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INDICATORS FOR THE ASSESSMENT OF TELECOMMUNICATIONS COMPETITION

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FOREWORD

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INDICATORS FOR THE ASSESSMENT OF TELECOMMUNICATIONS COMPETITION

Summary

Intensified competition in OECD countries' telecommunications sectors calls for regulations proportionate to the level of competition in the market. If regulators consider there is full-fledged competition in a telecommunications market, they should lift regulatory interventions existing in the relevant market. Therefore, regulators need a yardstick that measures the true level and scope of competition. Regulators have not yet fully developed indicators for the assessment of telecommunications competition and thus have not reached a consensus on this issue. This report explores the concept of effective competition and the definition of a relevant market, and suggests appropriate indicators and parameters for the evaluation of competitiveness in the telecommunications markets.

The concept of 'effective competition' is different from that of 'market power' or 'significant market power (SMP)'. Whereas a review of market power targets the market presence of a particular company, an analysis of effective competition focuses on a general telecommunications market and is more comprehensive in nature, with an emphasis on consumer behaviour and benefits. Unlike the concept of SMP which was formerly used, the review of effective telecommunications competition is not limited to pre-determined market segments and is not linked to specific *ex ante* regulations on operators with SMP. Nevertheless, in developing the indicators for the assessment of effective competition, this report extrapolates many of the indicators employed by a market power approach under competition rules. This will ensure as much consistency as possible with other competition analyses and also reduce the burden of data collection.

A definition of a relevant market for the evaluation of its competitiveness is examined with respect to services as well as geography. The scope of a market hinges on demand substitution from consumers and supply substitution from competitors in response to a non-transitory price change by an incumbent. Appropriate delineation of a telecommunications market must take account of distinctive features of the telecommunications sector, which include the control of bottleneck facilities, high sunk costs, network externalities, vertical integration, rapid technological change and others.

This report proposes several indicators appropriate for the assessment of competition and examines weaknesses of the proposed indicators and parameters. First, robust indicators require a firm grip on the mechanism of effective competition and its benefits. Developing from this criterion, suitable indicators are suggested for each sector that represents such a mechanism. The sectors and indicators comprise a market structure (market share, entry barrier), the behaviour of sellers (active price competition, absence of anti-competitive practices, innovative service provision, profitability) and consumers (information access, ability to use information, barriers to switching suppliers, countervailing power), and consumer benefits (competitive service offer, satisfaction with price and quality of service). Second requirement for robust indicators is that they are not correlated and confounded with exogenous variables, which demands a careful consideration of circumstances on a market under review and qualitative assessments. The third requirement is that the indicators are measurable, comparable and that it is easy to obtain relevant data. Many drawbacks of the indicators and parameters in this report have to do with the second and third requirements.

This report concludes with a minimum set of indicators and parameters that are measurable and comparable across member countries. Although the suggested set of indicators and appropriate parameters are mainly limited to quantifiable ones, complete understanding and comparison of the scale of competition across the OECD area can be achieved by complementing such minimum indicators with results from standardised and uniform consumer surveys within OECD countries.

Introduction

Since the 1990s OECD member countries have been trying to create competitive markets in the telecommunications sector. Many of the member countries have as a major regulatory goal the creation of tangible benefits to consumers including lower prices, higher quality services, innovative services and better choice in the delivery of telecommunications services through competitive market forces. As competition in the telecommunications markets develops, regulatory regimes have shifted toward lighter regulation and more emphasis on benchmarking and use of best practice regulation, while taking into account the specifics of the national market context to which they apply.

However, a common framework for analysing the development of competition among member countries has not yet emerged. A few regulatory authorities such as Oftel and the CRTC have recently begun to develop methodologies and indicators for assessing the state of competition in telecommunication markets. Some member countries are monitoring the competitiveness in telecommunications markets without investigating the validity of criteria employed for that purpose. Some other member countries have only examined some general trends in the telecommunications service sectors as a proxy to see whether consumers have enjoyed benefits delivered through competitive forces. The last two types of approaches are prone to be fragmented and unsystematic and lack consistency in monitoring the extent of competition over time. In contrast to a framework for the analysis of effective competition, many OECD member countries endeavoured to come up with indicators and parameters to determine whether individual firms had market power with the aim to curb the abuse of such power. The framework and indicators developed to ensure fair competition through the restraint of market power of telecommunications service providers could be different from those for effective competition in many respects. The framework for market power comes into play in quite specific cases and regulators do not regularly collect data for designating a carrier as having market power. Conceptually, the review of market power of a particular firm in a relevant market segment should be conducted, following an assessment of whether there exists effective competition in that market segment.¹ Effective competition is concerned with the competitiveness of a related market as a whole rather than the behaviour of a particular firm.

This report is concerned with indicators used to review effective competition in the telecommunications market. One of the main objectives of the report is to put forward indicators that are useful in assessing the status of competition for member states and to highlight strengths and weaknesses associated with such indicators. The indicators should embody unique features of the telecommunications industry as well as general competition theory in investigating the level of competition. This entails a clear understanding of the scope of a relevant market in the telecommunications sector.

Regulators as well as consumers can use such indicators. Indicators for the evaluation of effective competition provide regulators with some yardsticks by which to evaluate the success or failure of their competition policies. A set of indicators allows policy makers to compare the performance of telecommunications operators in other countries or against certain thresholds so that the level of regulation is proportionate to the extent of competition in various telecommunications markets. Monitoring of telecommunications competition sheds light on validating and tracking the effects of regulation imposed on the market. Regulations can be withdrawn in a telecommunications market in which competition is thought to be firmly established. If a market is identified as not having effective competition, regulators can examine further why a competitive market is failing to emerge and come up with appropriate policy instruments. For example, in Europe once the new regulatory framework is in place, the regulators can adapt or lift relevant regulations if they consider that there is effective competition in a given market. Consumers are able to use information provided by such evaluations to ensure that they get the best possible deals for their money. For example, reports on quality of service would provide an information base that would help customers in making decisions.

Issues relevant to the evaluation of telecommunication competition

The relationship between effective competition, market power and significant market power

Effective competition

There are several types of ways to assess competition in the telecommunications sector. In examining the existence of effective competition in a market it is important to ensure the highest degree of consistency with concepts such as market power and significant market power, which have been developed for different purposes, but have a common thread in many respects. Effective competition lowers prices to their efficient levels and encourages innovation in the development of new products and services. The concept of effective competition lays stress on the outcome for users.

In some cases a demarcation line is not clearly drawn between the concept of market power and that of effective competition. The EC defines effective competition as a continuing absence of players with significant market power (or a dominant position). In this context, market power means the ability to influence prices and persistently enjoy higher profits than those enjoyed by rivals lacking market power. Effective competition, according to the EC, makes consumers better off through the provision of a greater variety of products and/or lower service prices and higher quality compared with those in a non-competitive market.² Consumers are best served in terms of price and quality for money. Firms are efficient and offer choice and variety of innovative services in response to users' needs.

The concept of 'effective competition' differs from the concept of 'market power'. Effective competition is concerned not only with the ability to control prices and costs for products and/or services, but also with consumer benefits such as quality of service, a range of services available to consumers, efficient operation of firms in a market and innovative service provisions as well. Accordingly, measures of consumer outcomes from competition are indispensable in a framework for the analysis of effective competition. In a particular situation, regulators want to constrain a particular operator's anti-competitive activities or businesses and are able to use an analysis of market power to target the operator. While market power is more case specific and narrowly focused and treated under the context of competition rules, effective competition is more general and broader and should reflect the unique features of telecommunications markets.

The decision making process regarding the assessment of competition is often as follows: First, a definition of the relevant market is made. Second, the national regulatory authorities (NRAs) have to review whether or not there is effective competition in the relevant market. If the market turns out not to be effectively competitive, the NRAs can initiate an investigation as to which operators have market power in the relevant market. Then, regulatory measures can be imposed on those operators with market power based on how they restrict effective competition. The level of regulation that should be applied to particular firms depends on whether the firm possesses market power and has exerted it. Firms that lack market power within a single market should face little or no regulation.

The concept of effective competition is also different from that of 'significant market power (SMP)'. In the past, SMP is identified in relation to pre-determined particular markets (fixed, mobile, interconnection and leased line markets) by the EU Open Network Provision (ONP) Directives, and such designation requires operators with SMP to observe *ex ante* obligations. Unlike SMP, a review of effective competition aims at appropriate product or service markets at a given point of time that are not pre-determined. Under the competition rules, a dominant operator is not forced to open up its networks unless there is abuse of market power by that firm.

