my/b_analogue.htm.

[57] This assumes that the average call duration is 3 minutes, and the called and calling parties are between 50 and 150km away from each other. The calculation also assumes that there are 50 working weeks per year, and 5 working days per week. Business line rental is assumed to RM45 per month.

[58] Source: Illustrative price quoted on Telekom Malaysia's website at http://www.tmdata.com.my/b_analogue.htm.

[59] This assumes that the average call duration is 3 minutes, and the called and calling parties are at least 150km away from each other. The calculation also assumes that there are 50 working weeks per year, and 5 working days per week. Business line rental is assumed to RM45 per month.

[60] The Commission notes that there may be a number of small areas in Malaysia where other providers of PSTN services operate.

9.3.3. Alternative services as substitutes for digital leased lines

9.3.3.1. Demand side substitution

In principle, voice signals and data could be transported over conventional, non-dedicated networks in ways that, compared with PSTN services, more closely approximate a leased line service. The closest substitute service for leased lines however will depend on what use the service is intended for.

Low bandwidth services (less than 2Mbits) are typically used to provide route-to-route connectivity between computer equipment at two or more customer sites. The closest substitute that could support this function would be an Internet Protocol - Virtual Private Network (IP VPN).[61] However, the Commission understands that higher bandwidth services (more than 2Mbits) are most commonly used for multiplexing purposes (i.e. switchboard connection). A potential substitute for leased lines in this instance would be microwave, laser or satellite links.

With respect to low bandwidth leased line services, it appears that leased lines and IP VPN are not demand substitutes at this time for two reasons. First, the Commission notes that the roll out of xDSL has only just begun in Malaysia, and the coverage of services is currently limited. Second, it is questionable as to whether this type of service could offer a comparable level of security compared to leased lines as required by the vast majority of leased line customers.

With respect to higher bandwidth lines, information from several of the operators suggest that microwave, laser or satellite links do currently provide a competitive constraint to leased line services in some instances (for example, where the line of sight between the customer's premises is suitable). It therefore appears that they are demand substitutes.

Question 9 (A):

The Commission seeks views on whether customers are likely to view IP VPN as a viable substitute for digital leased lines.

9.3.3.2. Supply side substitution

With respect to supply side substitutability, given that providers of IP VPNs and microwave/laser links are already likely to have access to a local network, the most important asset required to supply leased lines is a backbone network. Any provider who would like to enter the retail leased line business would firstly either have to build or acquire such a network, or purchase sufficient capacity in a wholesale operator's trunk network.

Building a network could not be undertaken swiftly. It would imply substantial sunk and risky investment. A significant amount of time would also be required to obtain the

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[61] This involves an xDSL service used in conjunction with the public Internet. Services in Malaysia include Telekom Malaysia's COINS service or Maxis' IP VPN.

necessary Right of Way/way leave permits and licences, and construction itself would take considerable time, particularly if the network had to be built from scratch.

Similarly, the wholesale market for leased lines is characterised by long-term contracts for capacity (typically between one and 5 years), making it difficult for operators to acquire capacity in the trunk network swiftly. Furthermore, the Commission notes that the provision of (wholesale) leased lines is not currently on the list for mandatory access.

It therefore appears that barriers to entry are sufficiently high to prohibit swift entry in response to a hypothetical price rise. Accordingly, alternative services such as microwave, satellite, laser and managed data services using the public network do not appear to be supply substitutes for leased lines.

9.3.3.3. Conclusion

It appears that satellite, free space optics and microwave links are likely to provide effective demand substitutes for leased lines, which would suggest that they should be considered in the same market as digital leased lines. At this time, it does not appear that there are any other demand or supply substitutes for leased line services. The Commission is mindful, however, that as the xDSL market matures in Malaysia, this assumption may warrant further assessment.

Question 9 (B):

The Commission seeks views on whether there are likely to be any other services, other than satellite, free space optics, or microwave, which may provide a competitive constraint to digital leased lines.

9.3.4. Substitutability between different bandwidths of digital leased lines

Digital leased lines are currently offered at the following bandwidths in Malaysia:

- · 128kbits/second to 2 Mbits/second; and
- · 4, 6, 8, 34, 35, and 155 Mbits/second.

As a matter of principle, customers with a certain amount of data or voice traffic to transmit are unlikely to consider switching to "too little" capacity, given that lower bandwidth will not be able to deliver the required service. Similarly, a 5-10 percent price increase in the price of one of the bandwidths is unlikely to result in customers upgrading to the next available bandwidth. This is because of the non-trivial price differential between each of the bandwidths. For example, Telekom Malaysia's recurring annual long distance (trunk/junction) charges[62] for each bandwidth increment differ by between

[62] This charge is a significant component of the total leased line charge, particularly if the distance between the customer's premises is more than 50 km.

15 and 30 percent.[63] It therefore appears that demand substitution between different bandwidths of digital leased lines is highly unlikely.

On the supply side, competitive conditions are relatively homogenous between the different types of leased lines. Most backbone networks in Malaysia can be used to provide all types of digital leased line, and each of the operators offer leased lines of any bandwidth up to 155 Mbits/second. There is a possible 'breaking point' however at the 2 Mbits/second bandwidth level.

The provision of leased lines at below 2 Mbits/second hinges on the ability to provide access to a local copper network, while the provision of leased lines at above 2 Mbits/second does not. If a leased line provider has access to a local copper network then it could easily provide any leased line service below 2 Mbits/second. If not, then the operator would need to construct such a network, which would be time and resource intensive and therefore could not be done swiftly. Accordingly, supply substitution between leased lines of bandwidth between 128kbits/second and 2 Mbits/second appears likely. However, supply substitutability between leased lines of bandwidth below 2 Mbits/second, and those that are above 2 Mbits/second, appears unlikely.

The supply of leased lines above 2 Mbits/second also requires access to a local network, although this would be a fibre or microwave network rather than a copper network. Again, if a leased line provider has access to such a local network then it could easily provide any leased line service above 2 Mbits/second. If not, then the operator would need to construct such a network, which could not be done swiftly. Accordingly, the Commission would expect supply substitution between the bandwidth range of between 2 Mbits/second and 155 Mbits/second. However, it would not expect any supply substitutability between leased lines of bandwidth above 2 Mbits/second, and those that are below 2 Mbits/second.

Accordingly, by virtue of supply substitutability, it appears that digital leased lines of bandwidth above 2 Mbits/second and digital leased lines of bandwidth below 2 Mbits/second should be in separate markets.

9.3.5. Geographic aspects

The points to be connected by a leased line will in general be determined by the locations of a customer's premises - i.e. between central and remote offices, outlets, production sites, etc - that they would like to connect. The service is specific to these locations, and customers will not consider connections between any other pair of points to be substitutes.[64]

However, suppose a hypothetical monopolist was to raise its price above the competitive level for providing a new leased line between two given points. Other providers of leased lines in close geographic proximity would then have an incentive to switch to providing connection between these points. Therefore, it appears that competition for digital leased lines takes place over corridors or popular routes, defined by major segments of the trunk networks.

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[63] The recurring annual long distance (trunk/junction) charges are quoted on Telekom Malaysia's website at: http://www.tmdata.com.my/b_digitaline.htm

[64] This is in some aspects analogous to the airlines business, where competition authorities have repeatedly found that flights between different routes are not demand substitutes; see for example United Airlines / US Airlines, COMP / M.2041, Section 9.

With respect to analogue lines, strictly speaking, the geographic markets are also likely to be best viewed on a route-by-route basis. Given that market conditions are relatively homogenous across the country (Telekom Malaysia is the only supplier of analogue lines), for analysis purposes, these markets can be aggregated into a single national aggregation market.

With respect to digital leased lines, the backbone fibre networks tend to follow federal roads, railway, electricity and/or gas network corridors in Malaysia, and some operators have exclusive right of access to some of these corridors (e.g. Fiberail has an exclusive right of access to the railway corridor). In broad terms, however it appears that there are four corridors in peninsular Malaysia over which digital leased line services are offered – the Southern, Eastern, Northern and Central corridors. In addition to the corridors and routes within peninsular Malaysia, there is also the connection to East Malaysia. Popular routes within each corridor are listed in Table 9.1.

The geographical boundaries of the relevant markets for digital leased lines will be defined according to these and other routes served by leased line providers in Malaysia.