Market power

The concept of ‘market power’ centres on the ability to charge prices for a product or service without being penalised by competitive restraints. Market power of a seller is the ability to profitably maintain prices for products or services higher than competitive levels for a significant period of time. Theoretically, market power is understood in the case where a hypothetical profit maximising firm would impose at least a ‘small but significant and non-transitory’ increase in price in a relevant market concerning a product in a given geographic area.³ In Canada, the concept of market power is commonly used in competition law and intended to explain the ability of a dominant firm to raise prices above those that would prevail in a competitive market.⁴ Oftel has used the term of ‘market influence,’ which is identical to market power. Market influence is defined as “the ability to raise prices above the competitive level in that market for a non-transitory period without losing sales to such a degree as to make this unprofitable.”⁵

Practically, if an operator can maintain a high level of profits over time against a level of costs that would emerge in a competitive telecommunications market, this indicates the individual operator possesses market power in the said market. Given the difficulties associated with estimating the competitive level of costs, regulators can assume the costs of the most efficient operator (efficiently incurred costs) are a surrogate (benchmark) for costs of providing a telecommunications service in a competitive market. Then, for the estimation of costs for other operators in the market, the benchmarked level of efficiently incurred costs should be adjusted to reflect volume differences and optimal customer mix that can be achievable by them. This is because the other operators can not achieve the same level of output and customer mix within a short period of time due to economies of scale exploited by the benchmarked operator.

If the market is competitive enough, an operator charges service prices close to the efficiently incurred costs and can only earn normal profits (costs plus adequate return on investment). An operator’s market power enables it to obtain excess profits, by setting prices exceedingly high above the estimated efficiently incurred costs, unless they are explained by ongoing efficiencies or innovation that are not immediately available to other operators and that are consistent with a competitive market. Accordingly, it involves the consideration of profits and efficiency together for regulators to assess the existence of market power to an individual operator in a telecommunications market. In some cases, an operator in a position of market power may set prices quite higher than the competitive level but earn low profits because it operates inefficiently. Alternatively, an operator with market power, whether efficient or not, can choose to earn low profits as a long-run strategy to deter market entry or a sustained presence by other service providers. Likewise, it could be possible for the benchmarked operator’s excess profits to be explained not by market power but by super or extra efficiency which can not be easily eroded by competition.⁶

In economic theory, the Lerner Index is used to measure classical market power directly by subtracting a firm’s marginal cost from its price, and then dividing the result by the firm’s price. The Lerner Index faces several obstacles in the measurement of market power, especially in the telecommunications sector, where the marginal cost is close to nil. Among these, determining the firm’s marginal cost of production at a given point in time constitutes the most significant practical complication to this purpose. In the case of horizontal mergers, courts and competition agencies have employed market share and the Hirschman-Hirschman Index (HHI) to quantify market power in a market. The HHI turns market share into a measure of market concentration.⁷

According to Oftel, market power represents a position of economic strength, short of market dominance in the relevant market. In the case of AKZO Article 86 investigation, the European Court of Justice presumes the existence of ‘dominance’ if a firm’s market share persistently exceeds 50% in the absence of evidence to the contrary. Oftel maintains that as a rule of thumb a market share of 25% is a threshold below which operators are unlikely to possess market power. The concept of market power, based on market definition conducted under the competition rules, is also different from that of SMP that was assessed with respect to pre-defined telecommunications markets in the EC’s ONP Directives.

Significant market power

The SMP concept was introduced by the EC to provide the NRAs with sufficient power to regulate the behaviour of the incumbent.⁸ The EU considered that the concept of market power developed under competition rules was not sufficient to curb the incumbent's influence over the market. SMP, in the past, was an established threshold above which an operator was subject to certain regulatory obligations. The threshold of SMP triggered for the NRAs to apply *ex ante* regulatory obligations that served as a safety net in the telecommunications markets.⁹ The SMP framework allowed for the *ex ante* regulation of important network operators to ensure fair interconnection terms that abided by the following principles:

- The obligation to align prices with costs.
- Separate accounting.
- Publication of a reference offer such as interconnection catalogues.

According to the EC, the combination of the sector-specific ONP legislation with SMP provided a legal certainty to market participants concerning regulatory obligations. Whereas the relevant market was defined on a case-by-case basis under a competition law approach, the SMP legislation demanded the relevant market be assessed on the basis of a categorisation identified in the specific Directives.¹⁰ These Directives were the ONP Leased Line Directive, the ONP Voice Telephony Directive and the Interconnection Directive. SMP status was designated only in the pre-defined telecommunications markets.

There were some caveats in the implementation of the SMP concept. This SMP concept might have an adverse impact by preventing new entrants from growing above a certain size or influencing the market and thus challenging the incumbent. This might retard the development of full competition. There might not be a guarantee that a threshold of a certain market share combined with additional criteria was sufficient to determine whether the operator in question was likely to use its influence in the market in an undue manner. Furthermore, designation of operators as having SMP in a broadly defined pre-determined telecommunications market did not automatically mean that there was no effective competition in a more disaggregated telecommunications market.

In the past regulatory framework, an entity with no more than 25% of the market was presumed not to have dominance in that market. An organisation was presumed to have SMP if it had more than 25% of the relevant market that remained stable over time. It remained a vital question in the approach taken by the proposed European framework (draft guidelines on SMP) which differed from the past framework with regard to the 25% threshold used to define market power. According to the EC working document on the 'Draft Guidelines on Market Analysis and the Calculation of SMP' (hereinafter draft guidelines on SMP) issued in March 2001, market share was used as a proxy for market power. The proposed regulatory framework moved closer to the general definition of competition to define a dominant position and abandoned the systematic threshold concept. According to the draft guidelines on SMP, dominance concerns arise in the case of an undertaking having more than 40% market share. A firm in excess of 50% market share, except in exceptional circumstances, evidently possesses a dominant position in the SMP framework.¹¹ In this case, the firm bears the burden of proof to show that it does not have dominance. When an operator is classified as having SMP, it is subject to specific obligations contained in the EU ONP Directives.

Article 13 of the proposed Framework Directive of the EC described that an undertaking with SMP enjoys a position of economic strength affording it the power to behave to an appreciable extent independently of competitors, customers and ultimately consumers. The new draft guidelines on SMP of the EC intended to align the definition of SMP, a notion developed to facilitate sector specific *ex ante* regulation, with the Court's definition of dominance within the meaning of Article 82 of the Treaty, developed in an *ex post* context. Until early 2002, discussions on the draft guidelines on SMP were under way. Many parties

participating in the discussions expressed concern with regard to this alignment of SMP with dominance in the draft guidelines on SMP, diverging from the substance of Article 14 of the proposed Framework Directive.¹²

The new Framework Directive including the Authorisation Directive, the Access Directive and the Universal Service Directive became effective on 24 April 2002. Member states of the EU must implement the Framework Directive from 25 July 2003. The European “COMMISSION GUIDELINES on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services (hereinafter EC Guidelines)” are also adopted and released in 2002. The NRAs of the EU should take account of the Framework Directive and the EC Guidelines in the market review process. The current EU Framework Directive requires the regulators of EU member states to conduct reviews of effective competition in the telecommunications markets which are defined in accordance with the principles of competition law considering expected or foreseeable market developments. If the said market is not effectively competitive, the regulator should identify undertakings with SMP and impose regulatory obligations on them, proportionate to the achievement of policy objectives and regulatory principles set out in Article 8 of the Framework Directive. According to the Framework Directive, the definition of SMP is equivalent to that of dominance in the EU competition law. The main substance of the Framework Directive and the EC Guidelines in relation to SMP and effective competition review is described in detail in Annex I.¹³

Characteristics of the telecommunications market

The telecommunications industry has some quite distinctive aspects from other commodity industries owing to the combination of economic features and rapid technological changes. This has implications on the sector specific consideration in imposing regulatory measures or analysing the state of competition. An appropriate analytical framework for the evaluation of effective competition should take into account various factors that characterise the telecommunications industry or markets. The unique characteristics of the telecommunications sector are worth considering in the framework of the review of effective competition. The features peculiar and prevalent in the telecommunications sector are:¹⁴

- Bottleneck/essential facility control: Telecommunications networks have very high fixed costs that result in bottleneck or core facilities in the provision of access. The advantage of the incumbent in relation to access provision gives the firm an incentive to use its dominance in order to stifle competitors.¹⁵
- High sunk costs: Investment in telecommunication networks entails large sunk costs. Sunk costs are the acquisition of tangible and intangible assets that cannot be recovered through redeployment of the assets outside the relevant market. Significant sunk costs cannot be recouped in a short period of time after the commencement of the supply of products or services. These high sunk costs allow for the incumbent to erect an effective entry barrier to potential entrants into the telecommunications market because it is costly to enter the telecommunications market.
- Network externalities: A call involves two parties. The value of telecommunications networks increases as more users are linked to the networks. When considering subscription to a network operator or service provider, the vast majority of potential customers consider a telecommunications network with more subscribers more favourably.
- Vertical integration: A telecommunications network operator tends to practice vertical integration by placing its downstream subsidiaries as well as their competitors rely on the firm’s infrastructure and network. As is often the case in the telecommunications sector, a particular operator has strong presence in infrastructure markets and influences a downstream

market of that infrastructure. Infrastructure costs are the single most important factor determining the costs of service provision by firms in the downstream market.

- **Rapid technological change:** New technologies also bring a stream of new services and improve quality, which improves existing services or creates an entirely new service market. Customers thus have more choice. Technological development has two implications on competition in the telecommunications market: the definition of relevant market will change accordingly, and barriers to entry in new markets will be reduced. In contrast to the above features conducive to exploitative or exclusionary behaviour and/or threat against market entry, innovation reduces high fixed costs associated with telecommunications networks and thereby lowers entry barriers in existing markets. For instance, the development of fixed radio access networks could reduce the fixed costs in providing local telephone services, although this new technology in many countries is still at the commercial start-up phase and appears to be confined to business customers. The definition of the relevant market is liable to change and should be able to adapt as technology progresses.¹⁶

Besides the above-mentioned elements, the following features imply that the application of approaches developed under the auspices of the competition rules is not always straightforward and the fine-tuning of such approaches is required in examining the telecommunications sector. First, some of the telecommunications markets have been subject to price control and competition in the telecommunications markets is fairly new compared with other industries that have been opened to competition for a long time. Second, the influence of regulation on the telecommunications market still persists or remains in many respects such as the definition of relevant market and terms of interconnection and provisions of facilities. For example, for regulators in the telecommunications sector, it would be more complicated to determine whether competition exists in a telecommunications market if current regulatory restrictions were lifted from the market.

Definition of a relevant market

Without a clear definition of a relevant market in the nature of both service and geographic area, most indicators, including market share, for the analysis of competition may be irrelevant and regulators could draw erroneous conclusions about the status of effective competition in telecommunications markets.

Demand substitution and supply substitution

Many NRAs use the definition of a telecommunications market in line with that developed under competition rules and competition authorities, and thereby the definition is inextricably linked to the concept of market power. Most economists agree that an ideal market definition considers possibilities in both consumption and supply substitution.¹⁷ In the telecommunications sector like others, the definition of a relevant market concentrates on identifying constraints on price setting behaviour of operators. These constraints comprise demand substitution and supply substitution.

A market is defined as a (group of) product/service in a geographic area for which a hypothetical profit maximising firm, a sole firm not subject to price regulation, can impose a ‘small but significant and non-transitory (lasting)’ increase in price. The concept of a ‘hypothetical monopolist’ can be a useful analytical tool in finding close demand and supply-side substitutes, which sets the boundary to the relevant market. Many competition authorities in the US, UK and other countries use the prevailing prices of the products as a benchmark and regard price increases of 5-10% lasting for the foreseeable future as a small but significant and non-transitory price increase.¹⁸

The hypothetical monopolist should consider the likely demand responses from consumers to a price increase. If the reduction in sales of services were substantial, such a price increase is not profitable for the hypothetical monopolist because of demand substitution. The nature and magnitude of this response from consumers determines the scope of the product/service market and the geographic market. A relevant market is to measure responses from firms selling substitutable products/services to a price increase by the hypothetical monopolist firm. Without significant sunk costs of entry or exit, new entrants would enter existing markets to produce or sell products/services that were alternatives to the incumbent's if they viewed a small but significant and non-transitory price increase as giving them profits higher than normal.

Demand-side substitution means the extent to which customers can substitute other services or products for those in question. Demand-side substitution involves the following issues: What kind of services are available to consumers; what factors are important for them to select services; how customers use the services; and in what circumstances and how they opt for new services either from an operator currently subscribed to or competitors instead of services in question. In the context of demand substitution, the marginal switch to new services or a new operator by a customer matters. It would be erroneous to simply identify captive customers as a base to determine the scope of the relevant market.¹⁹

Supply-side substitution refers to the extent at which suppliers could increase or switch their facilities to produce and deliver relevant products in place of products/services in question. Supply-side substitution includes the following questions: Whether the supply of a product or service hinges on dedicated or specialised equipment, how the service reaches customers, and whether a new entry in an existing market or switch to the provision of the product/service is technically or commercially feasible.

The NRAs can consider the following factors in reviewing demand and/or supply substitutability:²⁰

- Evidence that buyers have shifted or considered shifting purchase between products in response to relative price changes or other competitive variables.
- Evidence that suppliers change their business decisions corresponding to the prospect of buyer substitution.
- The influence of downstream competition faced by buyers.
- The timing and costs of switching products. Customers have made investments to receive a service or product and may be unwilling to incur additional costs resulting from other substitutable services or products.

The geographical scope of the relevant market can be determined through identifying a geographical area within which customers are facing similar competitive choices and which can be distinguished from neighbouring areas having noticeable differences in the conditions of competition. Within this broadly similar area, customers can purchase alternative services from rival suppliers in close proximity in response to changes in relative prices by a supplier. Geographic location is determining available choices to customers (demand-side substitution) and the response of other firms (supply-side substitution). Some member countries, for instance, attempt to disaggregate the geographic boundary of the relevant wireline market to downtown business district in major metropolitan areas, nearby suburban area and rural area based on the prior criterion.

In determining the boundaries of a relevant market, the hypothetical monopolist framework focuses on potential changes in relative prices. This raises an issue of whether the price levels prevailing in the market should be a starting point or a benchmark of the analysis on the performance of the market and the industry. As discussed in the characteristics of the telecommunications market, this has to do with the persistence of price regulation in the telecommunications market in many member countries. If a market has been under monopoly or oligopoly where choices for services and products are quite limited, an

increase in prices leads to customers switching to other services or products which are not normally regarded as close substitutes in the relevant market. In this case, it is easy to overestimate the boundary of the relevant market. Likewise, if regulators choose to use the incumbent operator's regulated high price levels as a benchmark against a small but significant and non-transitory increase in price, a substitution of a telecommunications service may occur, which would not happen if the price were closer to the competitive level. Given the long history of price regulation, there is a danger of distortion creeping into the assessment of the performance of the relevant telecommunications market.

Convergence of technologies and inter-industry substitution

The convergence of various technologies increases the level of service substitution in the telecommunications market. Internet is used to transmit digitised voice signals competing with voice telephone services. It has been argued that mobile telephone services and/or high speed broadband services are close and effective substitutes for traditional fixed telephone services.²¹ In this respect, the main argument is that since once separate industries are converging and form an information sector, policy makers have to reflect this intensified inter-industry competition and the measures of competition must incorporate such a recent change. If the level of competition were only measured by counting the number of access lines or turnover along the line of the traditional telecommunications industry, the framework would have deficiencies in showing the true level of competition. The contention is that the erosion of market share can not be fully appreciated without the employment of more precise measures, including traditional wireline competition as well as a host of last-mile connections such as wireless and high speed data services.²² This calls for a market definition from a viewpoint of consumers instead of industries.

The mobile telecommunications market can be treated as being separate from fixed telephone service markets. From a demand-side perspective, subscribers to a mobile telephone service are unlikely to easily switch to fixed telephone services in response to relative increases in prices for a mobile telephone service, bearing in mind several advantages in using the service. The inherent ease of access to mobile communications shows that the two services are not close and effective substitutes. Service quality level of mobile telephony may be lower than that of fixed telephony.²³ Though mobile telecommunications services may be considered to be substitutes in some respects for local telephone services, pricing levels and functionality are currently substantially different from those of fixed telephone services. In some senses, fixed telephone services could be an inferior good to cellular services. From a supply-side perspective, operators licensed to run mobile networks are limited due to the lack of spectrum, which poses a significant entry barrier for potential entrants.

Prices for some of the telecommunications markets such as mobile telephony have been falling very rapidly and it may not be very compelling to apply the concept of a small but significant and non-transitory increase in price, without any modification. This also raises the question of the validity of pre-defined markets shown in the former SMP legislation in the telecommunications sector, which can be obsolete, inaccurate and irrelevant in consideration of rapid technological change.

Appropriate delineation of current telecommunications markets

It is useful for regulators to discuss what could be a proper delineation of current telecommunications market segments, having in mind the aforementioned criteria for the definition of a relevant market. This can be used as a starting point for the NRA to initiate reviews of the impact of regulations on the markets and the performance of the markets. Table 1 demonstrates an example of classifications of the telecommunications markets by some entities and a proposed list of the report.

Table 1. Categorisation of current telecommunications markets (as of 2001)

Canada	EU	Proposed list
Voice – individual lines, Centrex, PBX access, intra-regional long distance, domestic long distance, cross border (US), international (non-US)	International voice telephony	Voice – local, long distance, international (residential and business respectively)
Data access – high speed	Packet-switched data	Payphones
Local private line	Resale of international transmission capacity	Leased lines – domestic, international
Foreign exchange line	Audio-conferencing	Data network service
ISDN lines	Satellite services	Internet access
Inter-exchange private line	Enhanced global telecom services	Mobile
International private line	Directory-assistance	Network access* - local loop unbundling, interconnection
Data network services (frame relay, ATM, etc.)	Internet access services to end users	
Cross border data circuits	Mobile	
Carrier network access services		
Unbundled network element		
Internet access – Dial-up, high-speed, dedicated		
Mobile – post paid, pre pay, long distance		
Specialised mobile, Operator services		
Payphone lines, Calling features		

Note: 1. * Signifies markets that do not directly deal with end users. This is concerned with wholesale markets.
2. The list for Canada is proposed by a consulting firm and is different from what the Canadian regulatory authority actually chose to monitor the industry after extensive discussions and consultations.
3. The European Commission indicates in Article 15 of the Framework Directive of 7 March 2002 that it defines markets in accordance with the principles of competition law. The classification of telecommunications markets by the competition law differs from the one above.