Table 9.1
Corridors and Popular Leased Line Routes in Malaysia

Corridor	Popular Routes
Northern corridor	Kuala Lumpur/Cyberjaya to Penang Kuala Lumpur/Cyberjaya to Ipoh
Eastern corridor	Kuala Lumpur/Cyberjaya to Kuantan Kuala Lumpur/Cyberjaya to Kuala Terengganu Kuala Lumpur/Cyberjaya to Kota Bharu
Southern corridor	Kuala Lumpur to Seremban; Kuala Lumpur/Cyberjaya to Malacca Kuala Lumpur/Cyberjaya to Johor Baru
Central ring or corridor	Kuala Lumpur/Cyberjaya to Cyberjaya/Putrajaya Kuala Lumpur/Cyberjaya to Damansara Kuala Lumpur/Cyberjaya to Shah Alam
Connection between peninsular and East Malaysia	Kuala Lumpur to Kuching Kuala Lumpur to Kota Kinabalu

Source: Operators' submissions made in response to the MCMC Information Request

9.4 Findings on the Assessment of Dominance

Preliminary assessment suggests that there are separate product markets for analogue leased lines, digital leased lines up to and including 2 Mbits/second, and digital leased lines of more than 2 Mbits/second. Further, competition for digital leased lines will occur within major routes or corridors in Malaysia, while analogue leased lines could be assessed as a national aggregation market.

Telekom Malaysia is the monopoly provider of analogue leased lines in Malaysia. Moreover, it appears that there are high barriers to entry in the provision of analogue leased lines, given that this requires access to the local copper network. The provision of third party access to the local network is not currently mandatory. This suggests that Telekom Malaysia is dominant in the provision of analogue leased lines in Malaysia.

Question 9 (C):

The Commission seeks views on the following:

i. **Whether there are likely to be high entry barriers in the provision of analogue leased lines.**

ii. **How these barriers to entry may be lowered and is there a gain to any party in lower barriers to entry for this particular segment?**

iii. **What would the net effect of lower barriers to entry be to the industry and consumers?**

For digital lines the assessment of dominance needs to be done on a case-by-case, route–by-route basis. At this time, the Commission does not have sufficient information to be able to assess dominance within each of the routes in Malaysia, however the state of competition within a number of popular routes is considered below.

It appears that Telekom Malaysia is currently the only provider of digital leased lines over the routes linking East and peninsular Malaysia (from Kuala Lumpur to Kuching and Kuala Lumpur to Kota Kinabalu). Moreover, competition from substitute services appears limited:

- These routes extend over a significant distance and across a sea, therefore competition from microwave or laser is not likely to be plausible.
- Satellite services may provide a competitive constraint.
- Capacity constraints in satellite and the price differential (at competitive price levels) between satellite and leased lines may limit the extent to which satellite is able to constrain the price of leased lines over these routes.
- There are high barriers to entry over these routes, due to the significant investment that would be required and the economies of scale involved (as outlined in Section 7.4).

These considerations would suggest that Telekom Malaysia is likely to be dominant over these two routes.

Question 9 (D):

The Commission seeks views on the extent to which satellite or any other services provide a competitive constraint to the provision of leased lines over routes between East and peninsular Malaysia.

With respect to routes within peninsular Malaysia, Telekom Malaysia has not provided information about its leased line service on a disaggregated, corridor or route-by-route basis, given that its services are available nationwide and are therefore classified in this way. The Commission is therefore unable to analyse market shares and available capacities over popular routes in peninsular Malaysia.

However, on an aggregate, nationwide basis, the Commission is informed that Telekom Malaysia has some [c-i-c][65] leased lines, while Maxis has some [c-i-c] leased lines and Time has a total capacity of [c-i-c].[66] Although it appears that Telekom Malaysia may have significantly greater number of leased lines relative to the other operators, information from the operators suggests that there is [c-i-c] spare capacity at the wholesale level. This suggests that while Telekom Malaysia may have a significant number of leased lines and customers nationwide, other operators would be able to respond reasonable swiftly if Telekom Malaysia tried to raise its price for leased lines. The significant price reductions recently offered by Telekom Malaysia would support this conclusion.

Question 9 (E):

The Commission seeks views on the following:

i. **Whether service providers compete on price and other terms and conditions in the provision of leased lines.**

ii. **The extent to which there is available and easily accessible network capacity, on a route by route basis within peninsular Malaysia.**

That said, the market for lower bandwidth leased lines (below 2 Mbits/second) does require a provider of leased lines to have access to the local copper network. Telekom Malaysia holds considerable advantage in this regard. In this market, it appears that Telekom Malaysia may be dominant on some routes, although the exact identification of these routes would require a case-by-case analysis.

Even at higher bandwidths, it is reasonable to expect Telekom Malaysia to have advantages over its competitors. Even within corridors or routes where a number of providers operate, evidence suggests Telekom Malaysia may hold an advantage over new entrants given that:

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65 Information has been removed due to its commercial sensitivity. Throughout this report [c-i-c] denotes that commercially sensitive information has been redacted. Such information has been provided to the Commission on a confidential basis.

66 [c-i-c]

- Telekom Malaysia is better able to manage line of sight difficulties associated with microwave, given that it has access to a greater number of smaller exchanges and therefore has more launching sites;
- Telekom Malaysia's costs of installing fibre are likely to be less given that it holds access to a greater number of ducts in the network and has a greater chance of avoiding trenching costs compared to other providers; and
- Telekom Malaysia is able to operate nationally, while some operators are limited in the extent to which they can provide point-to-point connectivity by licensing arrangements. In some cases, a business premise requiring connectivity may be located outside the region or corridor where these operators are permitted to operate, implying that they will be unable to offer the entire service required by a customer.

Moreover, in general Telekom Malaysia is likely to be better placed to compete, given its role as the national incumbent with the widest backbone network, the strongest brand name, and a wide portfolio of services. Yet, whether this gives Telekom Malaysia a dominant position would depend on the exact details on a cases-by-case basis.

Question 9 (F):

The Commission seeks views on the following:

i. **The extent to which Telekom Malaysia is likely to enjoy a competitive advantage over new entrants in the supply of leased lines as a consequence of having a wider network and portfolio of services.**

ii. **What other factors might contribute to Telekom Malaysia's competitive advantage aside from these two?**

iii. **What new developments or technologies might be likely to reduce this competitive advantage in future?**

In summary, based on the information available at this time, it appears that Telekom Malaysia is likely to be dominant in the supply of analogue lines in Malaysia. With respect to digital leased lines, it appears that dominance will need to be assessed on a case-by-case, route-by-route basis. Considerations that the Commission intends to take into account are: (1) the available capacities held by each operator, (2) barriers to entry, and (3) the commercial advantages held by one or more of the operators.

Nonetheless, on the basis of the evidence assessed so far, it appears that Telekom Malaysia is likely to be dominant in the supply of digital leased lines on the routes between peninsular and East Malaysia. In addition, Telekom Malaysia is likely to be dominant on some routes within peninsular Malaysia.

Question 9 (G):

The Commission seeks views on the following:

i. **The need for regulation of leased lines (covering price regulation and quality of service).**

ii. **Whether the introduction of such regulation would be able to constrain all potential abuses by a dominant provider of leased line services.**

iii. **How might regulation be applied to leased line service providers (covering price regulation and quality of service) to limit abuse of a dominant position while ensuring profitability and growth of the market players?**

SECTION 10: BROADBAND SERVICES

10.1 Market Identification

Broadband services are a very effective way of taking full advantage of the benefits brought about by the Internet and the new economy with large amounts of content available over the net.

Broadband is also a high priority on the government's agenda. Malaysia aspires to become Asia's technology centre and a major global hub for communications and multimedia information and content services. This goal is reflected in policy, e.g. the Last Milers (AtlasOne, NasionCom, etc.) are required to provide last mile infrastructure that is capable of supporting broadband connections, and also the announcements by the government relating to the Budget 2004. As discussed further below, as part of its 2004 Budget, the government announced the merger between Jaring and TMNet, as well as significantly reduced charges for Telekom Malaysia's business and consumer broadband services.

The Commission considers the conditions in the downstream retail market. This is the point of contact with individual customers. In view of the National Policy Objectives it is important to ensure that customers are faced with competitive services, with high quality at a reasonable and affordable price.

Note that the Commission has not assessed the retail sector for dial-up Internet services. This is because this sector is likely to be one of the most competitive communications sectors in Malaysia. To the extent that there are any issues of dominance or anti-competitive behaviour, the Commission expects this to be a reflection of conditions and/or behaviour in upstream services. The market for upstream network services has already been considered in Section 7.