Source: Lemay-Yates Associates Inc., Monitoring the Canadian Telecommunications Industry; EC, Working Document on the Draft Guidelines on Market Analysis and the Calculation of Significant Market Power.

Fixed telephone voice market can be separated into local, long-distance, and international services. These three markets are distinct from each other in that consumers cannot switch to other services responding to a relative price change. It is also possible to define distinct residential and business markets. This division of residential and business market can be justified on the ground that competitors have a greater market share in the business market than the residential market. Owing to price differences and operators' strategies on the more profitable business telecommunications market, business and residential services are distinguishable on the basis of off-peak discount, the magnitude of discounts and the presence of minimum billing levels. This report presumes the payphone service market is separate because consumers using payphones cannot easily or are not willing to substitute the services for other fixed telephone services because of the type of use of the service or income constraints, although demand substitutability is made possible by mobile telephony.

Leased line services range from analogue voice quality to high speed digital lines. Since customers of leased line services tend to be larger users of communications services and want to retain private lines for some other purposes, they are unlikely to respond quickly to a relative change in price for a leased line service. However, the magnitude of supply-side substitution is thought to be fairly high because it is easier for suppliers to change existing facilities to provide leased line services reacting to price changes. Data network service markets have been deregulated for a long time and are relatively competitive. The

demand-side and supply-side substitution with other service markets is not likely to be high. However, high speed digital leased line services can be a close substitute of data network services and these two markets might be regarded as one.

A market for access to Internet raises the issue as to whether or not different means of accessing to Internet form separate markets. These different means include dial-up access via modem, broadband access such as ADSL and permanent access via private leased lines. In terms of demand substitution, low users of Internet, typically residential customers, are not willing to pay the additional costs of obtaining a leased line in place of dial-up or ADSL services. For the medium-sized or large business users who take a large portion of low speed access services to Internet, according to Oftel, they are likely to upgrade their connection to Internet in response to a relative price change.²⁴ In terms of supply substitution, there is a considerable level of substitution between different means. Thus, Oftel concludes that the different means of access to Internet do not constitute distinct markets.

The market for interconnection to telecommunications networks has gained significance as a result of liberalisation and deregulation of the telecommunications sector. To promote competition in the market, regulators forced incumbents to allow access to facilities necessary for competitors and resellers to provide that service to end users. Practically, in the telecommunications sector, two main types of the relevant markets are a service market for end users and a network access market for competitors as a wholesale market. With the adoption of local loop unbundling (LLU) as a policy in member countries, the interconnection regime has been expanded to include local loop unbundling. A network operator can be asked to connect either local loops or local switch ports terminating at the company's distribution frame to competitor's co-located transmission equipment.

However, interconnection and local loop unbundling can be considered as distinct in many respects. First of all, interconnection allows for competitors only to carry their traffic over the incumbent networks. In contrast, local loop unbundling permits them to access customers directly and increase market penetration more effectively through this mechanism. Secondly, customers for the wholesale market are quite distinguishable. Most ISPs demand incumbent network operators unbundling of network elements to improve the quality of their Internet services by providing high speed broadband services. The competitiveness of a market for LLU can be measured through a comparison of three variables. These are the number of lines available for LLU by network operators, the percentage of lines being offered by the incumbent network operators for the use of LLU, and the number of self-owned access lines by competing companies. Thirdly, strictly speaking, unbundling is not interconnection in that it does not meet the definition of interconnection, which requires a physical and logical linking of the public communications networks used by the same or a different firm. Unbundling falls within the scope of the concept of "access", as confirmed by the EC's new Framework Directive of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities.

Indicators for the review of effective competition

A range of indicators to examine the competitiveness of the telecommunications markets

Logical underpinnings for the selection of indicators

The effectiveness of competition should be assessed in using indicators that ensure consistency as much as possible with those used in determining allegations of anti-competitive behaviour within the scope of national competition authorities or judicial entities. This report purports to combine sector-specific features described above with application of general competition rules. Therefore, it extracts the analysis criteria used in the application of usual competition laws and extrapolates them in order to analyse the existence of

effective competition in the telecommunications market. Although the concept and objectives of effective telecommunications competition differ from those of market power and past SMP, indicators and parameters developed for the assessment of effective competition need to ensure as much consistency as possible with those used for the assessment of market power and past/current SMP. Market power determination and former SMP designation are respectively concerned with specific cases and allegations under investigation and predefined relevant markets in the EC Directives. Even with a difference in markets to be reviewed among the types of competition assessments, indicators and methodologies devised for the evaluation of market power and SMP can be carried over to those used to determine effective competition. For one thing, this will reduce the burden of data request on carriers and takes advantage of already existing information. Secondly, this permits a consistent interpretation of competition in the telecommunications market, which minimises conflicts of interests among market participant and regulators.

Monitoring the evolving landscape of the telecommunications sector should focus on factors that are truly indicative of effective competition. Data concerning the indicators used to measure effective competition should be objective as far as possible and allow comparisons to be made. However, a qualitative assessment of the nature of innovation and technological changes evident in the market place should be undertaken in analysing the state of competition. Related to this is that it is very difficult to measure quality across companies providing different bundles and mixes of services. The NRAs should be aware of the burden and resources for operators to produce data requested by the regulators with a view to gauging telecommunications competition.

An array of measures for the evaluation of telecommunications competition should encompass indicators for the structure and characteristics of the relevant market under review, the behaviour or conduct of market participants and the performance (consumer benefits) of the relevant market. A market's performance depends on the conduct of sellers and buyers, which have a close connection to the structure and characteristics of the relevant market. Inclusion of consumer benefits as well as consumers' behaviour for effective choice and competition as a list of indicators demonstrates a certain degree of departure from typical market power analysis.

The parameters selected for the measurement of indicators for the framework must not have a disproportionate or discriminatory effect on particular players. The choice of measurement parameters should be conducted in a way that respective indicators are measured accurately, minimise distortions and provide sufficient predictability. Table 2 summarises indicators for the measurement of effective competition accompanied with appropriate parameters to each indicator in the telecommunications markets.

Table 2. Indicators for the evaluation of telecommunications competition

Category	Indicator	Parameter
<i>Market Structure</i>	Market share and its trends	Volume-based: call minutes, number of subscribers; Value-based: revenues; Capacity-based: number of lines installed
	Entry barrier/Ease of entry	Parameters for absolute barriers: number of firms, regulatory restrictions, control of essential facilities, extent of economies of scale and scope Parameters for strategic barriers: advertising & capital intensity Vertical integration / Parameters for exclusionary barriers: existence of vertically integrated firm and its price levels, including non-discriminatory access to wholesale products
<i>Supplier behaviour</i>	Active competition in price and rivalries	Rivalry in price competition: pricing trends, the extent of reaction to a price change, existence of price leadership Rivalry in non-price competition: level of marketing & advertising costs, coverage of services or networks Indirect measure: the existence of recent entry or exit, the extent of such movement in the past
	Absence of anti-competitive behaviour and collusion	Anti-competitive practices: number and time spent for agreements on LLU and interconnection, percentage of lines for LLU by incumbent, existence of carrier pre-selection and number portability, number of complaints reported Existence and level of collusion (subjective assessment according to the context)
	Provision of innovative services	Rate of diversification (differentiation) and speed for innovative services
	Profitability and its trends	Trends in profits across firms
<i>Consumer behaviour</i>	Access to information	Consumer survey, regular information notice to customers, quality of websites for information, in-time provision of requested information
	Ability to use information and market opportunities	Consumer survey: possession of correct and sufficient information for current services and alternatives, clear criteria for comparison
	Costs and barriers to switching suppliers	Consumer survey: extent and substance of barriers to switching suppliers; Level of switching made compared with level of satisfaction on information provided
	Countervailing buying power	Number of consumer groups, percentage of large users and its portion in revenues, level of consumer expenses for services to total income
<i>Consumer benefits</i>	A wide range of competitive services offered	Churn rate of offered services to a threshold Consumer survey: presence of sufficient service offers and changes in level of satisfaction
	Consumer satisfaction with price and affordability	Revenues/number of calls (fixed costs), revenues/number of calls minutes Consumer survey: price adequacy, affordability, simplicity and ease in rate structure
	Consumer satisfaction with the quality of services	Call completion/congestion/disruption rate, time for installation and repair, number of faults, number of reported complaints Consumer survey: level of quality, areas of concerns, the reason for low quality service

Market structure

Market share and its trends: Many NRAs in the OECD area collect information on market share for various purposes. Market share can be the volume of demand, value (revenues) of demand, or capacity in the market. While volume parameters are preferred to value parameters in measuring a market share of a market for bulk products, sales in value and their associated market share has comparative advantages over the volume of demand in the case of differentiated goods.²⁵ Capacity based market share can better reflect supply substitution and expansion than a revenue-based one. The redistribution of and trends in market share are crucial to understanding the transition from monopoly to sustainable competition. The degree of market concentration can be measured using the four-firm concentration ratio (CR4), which is the share of market sales accounted for by the four largest firms. Changes in the pattern of market share (or trends) give a more accurate understanding of the development of competition in the telecommunications market over time than a snap shot review of market share.