10.2 Description of the Service

Broadband services involve the provision of sufficient bandwidth to facilitate the transfer of data at high speeds (between 128 kilobits and 155 Megabits per second), enabling new types of content and services to be delivered to customers, together with the necessary applications and content to use those new services. New services include multimedia based applications such as video-on-demand, and faster rate of Internet access.

The main technologies that are used to provide broadband services in Malaysia are Asymmetric Digital Subscriber Lines (ADSL) and Symmetrical (or Single-line) Digital Subscriber Lines (SDSL). Wireless technology is also used, particularly in rural areas where such technology can overcome the relatively high cost of laying land cables, and also in business centres where tall buildings can be reached by line-of-sight to a central transmitter. Some providers also provide broadband services using fibre optic cable. Finally, a small proportion of customers in Malaysia use basic and primary ISDN lines, and broadband leased lines, for data application and high speed Internet purposes.

There are a series of operators that offer broadband services in Malaysia. The licensing requirement under the CMA for supplying retail broadband services is an ASP licence.

Retailers hold the relationship with the end-user, and undertake activities which help distinguish or improve their broadband retail product, such as improving service capacity by increasing international links and caching to improve customer experience and, for protection, installing security devices to prevent unwanted service disruptions.

The upstream services provided by Network Service Providers serve as an essential input to retail broadband services. Network Service Providers often supply access to local network elements, and also a broadband data channel across the copper line connecting the end-user to the local exchange (via xDSL technologies).

The market definition for the downstream broadband service is discussed in the remainder of this section. The market definition and assessment of dominance for the upstream service would follow that for network facilities, which is the subject of Section 7, and is therefore not considered further here.

10.2.1. Background

Retail broadband services are provided to end-users on a rental basis, although in some cases the subscriber is also required to pay a one-off, upfront installation fee covering the cost of converting the existing exchange line or installing the necessary equipment. Rental charges are payable monthly, and are differentiated according to the download and upload speeds required by the subscriber. Recent prices are provided in Table 10.1 below.

Broadband rates in Malaysia are not subject to formal regulation at this point in time.

Table 10.1
Existing Broadband Rates

	Technology	Download Speed	Upload Speed	Installation fee (RM)	Monthly fee (RM)
		TMNet[67]			
Home Streamyx					
60 hours Usage (Without Modem)		384k			44.00
Unlimited Usage (Without Modem)		384k			66.000
Unlimited Usage (With Modem)		384k			77.00
Unlimited Usage (Without Modem)		512k			88.00
Unlimited Usage (With Modem)		512k			99.00
Enterprise ADSL[68]					
Unlimited Usage (With Modem)	ADSL	1.0Mbps			415.00
Unlimited Usage (With Modem)	ADSL	1.5Mbps			618.00
Unlimited Usage (With Modem)	ADSL	2.0Mbps			688.00

[67] Broadband rates quoted are the rates offered by TMNet as a result of the Budget 2004 announcement. These rates are effective 1 November 2003.

[68] The enterprise service relates to 1 fixed IP address.

	Technology	Download Speed	Upload Speed	Installation fee (RM)	Monthly fee (RM)
Corporate ADSL[69]					
Unlimited Usage (With Modem)	ADSL	1.0Mbps			618.00
Unlimited Usage (With Modem)	ADSL	1.5Mbps			1,048.00
Unlimited Usage (With Modem)	ADSL	2.0Mbps			1,188.00
		Time Broadband			
HomeNET 256	SDSL	256kbps	256kbps	399.00	99.00
HomeNET 384	SDSL	384kbps	384kbps	399.00	129.00
HomeNER Pro*	SDSL	448kbps	448kbps	399.00	199.00
BizNET 500	SDSL	512kbps	512kbps	99.00	599.00
BizNET 2000	SDSL	2048kbps	2048kbps	99.00	1399.00
SoNET 250	SDSL	256kbps	256kbps	99.00	339.00
		Maxis Broadband			
Hink (Super)	ADSL	128kbps	64kbps	Waived	300.00
(With Modem)	ADSL				
Hink (Power)	ADSL	512kbps	128kbps	Waived	740.00
(With Modem)	ADSL				
Hink (Turbo)	ADSL	2Mbps	512kbps	Waived	2400.00
(With Modem)	ADSL				

Source: Communications and Multi-Media, Selected Facts and Figures, Q1 2003 and the government's Budget 2004 announcement.

10.2.2. Supply structure

TMNet currently supplies the vast majority of broadband subscribers in Malaysia. According to information collected by the Commission, as at June 2003, TMNet supplied around [c-i-c] percent of all broadband subscribers, while new entrants such as TimeNet and MaxisNet supply around [c-i-c] percent of subscribers each.

10.3 The Relevant Market

The following sections set out the analysis covering what services should be included in the relevant market. In particular, the Commission assesses whether there are separate markets for:

[69] The corporate service relates to 5 fixed IP addresses.

- the provision of broadband services using different technologies (ADSL, SDSL, fixed wireless, cable);
- dial-up on direct exchange lines versus broadband services;
- the provision of data application and Internet services over ISDN lines and broadband services;
- the provision of data application and Internet services using mobile lines and broadband services; and
- the provision of leased lines and broadband services.

10.3.1. Broadband retail services using different technologies

10.3.1.1. Demand side substitution

The functional differences between the services provided using different broadband technologies are minimal. ADSL, fibre cable, and fixed wireless are all able to offer comparable upload and download speeds, at comparable prices. Accordingly, the majority of end-users are likely to be indifferent between broadband services using different technologies, and, as such, will perceive them as demand substitutes.

SDSL may be an exception, given that this offers a much faster uploading speed capability than the other technologies (ASDL, wireless, fibre optic). While customers may wish to "upgrade" to SDSL if the price for other technologies were to rise significantly, the price differential may mean that SDSL is a somewhat more distant substitute. However, the question of demand substitutability with respect to SDSL is not pivotal since there is supply side substitution between ADSL and SDSL (see Section 10.3.1.2).

10.3.1.2. Supply side substitution

Providers tend to specialise in the provision of broadband retail services according to a particular technology. This is because different technologies require largely different infrastructure. For example, broadband over fibre optic cable requires access to a fibre optic network, ADSL/SDSL requires access to converted exchange lines, and fixed wireless requires access to spectrum rights. In addition, the provision of fixed wireless versus other line-based technologies tends to be driven by technological and geographical constraints. For example, fixed wireless may be more economical in remote regions, or in areas where direct exchange lines cannot be converted to ADSL or SDSL. This would suggest that broadband services utilising alternative technologies are not effective supply substitutes.

The key exception is the substitutability between ADSL and SDSL. An ADSL line could be converted to an SDSL line, and vice versa, relatively swiftly and at low cost. This suggests that they could be supply substitutes.

10.3.1.3. Conclusion on different technologies

Given that broadband services utilising alternate technologies are likely to be demand substitutes (with the possible exception of SDSL), they are likely to be in the same market (the geographic considerations are discussed in Section 10.3.5).

With respect to SDSL, although it may be a more distant demand substitute for the other broadband technologies, it is linked to the other technologies through supply side substitution.

10.3.2. Dial-up Internet versus broadband services

10.3.2.1. Demand side substitution

The primary application of broadband services, by both residential and business subscribers, is Internet access. Therefore the extent to which dial-up Internet or 'narrowband' services and broadband services may be considered to be close substitutes by customers, will depend on whether narrowband Internet access over exchange lines and broadband Internet access are substitutes in the eyes of subscribers.

As discussed in Section 5.3.3, broadband access to the Internet, whether using xDSL, fibre or wireless technologies, has a number of distinguishing functionalities:

- Speed – access is generally at least ten times as fast as with a dial-up connection on a standard direct exchange line.
- 'Always on' – by definition, no dial-up is required as the connection – once made – remains lit.
- Application uses – because of the speed, broadband access can be used for a much wider variety of purposes than narrowband access, including streaming video and audio (radio) on the Internet, taking part in multi-player interactive gaming, video-conferencing and other 'content rich' applications.
- Voice and Internet access at the same time – using broadband technologies, it is possible to make voice calls at the same time as accessing the Internet, which is not possible using dial-up on standard direct exchange lines.

Reflecting these functional differences, the price differential in Malaysia between narrowband Internet services and broadband services is considerable. For example, for residential customers, the annual subscription fee for TMNet's dialup Internet service is RM24. This compares to an annual rental fee of RM1056 for TMNet's Streamyx.