In the telecommunications sector, the calculation of market share with a reference to value of demand can be more meaningful than that in terms of volume of demand. In general, new firms are able to attract low value customers, and incumbents retain high value customers, which is also prevailing in the telecommunications sector. For example, a count of the number of leased line termination points can not fully reflect the different types of leased lines, which encompass analogue voice transmission and transmission via high speed digital lines. In the case of leased lines, revenues (turnover) are more transparent and less complicated to measure. The established firm is likely to have higher market share with respect to revenue than volume. In the telecommunications sector, revenue is a more plausible parameter to represent market presence in terms of both number of customers and network coverage. This is also noticed in the determination of SMP. As market shares approach the 25% threshold, the EC notes a careful selection of measurement parameters becomes more significant.

The competitive landscape is much more complicated than the picture that would be given by a simple examination of the number of access lines. A simple measure of this parameter may lead to a distorted estimation of telecommunications competition over the lines. The use of call minutes could over-state the presence of new or competitive mobile operators, which provide relatively cheaper or limited coverage to mobile services than the incumbent. The use of call minutes can be misleading where some market players are focusing on the long distance market and others are dominant in local telecommunications market. Therefore, the use of revenues rather than volume to measure a market share indicator gives a better coverage of the diversity of market structures. However, both parameters can be measured to reveal differences between the two and why this happens and at what stage competition is in the market.

Entry barriers/Ease of entry: As noted above, there are many sources of entry barriers in the telecommunications markets, which could result from certain constraints due to regulation, possession of essential facilities by an incumbent operator and other factors. Three sources of entry barriers are absolute advantage, strategic advantage and exclusionary behaviour.²⁶ Absolute barriers may occur owing to technological barriers, economies of scale and economies of scope and regulatory restrictions of market entry, e.g. resulting from the shortage of available radio spectrum for mobile services. Economies of scale exist where the provision of services demands high fixed costs, while economies of scope occur where costs for one product can be reduced through a joint production with another product. These two will act against the entry of potential firms to telecommunications markets. Strategic barriers have to do with the first mover advantage and the nature of investment in telecommunications networks. Exclusionary barriers are associated with vertical integration of the telecommunications sector. A vertically integrated firm with market power on an upstream market can lever its position into a downstream market. In the absence of effective regulation, a firm controlling a network may be able to exclude those firms competing from accessing its network or squeeze their margins by increasing the interconnection prices charged for the conveyance of competitors' services and reduce the firm's retail service prices.

Therefore, parameters for the ease of entry with respect to absolute barriers include the number of firms operating in relevant markets, the extent of economies of scale and scope and the existence of regulatory restrictions making it more difficult for potential entrants to enter the market and to know whether the said restrictions might possibly be lifted. Frequently used proxies for strategic entry barriers are advertising intensity and capital intensity of incumbents against new entrants and subjective estimates of the difficulty in entering the market. Among these, while a high level of advertising expenditure by both incumbents and new entrants is associated with increasing competition in the market, extreme advertising campaigns by incumbents with deep pockets signal their efforts to drive prospective or fledgling entrants out of the market. Data for these parameters can be obtained through a calculation of the proportion of advertising/capital expenses in relation to total costs of incumbents. In particular, capital intensity of incumbents can be measured indirectly by looking at the level of excess capacity of the operators' networks such as fibre optic cable networks.²⁷ The evidence for exclusionary barriers is whether a vertically integrated operator is selling a corresponding service in the downstream market under review and its level of service rates as opposed to competitors. This parameter can be measured by using the existence of the non-discriminatory access of market participants to wholesale products which is intensively regulated and effectively provided in Germany. This parameter can be isolated from the indicator for entry barriers and be viewed as a new indicator that is representative of the structure of the telecommunications market independent of entry barriers.

Supplier behaviour

Active competition in price and rivalries: Rivalrous behaviour can be seen through falling prices (or the rate of price reductions), vigorous and aggressive marketing activities or expansion of services and geographic coverage by competitors.²⁸ These rivalries can be exhibited in terms of pricing and non-pricing elements. The price in a competitive market is determined at the equilibrium point of demand and supply. However, if a market is not sufficiently competitive, a supplier determines the level of its service charge on the basis of the pressure exerted by other market participants. In some telecommunications markets, there may exist a leader-follower situation. Rivalries in price competition can be measured through the use of overall price trends across firms in the relevant market and the extent of reactions from competing companies to a price change by a company in the market. Non-pricing competition can be measured by the percentage of marketing and advertising costs among firms. The other parameter is the rate of growth in geographic/service coverage by competitors, which exceeds the boundary of core high-density markets. An indirect way of measuring the level of active competition as well as the ease of entry is to look at the number of recent entries and exits in the relevant market.

Absence of anti-competitive behaviour and collusion: Effectively competitive markets lack collusion (strategic collaboration) among suppliers and anti-competitive behaviour, e.g. predatory pricing, slamming and other anti-competitive practices such as delay in interconnection agreements. In the telecommunications market, to make a transition from monopoly to effective competition, there has been a need to put regulatory measures in place to deter anti-competitive behaviour of incumbents. The indicator can be judged on the ground that economically feasible and fair transactions are achievable through interconnection, unbundling of local loops, rights of way, carrier pre-selection or selection and others that may be allowed to new entrants on a fair basis. Regulators and monitoring agencies can collect information on the number of applications for such services and agreements being made with incumbents and on the length of average period of time between the applications and agreements for these services. Also relevant is the percentage of the lines offered to LLU over total lines. Supplementary to this measure is the number of reported complaints against the incumbent concerning the exercise of anti-competitive practices.

Collusion among market participants can happen in many respects including a restriction on price competition, provision of new services and deterrence of new entrants in the relevant market. This measure can be associated with already mentioned parameters, thereby closely related to other indicators.

The existence of collusion is difficult to prove, and a demonstration of its existence and scale involves subjective evaluation. To identify evidence for this parameter, regulators need a careful review of previous instances of collusion.

Provision of innovative services: This measure includes the number and nature of services being offered by carriers and the degree of innovation in terms of service packaging, bundling and exploitation of technological convergence. This can be also measured through the speed and varieties with which innovative services are brought to the market. However, the measurement of this parameter is hardly standardised across member countries and mainly rests on self-assessments of the provision of new and innovative services by firms in the relevant market.

Profitability and its trends: Oftel used this criterion in determining whether certain firms possessed market power in the relevant market. If new entrants or firms with a relatively insignificant market share face financial difficulties, the health of competition in a market place will be unstable and the sustainability of the market comes into question.²⁹ Sustained excess profit across a number of major incumbent firms is indicative of the fact that the scale of competition in the relevant market could be relatively low. This indicator can be observed through the measurement of profits accrued to firms participating in the relevant market over time.

Consumer behaviour for effective choice and competition

Access to information on the availability of effective choices: If consumers are not well aware of alternative choice of competitive offers, competitors or new entrants are not likely to attain sufficient market penetration to counter anti-competitive practices of their rival with a fair amount of market presence. The measurement of this indicator can be conducted through consumer awareness surveys on a regular basis across a range of important issues in telecommunications, including the availability of quality of service offers. For this purpose an annual consumer report and/or periodic surveys of households and businesses need to be made by regulatory or policy entities. For this indicator, directly measurable data include the existence of regular notification of prices and available service options to consumers by service providers, the level of the contents contained in information on services via Internet, the provision of requested information in a timely manner, and others.

Ability to use information and market opportunities: Though relevant information is accessible in the choice of the telecommunications services, it may not always lead to consumers' right choice of services and the enhancement of consumer welfare. Consumers must be able to identify distorted information or supplement insufficient information with existing knowledge and then compare the selected correct information with other sources of information for competitive services. The measurement of this is fraught with difficulties in that the indicator must reflect a decision making process by consumers. Therefore, this process involves the consumers' ability to decide whether they have sufficient and correct information and whether they have criteria for comparing the information with comparable information for alternatives. This can be only investigated through consumer surveys.

Costs and barriers to switching suppliers: When considering a switch to new services in place of existing services, there are three possible cases. First, consumers will remain with current services if satisfied. Second, if not satisfied after a comparison of information, they will substitute services in question for new services unless significant switching costs are incurred. If consumers already have a considerable investment in equipment necessary for services, are locked into long-term contracts or are concerned about disruptions and inconveniences in so doing, they will stick to current services and show inertia in the choice of services and carriers. Related to significant barriers to switching suppliers are high connection/disconnection fees, lengthy contracts with penalty clauses, additional costs for new peripheral equipment, billing arrangements including separate bills and the existence and effectiveness of number

portability. Consumers' reluctance to switching suppliers can subsequently work as a potential barrier to entry. Consumer surveys can ask detailed questions on the extent and substance of such barriers to switching. One of the proxies for measuring this variable is the percentage of actual switching to new service or suppliers after receiving relevant information. If the level of consumer satisfaction drops over time but the rate of switching suppliers stays relatively low, this implies that a high level of switching barriers exists in the relevant market.