While the price differential has to be viewed with the differences in characteristics in mind, broadband and narrowband services are unlikely to be interchangeable from the perspective of end-customers. A small premium in the price of broadband is unlikely to provide sufficient incentive for a customer to switch to the inferior and qualitatively very different dial-up service, and therefore the two services are unlikely to be demand substitutes.

10.3.2.2. Supply side substitution

The issue here is whether providers of dial-up Internet services are able to swiftly switch to the provision of broadband services in case its price rose. The key question is whether they could deliver the required bandwidth.

Given that there are significant economies of scale involved in converting narrowband lines to broadband lines, lines are generally converted on an area by area basis. That is, if there is thought to be sufficient demand for broadband services in a particular area, assuming that conversion is technically feasible at the local exchange, the Network Service Provider in question will install the necessary equipment, offering the available converted lines to Application Service Providers on a wholesale basis. Once the converted lines are sold to a particular service provider, other service providers will be unable to gain access to these, and therefore will be unable to provide broadband services to those customers. This rollout method implies that dial-up Internet service providers will generally be unable to move swiftly into the market for broadband. Therefore, dial-up Internet services and broadband services are not supply substitutes.

10.3.2.3. Conclusion on dial-up Internet versus broadband

Given that dial-up Internet services represent neither a demand nor a supply substitute for broadband services, this would suggest that the market for broadband services should not be widened.

10.3.3. ISDN and broadband services

10.3.3.1. Demand side substitution

Compared to narrowband lines, ISDN lines can transmit data at much faster speeds, facilitating applications such as increased Internet access speed; higher-capacity access to facilitate the download of graphics, video, and multi-media; and remote and dial-up frame relay access. Broadband services, however, have the additional advantage of being "always on", and involve no loss of speed when using voice. Nevertheless, customers may perceive ISDN services as potential demand substitutes for broadband services.[70]

Charges for basic ISDN services are around a third of the price of broadband services. For example, Telekom Malaysia's monthly rental charge for a basic ISDN service would be 30 and RM60, for residential and business customers respectively. This compares to TMNet's Streamyx monthly rental fee for basic broadband packages of RM88 and RM588, for residential and business customers respectively.

The functional limitations of basic ISDN compared to broadband would suggest that business customers do not view broadband and basic ISDN services as substitutable. While the price differential may bridge the gap in quality/functionality, price comparisons are likely to be secondary considerations, suggesting that customers' choice is primarily driven by functionality. A small price premium for broadband services would therefore be unlikely to induce substantial switching towards Internet and ISDN lines. They are therefore unlikely to be demand substitutes from the perspective of business customers.

The likely response from residential customers is less clear. The price differential is considerably smaller, and the functional limitations of basic ISDN are likely to be less onerous for residential customers. Therefore, from the perspective of residential customers, basic ISDN and broadband services are likely to be demand substitutes. the Commission notes however, that this has little bearing on the outcome of the assessment of dominance in this market, given that one provider holds the vast majority of both basic ISDN and broadband in Malaysia.

10.3.3.2. Supply side substitution

The issue of supply substitutability in this case is whether providers of ISDN lines are able to swiftly switch to the provision of broadband services in response to a price premium for broadband services. The cost of converting an ISDN line to a broadband-enabled line is relatively small, provided that there is a significant number of people connected to the exchange who wish to be connected to a broadband service. To convert the line, an engineer has to install new equipment at the exchange and the customer's premises. However, as in the case of narrowband lines, there are significant economies of scale and economies of density involved in converting ISDN lines to broadband lines, implying that it would be feasible to convert lines only on a roll-out, area-by-area basis. This implies that ISDN service providers will generally be unable to

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[70] Note that the discussion here refers to non-DSL ISDN lines.

move swiftly into the market for broadband. Therefore, ISDN services and broadband services are unlikely to be supply substitutes.

10.3.3.3. Conclusion on ISDN and broadband

Given it appears that ISDN and broadband services are neither demand nor supply substitutes, this suggests they should be in separate markets. The key exception is for residential customers where it appears that these services are likely to be demand substitutes. As noted in Section 10.3.3.1 however, this finding will not materially affect the assessment of dominance, and this distinction is therefore not considered further. The remainder of this section proceeds on the basis that services over an ISDN connection should not be viewed as part of the market for broadband services.

10.3.4. Mobile telephony and broadband services as substitutes

10.3.4.1. Demand side substitution

As discussed in Section 5.3.2, connecting to the Internet on a mobile phone is currently possible (using WAP/IP based applications and GPRS applications on existing GSM systems). However, broadband services are not yet available on mobiles on a wide scale. Convergence – particularly with the emergence of third generation networks – will change this. The rollout of 3G (IMT-2000) will mean that subscribers are increasingly able to access broadband services over handheld mobiles. However, the Commission understands that this technology is at least 2 years away on a significant scale.

Accordingly, it appears that mobile telephony and broadband services are not effective demand substitutes at this time.

Question 10 (A):

The Commission seeks views on the following:

i. **Whether mobile services are likely to offer consumers a viable alternative for broadband services in the near future.**

ii. **What constraints do mobile services face (technological or otherwise) that prevent it from being a viable alternative for broadband services in the near future? How might these constraints be overcome?**

iii. **How will the development of mobile services as an alternative to broadband services affect consumers and the industry? Is the current regulatory environment sufficient for effective regulation of mobile broadband services providers?**

10.3.4.2. Supply side substitution

It appears that a provider of mobile phone services would be unable to move swiftly into the market for fixed network broadband services from its existing facilities. The technologies involved in the two services are entirely different. To be able to provide broadband services the mobile provider would need to invest in entirely new equipment, including the provision of a copper link to the customer's house, or different types of microwave access. On this basis mobile and broadband services are not supply side substitutes.

10.3.4.3.Conclusion mobile telephony and broadband services as substitutes

It appears that neither significant demand nor supply side substitution could be expected to take place in case of a price rise. Consequently, it appears that broadband services over fixed lines and the mobile network are in separate markets.

10.3.5. Geographic aspects

As is the case with fixed lines, customers wish to connect broadband services to a particular place (normally their home or business premise) and in most instances will not consider links to other places to be substitutes. On the demand side, therefore, it is unlikely that much substitutability will exist.

On the supply side, however, competition is driven by which providers are capable of supplying a particular customer. In the vast majority of localities, only Telekom Malaysia has the local facilities required to provide broadband services. While access to bitstream and local network elements is not currently mandated in Malaysia, Telekom Malaysia claims to offer these wholesale services to all Internet Service Providers.[71] In theory then, providers are able to provide broadband services in any locality, suggesting that competition occurs nationally.

The possible exception relates to the provision of wireless broadband and broadband over fibre. In some regions wireless broadband is likely to be more economically viable than in others. Similarly, extensive fibre networks exist only in certain regions of Malaysia, suggesting that there will be a difference across localities as to the number of providers capable of competing to supply a particular customer. This would indicate that competition occurs on a more localised basis.

However, the penetration of wireless broadband and broadband over fibre appears to be limited and therefore the distinction across regions in Malaysia is likely to be marginal.

Consequently, while strictly speaking the geographic markets are likely to be smaller than Malaysia as a whole, for analysis purposes, it appears reasonable to aggregate these markets into a single national aggregation market at this time.[72]

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[71] For example, Telekom Malaysia is quoted in *Broadband Markets*, 9 June 2003, confirming that it offers wholesale services to all ISPs. . The fortnightly newsletter is available to subscribers at http://www.baskerville.telecoms.com

[72] This aggregation constitutes a short-cut. There are likely to be a small number of locations where the conditions of supply are sufficiently distinct to warrant a separate market. While it is impossible to provide a complete list of such locations, in the event of a particular issue arising in such an area a separate geographic market may be appropriate.

Question 10 (B):

The Commission seeks views on the extent to which wireless broadband and/or broadband over fibre may pose a competitive constraint to broadband over fixed lines. Please comment on the extent to which this might be expected to differ across regions in Malaysia.

10.3.6. Conclusion on market definition for broadband retail services

It appears that the relevant product market is the supply of broadband retail services. The evidence available to the Commission at this time does not support a further segmentation into alternative broadband technologies. The evidence also suggests that in broad terms competition occurs on a national basis.

10.4 Assessment of Dominance

As set out in Section 10.2.2, TMNet is the most significant provider of broadband services by an overwhelming margin. While TMNet is a separate legal entity to Telekom Malaysia, based on the evidence available to the Commission at this time, it appears that TMNet's relationship with Telekom Malaysia enables it to enjoy a number of competitive advantages over its competitors in the market for broadband services.

First, as noted in Section 10.1, third party access to bitstream and local network elements is not currently mandatory.[73] While Telekom Malaysia claims to offer these wholesale services to all providers of broadband,[74] it is not clear what terms and conditions of access are offered to TMNet relative to the other operators. Even if TMNet were paying the same price to Telekom Malaysia as its competitors for the provision of wholesale broadband services, this may be an accounting issue, and therefore the Telekom Malaysia group might be able to discriminate against TMNet's competitors. While a high price to other broadband service providers would necessarily mean a high price to be paid by TMNet, TMNet might be compensated in other ways within the corporate group of Telekom Malaysia, or the holding company may simply tolerate lower profitability (which would of course be offset by higher profits from the provision of bitstream access).

Second, TMNet may be better placed in the market given that it is able to leverage from Telekom Malaysia's brand name. Telekom Malaysia is the national incumbent, and it has the strongest brand name and offers a wide portfolio of services. Moreover, the fact that Telekom Malaysia already holds access to potential broadband subscribers contact details, TMNet will possess a first mover advantage over its competitors.

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[73] The subject of mandating access in this sector is currently being considered by the MCMC.

[74] As noted previously, Telekom Malaysia is quoted in *Broadband Markets*, 9 June 2003, p 8.

Third, by virtue of the fact that TMNet is a subsidiary of Telekom Malaysia, it is also likely to be able to capture greater economies of scale and scope compared to its competitors. As noted previously, the economics of communications networks, with the characteristics of significant economies of scale and density, would lead to the conclusion that since Telekom Malaysia has the largest network in Malaysia by some measure, it will typically incur lower transmission costs when transmitting a call across its network than its competitors. Therefore, the overall cost of sending broadband traffic over the distribution network to the IP network is also likely to be lower for Telekom Malaysia/TMNet than for its competitors.

The fact that Telekom Malaysia has the commercial and physical capability to offer a wider range of communications services than its competitors also means that it is likely to benefit from greater economies of scope. These economies are significant in communications networks owing to the existence of relatively large common costs in supplying communications services. Such common costs include the duct infrastructure that would be shared by both Telekom Malaysia's fixed exchange lines and fibre used for broadband.

Question 10 (C):

The Commission seeks views on the following:

i. **The extent to which TMNet, by virtue of its integration with Telekom Malaysia, is likely to enjoy economies of scale and scope in the provision of broadband retail services.**

ii. **What potential technologies or developments are likely to negate such advantages and allow niche players to tap into TMNet's core market?**

iii. **The likely implications of the Budget 2004 announcement on access fees reduction relating to the broadband market.**

iv. **What would be the maximum sustainable number of players for the broadband market in Malaysia?**

10.4.1. Barriers to entry

To the extent that new entrants are currently unable to gain access to the wholesale services on the same terms and conditions as TMNet (taking into account internal transfers within the Telekom Malaysia group), new entrants are likely to need to build a broadband infrastructure, involving high sunk costs. In general, a fixed wireless base station costs in the region of RM500 000, and thus, enabling local access networks to support broadband traffic (involving the installation of DSLAMs in the local exchanges) is extremely expensive and time consuming.

On top of those sunk costs there are significant economies of scale which a new entrant, without the possibility of leveraging from another related market with a large customer base, would be unlikely to enjoy, thus reducing the incentive for new players to enter.

A new entrant would also not enjoy the economies of scope that Telekom Malaysia is likely to derive from its wide range of services in the communications and multimedia sectors. This would appear to constitute another barrier to entry.

10.4.2. Findings on the assessment of dominance

On the basis of the above the findings conclude that:

- the relevant product market is the provision of data application and Internet services over broadband lines, where competition in general terms takes place on a national basis;
- TMNet is the major provider by a very large margin and it faces very little competition;
- there are likely to be significant barriers to entry, not least brought about by the vertical integration of TMNet with Telekom Malaysia which affects access to bitstream and local network elements; and consequently that
- TMNet is likely to be dominant in the provision of data application and Internet services over broadband connections in Malaysia at the current time.

SECTION 11: BROADCASTING TRANSMISSION

11.1. Market Identification

In this section the Commission considers analogue terrestrial broadcasting transmission services. Terrestrial broadcasting transmission is at some remove from the provision of telephony services. The analogue terrestrial broadcasting transmission network can at this point in time not be utilised for telephone calls or other interactive services. Yet terrestrial broadcasting transmission is of wider relevance for two reasons.

First, the general process of convergence between different communications media is a key issue for telecommunications and broadcasting transmission regulators worldwide. While analogue terrestrial broadcasting transmission is not itself a convergent technology, the services that it is used to provide are at the centre stage of the convergence process.

Second, the primary provider of analogue terrestrial broadcasting transmission infrastructure is Telekom Malaysia. Telekom Malaysia's role as primary provider of a number of the technologies and infrastructures, which are being affected by technological and market convergence is an important theme in the Malaysian communications and multimedia sectors.

11.2. Description of the Service

The economic good being analysed in this section is point to multi-point transmission of broadcasting material using analogue terrestrial facilities. This allows broadcasters to transmit to the majority of Malaysian households that receive their television signals through a conventional analogue television set and aerial. The provision of transmission services requires an NSP licence.

Terrestrial transmission services for television broadcast are currently purchased by broadcasters of free-to-air, including Radio Television Malaysia (RTM), Sistem Television Malaysia Berhad (TV3), and Natseven TV Sdn. Bhd. (NTV7). The quality dimensions of the transmission service include the quality of reception and service coverage.

11.2.1. Current supply structure

Transmission services are currently offered by Telekom Malaysia and Celcom. While Telekom Malaysia is essentially the incumbent provider of terrestrial transmission services, Celcom's transmission services extend only to the redistribution or retransmission of content using microwave transmission or fibre optic cables. It does not have a network capable of transmitting to the majority of analogue terrestrial homes. Moreover, Celcom and Telekom Malaysia are currently merging.

Telekom Malaysia provides a national network of facilities with the towers and masts necessary to transmit analogue terrestrial television. While broadcasters are able to purchase their own individual transmitters to attach to these facilities (and in many cases they do), the operation and maintenance of these facilities is undertaken by Telekom Malaysia.

Service charges are not currently regulated, and are negotiated on a customer-by-customer basis. Discussions with Telekom Malaysia suggest that individual broadcasters are charged for services per broadcasting station, on the basis of capacity and coverage. For example, RTM uses an analogue service, and transmission coverage includes the whole of Malaysia (including rural areas). TV3 and NTV7 use an analogue transmission service, and transmission coverage includes all of the major

cities and towns in Malaysia. Live telecasts of special events, such as the Malaysian motor racing Grand Prix and significant national events, are also handled by the transmission service providers. Charges are embodied in medium/long-term contracts.

11.3. The Relevant Market

11.3.1. Transmission is a derived demand for broadcasting channels

In Section 3.1.3 the special characteristics of input markets was discussed. Terrestrial transmission services constitute such an intermediate market and the demand for terrestrial transmission services is a "derived demand". Broadcasters demand these services in order to be able to transmit their channels to households capable of receiving analogue terrestrial signals. The demand for these services therefore is derived from the demand for channels that are broadcast through analogue terrestrial transmission.

In order to broadcast a channel in any particular locality, transmission costs will be fixed for the broadcaster. That is, they will not vary according to the number of viewers the channel attracts, nor according to the amount of revenues that the channel attracts. This fixed-cost characteristic has an important implication: as prices of transmission rise, demand for these services will fall only if the channel in question decides to stop broadcasting at all.

This has two important implications.

First, if the channel in question is more than marginally profitable, then transmission prices may be able to rise appreciably before a channel is rendered unprofitable (and therefore ceases to operate). Alternatively, even if the channel is marginally profitable, the response to a transmission cost rise may not be to exit the market, but simply to reduce spending on other elements of cost, such as programming.

Second, if demand were to change, it would typically change in "lumpy" increments, rather than marginal increments. If the notional "competitive price" is set between these "lumps", a monopoly provider would be able to raise prices over a range with impunity. If, alternatively, it would be more profitable to raise prices such that a channel did exit, the rise in prices might be very large.