Countervailing buying power: If a service provider engages in practices that are harmful to effective competition, consumers can exert countervailing power against such practices. When buyers are large and powerful, they can effectively stop the attempt to increase prices by sellers. Many factors play a role in determining the scale of countervailing power on the part of the buyers. The higher the amount of purchase of services by customers, the stronger the counteracting power. The higher the portion of the costs for a service in relation to their total expenditure, the more sensitive consumers are to the price and quality of the service. The higher a seller's locked-in investment in specific customers (asset specificity), the more willing he will be to negotiate.

The proposed parameters for this variable follow the aforementioned criteria to measure the level of countervailing power on the part of customers. These variables can be expressed in the number of consumer associations, the number of large users for the relevant services and their portion of total revenues of operators, the percentage of costs in purchasing telecommunications services against the level of consumer incomes and the number of reported complaints from customers in connection with service provision.

This variable is more meaningful in the wholesale market than any other indicators representing consumer behaviour and benefits, because firms purchasing network services from incumbents are more visible and powerful than retail customers. A large wholesale customer can also exert pressure on an incumbent by threatening to build its own network infrastructure and to shift its traffic to this. The wholesale market such as LLU and interconnection does not directly concern end users but has substantial repercussions for the retail telecommunications market. In particular, this indicator must be reviewed in relation to vertical integration.

Consumer benefits

A wide range of competitive service offers available to consumers: This indicator can be measured through a customer survey on the quality of offers or through measures such as churn rates. Churn refers to the number of customers an operator loses over a given period of time. Consumer surveys would provide valuable information to complement and determine the true status of competition in market places covering effects of price competition, informed choice of services, the quality of offered services.³⁰ For this indicator, consumer surveys can ask for consumers' evaluation on the presence of sufficient service options and their level of satisfaction with such offers over time and could include a question regarding reasons for a customer discontinuing services.

Consumer satisfaction with price and affordability: Though not accurate, at the aggregate level, call prices can be defined as revenues adjusted for inflation per minute for all types of telecommunications services except for some basic telecommunications services at fixed prices (costs) per call regardless of the length of a call. The Australian Communications Authority calculated call prices in this way while conducting an evaluation of telecommunications performance. In the case of services with fixed costs, the formula to calculate prices for services is revenues in the market segment divided by the number of calls.

Consumer perception of prices and affordability for services can be different from those offered by service carriers in the telecommunication markets. That depends on the level of individual income and overall

level of consumer prices. If a consumer feels a price reduction for a particular service is not enough to match decreases in prices for services other than telecommunications services, this may turn out in the form of low satisfaction with the telecommunications service in question in terms of price. Accordingly, consumer surveys for this indicator should carry questions on the adequacy of current services, the presence of affordable service, ease in understanding rate structure for the services (price transparency) and so on.

Consumer satisfaction with the quality of services they receive: This indicator can be captured through a survey for the level of satisfaction with quality that consumers obtained from offered services. The survey can cover whether quality of service is satisfactory, which areas have significant problems and what leads to the problematic service quality. Another way to measure this indicator is to investigate the following parameters: average time spent for the installation of services, call congestion rate, call completion/disruption rate, the number of faults reported by carriers, the time consumed for repair, the rate of completed repair and the number of reported complaints. Some OECD member countries such as the United States have measured the changes in quality of telecommunications services using similar parameters already mentioned.

Strengths and weaknesses of the indicators for the review of effective competition

Market structure

Market share: High market share is a necessary, but not sufficient condition for exercising market power. Market share alone is not synonymous with market behaviour, but one important element of market structure. Thus, market share must not be treated as a proxy for measuring market power directly. Other factors are needed to draw a conclusion that a company acts anti-competitively or hinders effective competition. A high market share of a firm is not necessarily indicative of market power or lack of competition in the relevant market. In a regulated industry such as telecommunications, market share is less indicative of market power than in other industries because it depends for a large part on artificial regulatory entry barriers or lack of radio spectrum (or insufficient allocation of available spectrum) as in the case of mobile telephony markets.

Oftel uses a 25% market share criteria as a rule of thumb allowing for an investigation under the Fair Trading Act of 1973.³¹ However, this does not mean that an operator with a market share in excess of 25% is always presumed to have market influence (market power). In contrast, the former SMP guideline required that an operator having more than 25% of the relevant market was to be presumed to have SMP, which resulted in sector specific regulatory obligations for the firm concerning interconnection. The market share data can be used as a *de minimis* criterion. This refers to the absence of market power of a company below a certain level of market share but no presumption of the existence of market power over that level without additional relevant evidence showing the company's abuse of market presence.

Market share is based on historical data and this implies there is a certain limit in analysing potential competition in a very volatile and dynamic market. That is, market share measures can fail to reflect increases in production through expansion or entries in such a market. Recent or ongoing changes in the market cannot be correctly mirrored in the current market share of a particular firm, and a snap shot approach of market share can lead to an erroneous estimate of the firm's future competitive potential. To alleviate the above-mentioned problems, changes in the pattern of market shares over time are more significant than a snap shot of a market share.

Entry barrier/Ease of entry: Mere removal of entry barriers may not be sufficient for effective competition since it takes time to erode the incumbents' market power. The speed and magnitude of entry will affect

effective competition in the relevant market, which is not easy to measure or monitor. If the entry occurs in a timely manner and its magnitude is sufficient enough, this will effectively counteract competitive concerns in the market. Furthermore, in the telecommunications market, a dominant firm may utilise its first mover advantage since it is difficult for another firm to replicate the sunk capital invested by the dominant firm. Long construction periods and high investment costs constitute a significant deterrent to viable entry of competitors seeking to develop their own infrastructure.

Supplier behaviour

Active competition in price and rivalries: Prices for telecommunications services are falling due to increasing competition. However, this may occur for other reasons such as technological advances, as can be the case in markets controlled by a monopolist firm subject to rate of return regulation. Observed price reductions may reflect declining costs for service provisions instead of increased competition in markets. Coupled with persistent high profits and positive returns, falling prices could be inconsistent with increasing competition.

Pricing data are often difficult to compare due to diverse special offers and different kinds of discounts. The OECD's experience has been that a basket comparison approach is the preferred way to undertake comparisons. Several regulators (e.g. Oftel) have constructed baskets in order to compare price performance in distinct markets.

Absence of anti-competitive behaviour and collusion: Though several parameters for this indicator are proposed in this report, these are not exhaustive and have their limitations, inevitably calling for subjective appraisals. Therefore, the parameters are hardly standardised across member states or market segments. Practising undue preference and undue discrimination is not readily captured by the mechanical interpretation of data for the parameters suggested by this report. Past historic experience and competitors' capacity to put competitive pressure has to be examined in the process of determining the level of anti-competitive behaviour.

Provision of innovative services: Product differentiation by suppliers directly affects consumer benefits. There will be a high correlation between increased diversification of services by operators and an improved range of services available to customers and subsequent higher satisfaction from this. However, in terms of consumer outcome, service differentiation does not always lead to a higher satisfaction for consumers if it exceeds a certain threshold. Consumer surveys focus on the consumer perception of services being offered and are not always commensurate with the varieties of service provisions available to them.

Profitability and its trends: There are some pitfalls in relation to this indicator. Profitability is usually calculated based on the historical costs of capital. In order to reveal the true level of profitability, capital costs must be valued at replacement cost to determine whether the rate of return is above the competitive level. The other problems stem from fixed formulas to measure the depreciation of assets and valuing of advertising and R&D. The fixed formula to calculate depreciation may be unrelated to its economic measure of depreciation. Advertising and R&D affect either a firm's demand or supply.

Profitability and market share may be correlated with each other. If a less competitive market structure causes higher profits, then more companies will enter the market to provide services. Under this scenario, the structure of a market and the behaviour of the suppliers interact with each other. This has a particular significance in the telecommunications sector.

High profits are not always bad in terms of competition as long as these come from relative efficiency and innovation. Sustained high profits across companies in the relevant market may indicate the absence of fierce price competition. Profitability measures can fluctuate to a great extent by one off fees or costs such

as those incurred to secure 3G spectrum and licenses, and a simple addition of such expenditures to total costs may give a misleading picture of competition in the relevant market.

Consumer behaviour for effective choice and competition

Access to information on the availability of effective choices: The measurement of this indicator requires quantifiable data as well as qualitative assessments of information available through consumer surveys and direct observation. When parameters for an indicator have a mix of qualitative and quantitative data, a careful and consistent consideration of the two is required in order to have an efficient evaluation on the level of market competition. Sometimes, the two sets of data can contradict each other.

Ability to use information and market opportunities: The measurement of this indicator is very complicated. On the one hand, the indicator calls for a sophisticated understanding of the decision making process and a deliberate design of survey questions corresponding to the nature of decision making. On the other hand, it is likely to raise problems inherent in such surveys for gauging consumers' perception of a market. Thus, this indicator should be used as a complement to provide subsidiary information in a review of effective competition.