11.3.2. Alternative transmission technologies as a substitute

11.3.2.1. Demand side substitution

In terms of "product characteristics" it may seem at first sight that there are many other technologies that can be used to transmit television channels. However, this ignores the central points made above, namely that the product market for analogue terrestrial transmission services will be determined by the fundamental economics and profitability of the channels that use it. Alternative production technologies will be relevant only insofar as they affect the overall profitability of free-to-air terrestrial channels.

First, it appears that the existence of these technologies does not provide a close substitute for free-to-air analogue terrestrial channels. The potential alternatives include:

- fibre optic cable;
- satellite;
- the PSTN (via the local loop); and
- digital technologies.

Free-to-air terrestrial channels are currently receivable by virtually all homes in the localities where they are transmitted. This stands in stark contrast to all of the other technologies, where a household would require a cable connection or a satellite dish. In many areas the cable network is not even available to households. In the case of PSTN the technology is not even established. Only around a quarter of households have satellite dishes (about 1 million out of approximately 5 million households).[75] The digital versions of these technologies, and the further alternative of digital terrestrial transmission, suffer from the same drawbacks.

In a nutshell, the business model on which free-to-air terrestrial transmission is based relies on the ability to deliver mass audiences to advertisers. Mass audiences simply cannot, at this stage, be delivered by alternative technologies because too many households lack the equipment to receive them.

In the future this may change, but at present it appears that broadcasters of free-to-air analogue terrestrial channels will not view alternative transmission technologies as substitutes.

Question 11 (A):

The Commission seeks views on whether alternative broadcasting transmission services such as satellite or cable are demand substitutes for analogue terrestrial transmission.

11.3.2.2. Supply side substitution

The transmission technologies referred to above differ substantially in terms of their costs and underlying economics. It is therefore clear that other forms of television transmission will not be supply substitutes for analogue terrestrial transmission.

In principle, facilities for radio transmission may also be well located for analogue broadcasting transmission. However, in general radio transmission occurs from the same Telekom Malaysia network as analogue terrestrial television transmission, so even if such facilities were included, there would not be any material impact on the assessment of the market structure.

11.3.2.3. Conclusion on alternative transmission technologies

It appears that alternative transmission technologies are not sufficiently substitutable for analogue terrestrial transmission services, either on the demand or the supply side, to be included in the same relevant competition policy market.

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[75] Source: MCMC, *Communications and Multimedia – Selected Facts and Figures*, Q1 2003, page 31.

11.3.3. Indirect competitive constraints on free-to-air broadcasting placed by other forms of broadcasting

While it appears that a free-to-air broadcaster will not view alternative transmission technologies as a substitute for analogue terrestrial transmission at present, it might be argued that competition from channels that do use those alternative technologies places a close competitive constraint on free-to-air terrestrial channels. If the impact was that this competition rendered free-to-air terrestrial channels only marginally profitable, then it could be argued that any price increase for analogue terrestrial transmission would be rendered unprofitable because the channels would be forced to close. The reasoning behind this line of argument is closely related to the concept of indirect substitution discussed in Section 3.1.3.

However, based on the evidence available to the Commission at this time, this argument does not appear well founded. The economics of free-to-air advertising-funded television are quite different from those of multi-channel platforms. These channels rely on their ability to delivery large viewing audiences to advertisers, and compete for programming that will attract these audiences. Multi-channel television in contrast, tends to rely on the greater diversity of channels it can offer, or the retention of some categories of rights that viewers are prepared to pay for (for example premium sporting events); but they do not typically garner anything comparable to the free-to-air channels in terms of audience delivery, and, consequently, advertising revenue. Thus while competition from these other platforms may certainly impact on the revenues (and programming costs) of the free-to-air channels, and even though this may affect the profitability of those channels, this is only one factor among several that will affect them. In particular, the competition between transmission technologies deriving from substitutability at the downstream level is an indirect mechanism, which requires strong and quantitatively significant mechanisms for the effect to be substantial and not be diluted by the series of steps that are necessary in the indirect chain of competitive constraints. The downstream competition depends on a number of factors and it appears that the link between an upstream price increase and a downstream price increase is insufficiently strong for the indirect competition argument to be of appreciable magnitude.

Finally, the RTM is state owned and has a public service remit. It is highly unlikely that competition from new channel platforms would result in RTM exiting the market in the face of an increase in its transmission costs.

Question 11 (B):

The Commission seeks views on whether competition from satellite channels places a close competitive constraint on free-to-air terrestrial channels.

11.3.4. Geographic aspects of the market

The logic that the Commission followed in order to establish whether analogue terrestrial transmission services can be considered a separate market or not, is based on the consideration whether a price rise of these services would result in a channel becoming unprofitable. This line of reasoning equally applies to the considerations on the geographic dimension of competition, i.e. would it be profitable to charge a small but significant price premium in a particular locality?

In principle, there may be some areas where broadcasting is only marginally profitable because low population density implies a high transmission cost per household. This reasoning would suggest that the provision of transmission services should be assessed on a localised basis since Telekom Malaysia may face greater competition in some areas than others.

However, it appears that Malaysia as a whole can be analysed as an aggregation market. The Commission is advised that with the sole exception of Bukit Besi (where TV3 owns three transmission masts and transmitters – but Telekom Malaysia operates them) Telekom Malaysia is the sole provider. Moreover, contracts tend to be based on the coverage of the whole channel, not broken up into specific localities. Accordingly, investigation of competition at the local level would not add to the assessment at a national level.

In addition, broadcasters' licences mandate the area that they must cover. Broadcasters therefore do not have discretion over whether to "drop" a particular locality in response to a price increase for transmission. Accordingly, the conclusions above would hold in each locality: unless the price rise for transmission results in the entire station becoming unprofitable and exiting the market, a transmission price rise will not result in a reduction in demand.

11.3.5. Conclusion on market definition for analogue terrestrial transmission of television broadcast

It appears that, at this stage of development, cable, satellite, and other potential forms of television transmission are neither an effective demand side nor a supply side substitute for analogue free-to-air broadcasting transmission. It also appears that while channels transmitted using these other technologies will have some competitive impact on free-to-air channels, in general this will be one of a number of factors affecting the profitability of these channels, and this profitability is what determines the impact of a price increase by the transmission service provider. What matters is whether these channels are marginally profitable or not, and whether the drivers of this profitability are partly endogenous to free-to-air analogue broadcasting. This suggests that, at this stage of development, a hypothetical monopoly provider of analogue terrestrial transmission equipment would be able to raise its prices above the competitive level.

The competitive conditions appear to be characterised by a national dimension, given the unique attribute of free-to-air broadcasting of delivering high coverage and mass audiences. In any case a further disaggregation into smaller areas would not materially alter the conclusions on dominance.

11.4. Assessment of Dominance

Telekom Malaysia is the only significant provider of analogue television transmission services. Its current market position strongly suggests that it is dominant.

11.4.1. Barriers to Entry

While Telekom Malaysia's market share provides prima facie evidence of dominance, this market strength would be more apparent than real if it was the case that other firms could enter the market and compete with Telekom Malaysia. As with any dominance assessment, it is necessary to consider whether there are barriers to entry. It appears that there are barriers to entry for a number of reasons.

First, the erection of facilities necessary to support transmission services of this type is likely to involve sunk costs and new entry will be risky in consequence.

Second, the Commission understands that Telekom Malaysia's sites are already placed in the best strategic locations. A new entrant would therefore begin with a disadvantage in either terms of cost (the need to use less desirable sites may require more masts to be utilised in order to give an equivalent level of coverage) or coverage (use the same number of sites as Telekom Malaysia, but suffer poorer coverage because they are less well placed). The need for more sites would not only affect the sunk costs of new entrants, it might also affect the costs of broadcasters if they needed to connect with a greater number of transmission facilities.

Third, to the extent that broadcasters require transmission networks with wide coverage, the risks to a new entrant would be multiplied. If entry occurs only in one locality the new entrant would suffer a competitive disadvantage given its poor coverage. Alternatively, if the new entrant rolled out its network across the country, its risks of entry would increase appreciably.

Fourth, transmission services for analogue terrestrial television is likely to decline in the long run, as other technologies (cable, satellite, digital terrestrial etc.) become predominant. Since the assets are long lived, this long run horizon makes entry arguably less likely. If digital terrestrial broadcasting was expected to be launched in a substantial fashion, this might provide an opportunity for a new entrant (since a new transmission network would be required). However, it is likely that at least some, and potentially all, of the sites for these transmitters would continue to be the Telekom Malaysia sites, indicating that this is more a theoretical possibility, rather than a real opportunity.

Fifth, the NSP and NFP licences may take several years to obtain, thus giving Telekom Malaysia plenty of forewarning of potential entry, and inhibiting such entry given the declining market.

It is noted that these transmission facilities[76] can be utilised for services other than analogue terrestrial broadcasting. It might be argued that the costs of entry are therefore not "sunk" in respect of analogue terrestrial broadcasting alone, since the facilities have alternative uses. Against this, however, the Commission observes that these economies of scope are likely to need to be realised in the first place; profitable entry is likely to require not simply acquiring television broadcasting, but also a number of other clients. This may make entry more difficult since "sponsored entry" – where buyers (such as a broadcaster) sponsor an entrant to compete with a dominant incumbent – will be made more difficult as the buying base fragments.

On this basis it appears that there are likely to be barriers to entry for firms aiming to compete head-on with Telekom Malaysia.

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[76] That is, the actual towers or buildings, or even the actual land site.

Question 11 (C):

The Commission seeks views on the extent to which potential new entrants to the market for transmission services face barriers to entry.

11.4.2. Findings on the assessment of dominance

On the basis of the above the study conclude that:

- the relevant product market is the provision of transmission services for analogue television broadcasting, and that geographic distinctions do not assist in the market analysis;
- Telekom Malaysia does not appear to face serious and effective competition in the transmission of analogue terrestrial broadcasting;
- there are likely to be at least some barriers to entry; and consequently that
- Telekom Malaysia is likely to be dominant in the provision of transmission services for analogue television broadcasting (in most localities and nationally) at the current time.

SECTION 12: DETERMINATION OF A DOMINANT POSITION

12.1 Key Findings of the Study

Seven broad areas of the communications sector were considered as part of the study. Based on the information available in each area, markets were formally defined and, after taking into consideration market shares and structural characteristics of the market, a preliminary assessment of whether any operators are likely to be dominant has been made. This preliminary assessment is summarised in this section.

In relation to fixed line telephony, it appears that Telekom Malaysia is likely to be dominant in the provision of all forms of fixed line narrowband access to the PSTN (in most localities and nationally) at the current time, given that it does not appear to face serious and effective competition in most areas of Malaysia, and where alternative providers exist it appears to retain a very strong position with respect to its existing customers, and there are likely to be at least some barriers to entry.

There is insufficient support for a finding of dominance in the provision of mobile telephony services at this time. While past behaviour indicates a reasonably competitive market, the effects of the recent merger wave may not be fully reflected in the market at this time. Consequently, further analysis will need to be undertaken, observing the extent to which the combination of Celcom and TMTouch as well as Maxis and TimeCel has affected competition in the market.

Market definition and therefore dominance in the case of individual network elements will vary on a case by case basis. It therefore seems reasonable to assess dominance as and if specific issues arise. Nonetheless, on the basis of the study it appears that if the relevant market is found to be an individual network element or route that is supplied by a single provider, that provider is likely to be found dominant in that market. However, if the relevant market is found to be a route over which several providers compete, dominance is likely to depend on the structural characteristics of that market, including whether capacity constraints are present.

In the case of interconnection, the study suggests that each licensee with a network is a monopoly supplier in the provision of call termination and origination services to their network. It appears that entry is unlikely, suggesting that each of the suppliers is dominant in the market for termination and origination on its own network.

The available evidence suggests that Telekom Malaysia is likely to be dominant in the supply of analogue leased lines in Malaysia. In future, the Commission proposes to assess dominance in the supply of digital leased lines on a case-by-case, route-by-route basis, as and if specific issues arise. The Commission proposes that such an assessment will take into consideration the available capacities held by each operator, barriers to entry, and the commercial advantages held by one or more of the operators. That said, it is noted that there is a strong likelihood that Telekom Malaysia is dominant in the supply of digital leased lines on the routes between peninsular and East Malaysia, and it may be dominant on some routes within peninsular Malaysia.

TMNet is likely to be dominant in the provision of data application and Internet services over broadband connections in Malaysia at the current time, given that it is the major provider by a very large margin and there are likely to be significant barriers to entry, not least brought about by the vertical integration of TMNet with Telekom Malaysia which is likely to affect access to bitstream and local network elements.

Telekom Malaysia is likely to be dominant in the provision of transmission services for analogue television broadcasting (in most localities and nationally) at the current time, given that it does not appear to face serious and effective competition in this market and there are likely to be at least some barriers to entry.

In short, the analysis conducted so far suggests that there are a number of licensees who are dominant:

- Telekom Malaysia is dominant in the provision of all forms of fixed line narrowband access to the PSTN;
- Telekom Malaysia is dominant in the supply of analogue leased lines in Malaysia;
- TMNet is likely to be dominant in the provision of data application and Internet services over broadband connections in Malaysia; and
- Telekom Malaysia is likely to be dominant in the provision of transmission services for analogue television broadcasting.

Question 12 (A):

The Commission seeks views on the following:

i. **The key findings of the study relating to dominance in each of the communications markets.**

ii. **Whether price regulation (which in several cases may currently be set below LRIC)[77] is effective in constraining potential abuses by a dominant service provider or are there other tools that might prove equally, if not more so effective.**

12.2 Implications of Pre-Determining Dominance

While the Commission considers that there may be considerable merit in issuing a determination pursuant to Section 137 of the CMA, it is mindful that such determinations are somewhat limited.

First, with a large number of markets to be considered, the investigation of each market is necessarily somewhat preliminary. While the primary purpose of the PI is to test the study's assumptions and analysis, and to uncover any omissions, the Commission recognises that there is still some danger of false positive and false negative findings of dominance. As such, the Commission notes that while it expects that a Section 137

[77] In 2001/02, the MCMC commissioned an independent study of the long-run incremental cost of providing communications services such as fixed and mobile interconnection. Access charges, however, were set at a level below the study's estimates of LRIC.

determination will pave the way for a Section 139 direction, it recognises that before issuing a Section 139 direction, the analysis pertaining to market definition and assessment of dominance will need to be reviewed in the context of the abuse in question.

Second, the Commission recognises that a finding of dominance has a limited lifespan, particularly in the fluid communications and multimedia sector. As such, determinations will become outdated, and, potentially, a firm which was previously dominant loses market power, or conversely a previously non-dominant firm will acquire a position of dominance. For example, with respect to the current analysis, the Commission expects that a review would be necessary in the context of:

- information becoming available on the competitive effects of the recent mergers in the market for mobile telephony;
- substantial advancements in technology, such as changes in the competitiveness between wired and wireless technology, the introduction and widespread take-up of 3G mobiles, and/or the establishment of an effective market for digital television;
- institutional or regulatory changes, such as the establishment of an effective access regime for local network elements and/or bitstream;
- market changes, such as a merger or acquisition.

Due to such limitations it is clearly necessary to either limit the duration of a determination of dominance or provide a mechanism whereby the dominance finding can be challenged in the face of changed market circumstances, or as a third alternative, a combination of the two.

In view of these limitations, the Commission is minded to place a time limit on its determination. While the choice of an appropriate time frame necessarily involves some judgement and discretion, the Commission's preliminary view is that a finding of dominance should expire after two years, with the possibility of an earlier re-assessment if requested by the dominant firm. The Commission notes at the outset, however, that such requests will need to be clearly formulated and well reasoned, bolstered by firm evidence, before they will be considered. Moreover, the Commission expects that early re-assessments would be subject to a PI process.

Question 12 (B):

The Commission seeks views on the proposed expiry period of two years for a Section 137 determination.

SECTION 13: DOMINANCE THRESHOLDS

In this Section, the Commission discusses the general economic rationale for using market share thresholds to identify dominance and their limitations. The Commission then outlines its proposals for quantitative thresholds which it may include in its Dominance Guidelines.

13.1 Background

Competition authorities in many jurisdictions have made use of market share thresholds, whether published or internal, as a screening device to identify markets in which firms potentially have market power. They have been used in a very wide range of contexts in competition policy including merger control , the analysis of anti-competitive agreements and the identification of firms holding a dominant position .

The basic rationale for the use of market share thresholds is that economic theory suggests that in general a firm's market power is greater the higher its market share, and that a firm normally would only be able to exercise substantial market power if it had a significant share of the relevant market. It is, however, important to stress two points:

(1) Thresholds are only useful if markets have been correctly defined

Market shares obviously depend on how the market has been delineated. A high market share would only be an indicator of potential market power if the relevant market has been correctly defined. If the market has been drawn too narrowly, then a high market share could obviously arise even though the firm in question had little or no market power. Conversely, if the market is drawn too widely, a firm with a low share of the market may possess substantial market power. Market share thresholds are only as useful as the market definitions on which they are based.