Costs and barriers to switching suppliers: To some extent, the level of barriers and costs to switching suppliers relies on exogenous variables such as the down turn of economic conditions that affect all consumers. This will result in systematic errors in measuring the scale of switching costs. Consequently, regulators need to weigh and adjust such influence on trends concerning barriers to switching suppliers.

Countervailing buying power: Large buyers with countervailing buying power often negotiate with service providers for tariffs specific to them, different from a standard tariff package. Under these circumstances, countervailing buying power does not constitute constraints that prevent operators from pricing above the competitive level.

Consumer benefits³²

A wide range of competitive service offers available to consumers: There are difficulties in the development of meaningful and comparable indicators for consumer benefits. In particular, the indicator for this could easily vary significantly from country to country. Thus it may not be easy to have uniformity in indicators across all member states.

Consumer satisfaction with price and affordability: The proposed proxy for the calculation of service prices in the relevant market has a limitation in that quality changes and complex pricing packages may lead to the inaccurate estimation of prices for services. The other problem has to do with the changing nature of fixed cost (fixed price) services. Average length of local calls at fixed costs has increased considerably with a surge of connections to Internet. In addition to these, as competition intensifies in the market, arriving at the accurate estimate of a representative price for services in the market requires a well-balanced approach that considers different price packages proposed by many market participants.

Consumer satisfaction surveys are likely to be highly subjective as they reflect customers' expectations of particular services as well as satisfaction with services. Customer expectations are known to change over time and are based on individual perceptions and priorities.

Consumer satisfaction with the quality of services received: When interpreting data for quality of service, to begin with, regulators must be aware of the advancement in technologies that leads to improvements on service quality. For example, call congestion in the mobile telecommunications market has considerably improved after the use of GSM and CDMA technologies. Thus, improvements of service quality should be adjusted for technological innovation in order to identify the real impact of competition and market

performance. One way to deduce the influence of technologies and new equipment on quality of service is to conduct a comparative analysis of service quality in similar economies. Secondly, the nature of the interconnected telecommunications networks poses an issue of isolating quality of service in one market from other markets. Users of a fixed telephone network can encounter network congestion for calls terminating on a mobile network. In these circumstances, deterioration of service quality in the fixed network operator can stem from other service operators. Thirdly, regulators should also bear in mind the possibility of a trade-off between price of a service and its quality. Therefore, the impact of the two variables must be weighed simultaneously in reviewing market competition.

Other issues in using the indicators

Regulators should take into account that the indicators proposed in this report have a varying degree of relevance in relation to the circumstances of the market segment being reviewed. Therefore, the actual conclusions drawn from these indicators involve weighting of these indicators, depending on the market under review. The NRAs can develop a format to weigh the relative importance of indicators and parameters to secure a certain level of harmonisation for the purpose of international comparison. This report suggests, in the conclusions, to ascribe higher importance to a set of indicators which can be operational and comparable in assessing the level of competition in the telecommunications market.

Regulators should identify existing regulations on the relevant market segment and consider its impact on the market. If existing regulatory controls were withdrawn from the market, competition in the market would be self-sustaining or would not be effective in the absence of appropriate regulatory safeguards. If effective competition is attainable through functioning of regulations, the NRAs can seek a relaxation or phase out of such regulations after exploring the risk of eliminating them from the related market.

Overview of competition assessments in some member countries

Australia

The Australian Communications Authority (ACA) monitors and reports each year to the Minister of Communications, Information Technology and the Arts on the performance of the telecommunications industry and operators, according to Section 105 of the Telecommunications Act of 1997.³³ The performance report covers various issues including the performance of particular telecommunications markets, policy issues, and the compliance of carriers and carriage service providers with the requirement of the law. The performance report contains information on the performance of the fixed network market segment, mobile market segment, payphones and the television market segment. The ACA chooses to provide information on the performance evaluation of emergency services, ancillary services, and the Internet. These sectors seem to be selected on the basis of the law or relative importance at a given point of time in the telecommunications sector.

The ACA's telecommunications performance review differs markedly from the approach of this report. First, the purpose of the ACA report is to confirm whether there are any improvements over the year in some important areas of Australian telecommunications. Market performance is measured by typical market share parameters such as the number of connections, provision of new services, and a consumer satisfaction survey. Secondly, some policy issues of key importance are discussed in detail and not used as indicators for the assessment of competitiveness of market. The authority reviews the universal service obligations of Telstra as well as access to basic services. It also examines the issue of number portability and pre-selection to assist competition in the telecommunications industry.

In the ACA report each telecommunications market has its own criteria for quality of service, and the criteria are used for the evaluation of performance. For instance, the Customer Service Guarantee standard requires carriers to meet the following: minimum provisioning of service time frame, rectification of faults, informing customers of obligations, keeping records of arrangements, connection and fault repair performance, and others. The attainment of this standard is reflected in an annual consumer satisfaction survey in order to verify consumer perception of the fixed telephone market. Second, the report calculates consumer benefits as a result of price declines. The calculation is developed using a number of assumptions but, nevertheless, is quite useful as a measure of consumer benefits.

The Australian Competition and Consumer Commission (ACCC) publishes three reports on an annual basis: Telecommunications Competitive Safeguards; Telstra's compliance with the price control arrangements; and changes in the prices paid for telecommunications services in Australia.

Canada

Canadian competition assessments originated from the forbearance provisions set out in the Telecom Decision CRTC 94-19.³⁴ The CRTC can forbear from regulation when a market becomes effectively competitive. If a dominant firm possesses substantial market power, a market is not workably competitive according to the definition of the CRTC. Market power is defined in terms of market share held by the dominant firm, demand conditions affecting customers' response to a price change, and supply conditions affecting the ability of other firms to provide alternative services responding to a price change. According to it, demand conditions include the presence of feasible and practical substitutes, the costs for consumers in switching suppliers, and whether the service is essential for customers.

In assessing market power under the context of the forbearance provisions, the Commission determines a workably competitive market using the following indicators: demand conditions, supply conditions including the ease of the rival to expand output in response to non-transitory price increases, and the likelihood of entry, evidence of rivalrous behaviour, advances in technologies and market share data as a partial measure of an incumbent's market power.

From 2001, the Governor-in-Council asked for the CRTC, under Section 14 of the Telecommunications Act, to report on the state of competition and deployment and accessibility of advanced telecommunications infrastructure and service in all regions of Canada. The background report on monitoring the Canadian telecommunications industry discussed the appropriate scope of the telecommunications markets and key monitoring parameters. A categorisation of relevant telecommunications market segments proposed by the background report is shown in Table 1. The background report also enumerates criteria to determine whether viable and sustainable competition is under way in the telecommunications sector. These include non-dominance and industry concentration, pricing and demand elasticity, innovative service provision, quality of competitive offer, entry barrier, use of unbundled facilities, market share, geographic expansion, facility-based competition, industry efficiency and profitability, well-informed consumers, barriers to switching suppliers, consumer satisfaction, performance of universal service obligations, and absence of anti-competitive behaviour. The list of the monitoring parameters in the background report furnishes the Commission with a range of criteria, but the report does not explain in detail why the selected indicators are truly representative and relevant to the measurement of competition in a telecommunications market. The CRTC issued a status report on competition in September 2001 and it uses existing classifications of the telecommunications markets and much more simplified indicators than the background report suggested.³⁵

France

The French regulator has created an annual observatory of the telecommunications market which monitors different market segments such as fixed telephony, mobile telephony, Internet and leased line services. A quarterly survey is conducted to measure the telecommunications market as a whole, covering both end users and the intermediate market between operators with licenses for interconnection services. The Telecommunications Regulatory Authority (ART) publishes quarterly data tracking trends in the mobile phone market. The data measure the increase in the number of customers of mobile phone operators and the distribution of customers by region and by operator. The ART also publishes on its website a scoreboard showing progress in the unbundling of the local loop every two months. The segmentation of these quarterly surveys is less detailed than that of annual surveys. The results of the surveys are consolidated on a half-yearly and then annual basis.

Following a decision taken on 5 October 2001, the ART is carrying out an analysis of the competitive situation in the telecommunications markets. The Authority attaches importance to defining conditions that will effectively open up the telecommunications markets to competition and, to this end, has performed a review of the state of the said markets. This review aims at assessing the degree and conditions of competition in the markets using the following indicators: the number and typology of participants market shares, existence of barriers to entry. The review is based in particular on the analytical criteria of competition law. Thus far, three surveys have been carried out. The first deals with the market for Internet traffic on the dial-up network, and the second concerns the market for high-speed fibre optic transmission infrastructure. The third covers the interconnection market.

Portugal

Every year the regulator (ANACOM) collects information, quantitatively and qualitatively, in order to evaluate market evolution and assess barriers and inhibiting factors that may distort competition. Based on this information, a set of indicators is established, namely market performance (market shares based on subscribers, revenues, traffic, number of lines), investment (infrastructure development), the offer of services and interconnection and others. ANACOM also calculates a market concentration index – HHI. ANACOM conducted two surveys in order to complement information received from operators: the use of ICT by businesses and residential users.