To take a hypothetical example, a firm might have a 50 percent market share in fixed line business customers, but a 20 percent market share of the fixed line market as a whole (including both business and residential customers). If one thought the relevant market included only business customers then one might see a potential risk of dominance, but on the wider market definition (which the Commission considers the correct one for the present assessment of dominance exercise in fixed line telephony) it would be unlikely that there would be such a risk.

(2) High market shares are, at best, a necessary condition for substantial market power

Even if markets have been correctly defined, a firm with a high market share may still lack substantial market power. In order to determine whether the firm does indeed have market power, it is necessary to examine other indicators, such as barriers to entry and the nature of competition in the market. Thus, if entry into the market is sufficiently easy, then an attempt to raise prices above the competitive level would be thwarted by new entrants attracted by the profit opportunity. Similarly, if the market is a "bidding market" in which lumpy contracts are awarded infrequently, then a high market share may not confer substantial market power if there are one or more credible alternative bidders who compete with the market leader.

There is a range of additional factors, which determine whether a firm has substantial market power. These include, but are not limited to:

- the ability of the smaller firms to expand;
- buyer power on the part of the customers of the dominant firm;

- the extent of switching costs;
- the closeness of substitutes outside and inside the market.

The extent to which adequate data is available, which factors are most important and which can be analysed within a reasonable time frame, will all vary from case to case. However, the Commission is mindful of the dangers of determining a firm dominant purely on the basis of market share information without further investigation of the key market facts. With these factors in mind, the Commission sets out its proposals for market share thresholds, for inclusion in its Dominance Guidelines.

13.2. Threshold Levels

In EC case law a firm with a market share of 50 percent or above is presumed to have a dominant position. However, where there is no question of penalties or remedial action without a fuller investigation of the position of the firm and also of their behaviour, the Commission's preliminary view is that a slightly more aggressive standard of 45 percent is appropriate.

The Commission is also minded to conclude that below 25 percent a presumption of non-dominance should be created. Assuming that the market definition is correct, the Commission considers it unlikely that a firm acting unilaterally would have substantial market power below this level.

Consequently, between 25 and 45 percent, there should be no presumption in either direction, although, other things being equal, the higher the share the more likely it would be that a firm would have substantial market power.

SECTION 14: THE WAY FORWARD

At the conclusion of the PI process, the Commission would have obtained a stronger view on the state of competition in the Malaysian communications and multimedia industry, particularly vis-à-vis the assessment of dominance. Based on the findings and conclusions reached (which will be embodied in the PI Report), the Commission may then consider applying Section 137 of the CMA whereby it can determine that a licensee is in a dominant position in a communications market.

If and when Section 137 is invoked, then the Commission would also be able to invoke section 139 if a particular situation arises and is necessary, whereby it may direct a licensee in a dominant position to cease a conduct which has, or may have, the effect of SLC, and to implement appropriate remedies. However, the invocation of section 139 would involve an entirely different process.

In light of the comments received and findings/conclusions of this PI process, the Commission will also be minded to review the Competition Guidelines (Dominant Position and SLC) for its further enhancement. This may include incorporating the use of market thresholds for the establishment of dominance presumptions and levels, if appropriate, and other aspects of the guidelines. It is envisaged that the guidelines will be reviewed in the near future and will be subject of a separate consultation process with industry/public.

APPENDIX A: INTERVIEWS WITH INTERESTED PARTIES

The fieldwork for this study was conducted in August 2003. NERA consultants, together with the Commission's staff, met with the following industry players:

- AtlasOne, 1 August 2003
- DiGi, 1 August 2003
- Jaring, 1 August 2003
- Telekom Malaysia, 1 August 2003
- Celcom, 12 August 2003
- Time/Maxis, 12 August 2003
- Telekom Malaysia, 12 August 2003
- TMNet, 12 August 2003
- Fiberail, 13 August 2003.

APPENDIX B: INFORMATION REQUEST

The following information request was sent to operators at the beginning of the study in June 2003.

Table B.1 – Supply and demand characteristics

Issue	Data and information request
A. Market shares	**A.1 Services** Please list, with precise and technical definitions, all types of product and/or services provided[78]. Please specify if any services are offered jointly as a bundle on the basis of different terms than the individual products. **A.2 Customers** Please specify what main categories of customers you supply with each service, for example: ▪ Residential ▪ Small to medium-sized businesses (less than 200 employees) ▪ Large businesses (above 200 employees) ▪ Any other specific customer or group of customers (please specify) Do you have any exclusive supply arrangements with any of your customers? Who are your five main customers or groups of customers? What do you think consumers perceive to be your strengths and weaknesses with respect to your competitors? **A.3 Geographic market** Please specify in which geographic areas in Malaysia you offer each product or service. **A.4 Price** Please indicate all charges for each of the products/services identified above (by geographic area where they vary), including set up costs, other one-off costs, connection charges, rental charges (for example, per month), usage charges (charges for each unit consumed), charges for changes in service, transfers and so on. Please indicate any discounts policy adopted for each

[78] For calls please provide separate information for both residential services and business services for each of the following call types: Local calls, National calls, International Direct Dial calls, Operator assisted calls, Calls to mobiles, and nongeographic services. For each type please specify the precise pricing used, whether they are metered or unmetered.

	product/service. Please specify which charges are subject to regulation, by whom (and which regulatory tool). Where the charge structure varies (for example, international calls depending on the destination country) please indicate the different charge structures available to your clients. Also, please specify if there is a competitive tendering process to which you have to take part in order to serve large customers. **A.5 Cost** Where possible, please provide detailed cost information for each product and service, indicating which costs are common costs (such as Headquarters), joint costs (joint by one or more but not all services), and variable costs. Please provide an indication of all sunk costs that were required to be paid to provide each of your services, and indicate which services they apply to (for example, for leased lines which sunk costs apply to analogue lines and which to digital lines?). **A.6 Volumes** Please provide the relevant volumes sold of each of your products and services. For example, for mobile telephony and Internet services this should be numbers of subscribers and volumes of minutes (by call type). For leased lines, this should be numbers of leased lines. **A.7 Revenues** Wherever possible, please specify revenues derived, by service and product. **A.8 Competitors** Please provide the names of your five biggest competitors.
B. Technology	Please specify what type of technology you are currently adopting in order to provide each of your products or services. Are you planning to adopt new technologies in the next 1 to 2 years? If so, please specify what type of technology and for what products or services.

Table B.2 – Structural and behavioural aspects of the market

Issue	Data and Information request
C. Vertical Integration	Do you operate at different level of the vertical chain? If so, please specify at what stages you operate for each of the products and services you provide: ▪ Upstream (network infrastructure) wholesale ▪ Intermediate (access) wholesale ▪ Downstream (to final customers) retail
D. Barriers to entry (absolute, strategic and behavioural)	What do you think is the likelihood and what are the costs of entry in the market for each service/product you supply? Has there been any entry in the market for the provision of the products/services you supply? ▪ Please specify name of company and date of entry ▪ What type of company is the entrant (for example, another utility)? Please provide the year in which you started providing each product/service offered In what areas of your business do you think that entry will be likely and in what areas unlikely? To what extent is entry to the markets you operate in influenced by MCMC regulation, the requirement of any other government authorization or standard setting in any form? Are there any legal or regulatory controls on entry to these markets? To what extent is entry to the markets influenced by the availability of access to infrastructure owned by other operators or competitors? If so, which operators and competitors and for what infrastructure? If you use another network operator's network to provide your services, to what extent is entry to the markets influenced by the length of contracts between yourselves and its access providers and/or customers? Are you planning to enter any other markets in the telecommunications industry in the next 2 to 3 years? Please specify which product or service market.
E. Scale and scope economies	To what extent do you think there are economies of scale and scope in the services you provide? Please provide supporting evidence demonstrating the impact of fixed costs on your business.
F. Exit	What difficulties might you incur if you decided to exit those

	markets where you are active?
G. Investment	Do you have any difficulties in accessing financial markets when you wish to invest in a new product or service? Would you expect that your competitors have easier access to the capital markets than your company, or does your company have easier access to capital than your competitors? Please provide supporting evidence if available.
H. Switching costs	If you use another operator's network to offer your services, what costs would you incur if you chose to switch network operators?

Finally, please provide copies of your company's annual reports for the last three years.