United Kingdom

The United Kingdom is well advanced among OECD member countries in terms of a framework for the assessment of telecommunications competition and its indicators. Oftel has been undertaking an assessment of market influence, effective competition and collection of basic market information. As discussed in the concept of market power, Oftel's market definition focused on identifying constraints in the price-setting behaviour of operators, following an approach adopted by competition rules. Oftel ascertained factors relevant to assessing market power (market influence): level of entry barriers, vertical integration, number of active competitors, market share, extent of countervailing power among buyers, the extent of any recent market entry or exit, trends in market share and concentration, pricing behaviour, the level of profits, and the influence of other operators in the same or similar markets.³⁶ Based on these criteria, Oftel used its own framework to review the level of market influence in specific market segments including international telephony and mobile services.³⁷ The EU Directives as discussed in the Annex have now superseded this framework. Consequently, Oftel will review markets and assess whether significant market power exists (where absence is equated to effective competition) before applying *ex-ante* regulation according to the EU's Framework Directive.

In early 2003, Oftel will commence undertaking market reviews in accordance with the EC's Directives. All of these reviews must be completed by July 2003 in time for the commencement of the new framework. Oftel has issued a number of documents that provide guidance on how it will approach this task, and hence guidance on the application of indicators of effective competition.³⁸

Oftel collects market information from fixed carriers and mobile carriers and uses questionnaires to carriers and telephone surveys. Market information collected from fixed carriers divides markets into residential, business and wholesales markets. From each market segment in fixed telephony, data for revenues, call minutes and connections are retrieved.³⁹ For the wireless market, it analyses information on retail revenues and connection, wholesale revenues, WAP handsets and other indicators.

United States

The Federal Communications Commission (FCC) has required common carriers to file detailed financial and operational data since the 1950s. The Common Carrier Bureau maintains an Automated Reporting Management Information System, which contains basic financial data, holding companies' rates of return, and quality of service data. However, such reporting obligations have been imposed on operators mainly for various regulatory purposes rather than for the evaluation of the level of competition in relevant markets.

The FCC has certain rules designed to preserve and enhance competition. Under the Communications Act, Section 271 restricts incumbent local telephone companies' participation in long distance markets until certain levels of competition are achieved in the markets in which they have market power; Section 251 requires sharing of facilities to facilitate entry into formerly monopolised markets in local services; and spectrum caps which limit the amount of spectrum any one entity can control. In addition, two statutory requirements lead the FCC to review from time to time the state of competition in communications markets. Section 11 of the Communications Act requires that in every even-numbered year, the FCC review all its regulations.⁴⁰ Furthermore, according to Section 10 of the Communications Act, if the FCC finds that a regulation or a provision of the Communications Act is not necessary to protect consumers or the public interest, then the FCC can forbear from applying it.

Currently, regarding monitoring of the effectiveness of competition, the FCC focuses on emerging markets open for competition and issues the following reports: Local Telephone Competition Review report, Status of Wireless Competition Report, and Assessment of Competition in the Market for the Delivery of Video Programming report. The Local Telephone Competition Review monitors the competitive local exchange carriers' share in total local telephone lines and residential and business markets.⁴¹ The report attaches a brief customer response survey and analyses the level of facility-based competition. FCC's Status of Wireless Competition report covers mobile telephony and mobile data markets. The Status of Wireless Competition report is quite comprehensive in reviewing the status of competition in the mobile market. Market performance in the FCC report is demonstrated using subscriber growth, minutes of use, average revenue per unit, churn rate and market entry. The report tracks pricing data and trends in the mobile telephone market.⁴²

Competition analysis also commonly occurs at the FCC when licensed operators propose mergers or transfers of licenses, transactions which require FCC approval. In some cases there are rules that limit market concentration. In other cases, the transfers are evaluated case-by-case, based on whether the FCC determines if the transaction is in the public interest, its convenience and its necessity. The public interest standard encompasses aims such as the pro-competitive, de-regulatory national policy framework set out by the US Congress, preserving and advancing universal service, and accelerating the rapid private sector deployment of advanced telecommunications and information technologies and services. All mergers in

the United States are reviewed by the Department of Justice's Anti-trust Division and the Federal Trade Commission.

Another example of competition analysis at the FCC is the re-classification of AT&T as a non-dominant carrier in 1995. In that Order, the FCC first identified the relevant product and geographic market for assessing AT&T's market power. The FCC then examined whether AT&T possessed market power within the relevant product and geographic markets. Among the indicators used to assess market power were AT&T's market share; supply and demand elasticity for the relevant services; the cost structure, size, and resources of the firm.⁴³

The FCC recognises that the health of competition, and ultimately consumer welfare, may depend on many factors. Some of these factors, such as the threat of entry, threat of substitution, bargaining power of buyers, bargaining power of suppliers and rivalry among current competitors, and incentives for innovation, take into account the dynamic nature of the market.

Other member countries

Insufficient information is available as to whether other member countries conduct systematic evaluations on the performance of telecommunications competition. Many countries have not yet set up a system to evaluate effective competition in the telecommunications markets on a consistent base. Market share and other structural indicators are measured for specific industries by the member governments, but these measures do not coincide with the definition and scope of the relevant market employing the above mentioned indicators and parameters.

Most member countries publish overviews of the telecommunications market and industry. For example, in Japan data are provided on call minutes, the number of subscribers and the number of lines for the telecommunications markets. The Danish regulatory authority collects data for subscribers and call minutes for fixed and mobile carriers and for customers using carrier selection codes.⁴⁴ The Korean Ministry responsible for telecommunications also assembles quarterly data on the trend of the industry. Italy adopted the same methodology as Oftel in its "Reviews of competitiveness" to evaluate the conditions of competitiveness in the market for outgoing international traffic. These kinds of data, however, may not be sufficient to determine whether competition is effective in the telecommunications sector.

Conclusions

This report identifies a number of indicators and parameters to help regulators make proper decisions on the level of telecommunications competition. The right level of regulation is vital so that markets can develop. Too much regulation can distort market performance while too little regulation exposes new entrants and consumers to risks of abuse by a firm with market power. This is why the systematic and consistent assessment of effective competition in the telecommunications markets is called for. However, further work is needed on building a useful framework and methodology to conduct a thorough evaluation of effective competition in telecommunications markets.

The assessment of effective competition in the telecommunications markets and its monitoring efforts can not be ignored simply because markets are open to competition. The onset of deregulation and restructuring of telecommunications markets often ends up with mergers and market dominance instead of fuller competition. If such problems develop in the future, regulators and/or competition authorities should have a capacity to draw on information in order to assess the status of competition and find appropriate measures to change such conditions.

Indicators to be measured by member countries

The selected indicators need to have policy relevance as well as feasibility in terms of tracking data and costs of gathering information. The indicators should remain compatible with other assessments of the telecommunications market as much as possible, which is another way of reducing the burden on service providers in the market. The indicators of this report might be neither exhaustive nor perfect in determining the true level of competition in each member country. However, for the purpose of comparison across member countries, a certain minimum set of indicators for the assessment of effective telecommunications competition should be used. This enables regulators to carry out international benchmarking analyses of the competitiveness of their telecommunications markets and industry.

The minimum set of indicators can be selected from the indicators of this report presented in Table 2. The selected minimum set of indicators should be easily measurable and comparable across member states. This report suggests the following first-order indicators and parameters based on the above criteria: market share and its trends (all parameters), entry barrier (control of essential facilities, capital intensity), active competition (pricing trends, level of marketing & advertising costs), absence of anti-competitive behaviour (percentage of lines for LLU by incumbent), profitability and its trends, access to information (regular information notice to customers), barriers to switching (level of switching made compared with level of satisfaction on information provided), customer satisfaction with price and affordability (revenues/number of calls or call minutes), quality of service (call completion, time for installation and repair, number of faults).

Member countries can undertake further analyses on the pros and cons of each indicator proposed by this report given the circumstances of their telecommunications sector. In the course of the choice of appropriate indicators, a balanced approach is called for by keeping all four categories of indicators in the report. This report does not explore practical implementation issues on collecting data for the indicators and the parameters. These require further detailed elaboration and consensus if there are to be compatible international benchmarks. For example, 'pricing trends' requires specification of the services that will be included and how price movements will be assessed. Similarly, 'profitability' requires further clarification of how 'imputed' costs and common costs are to be measured in order to be compared across countries.

As shown in the section on the strengths and weaknesses of the indicators, subjective assessment and modification to some extent are unavoidable. Furthermore, some of the indicators suggest an effectively competitive market while others do not. Regulators can deliberately determine weighting of indicators to reach a conclusion about the state of competition. Besides this task, whenever necessary, regulators have to systematically use other qualitative information to interpret quantitative data so that the true extent of competition does not go unnoticed. With respect to consumer surveys of the telecommunications market, however, member countries can achieve harmonisation among them and benchmark the results of the surveys against similar markets elsewhere. This will help reduce risks of putting questions of low relevance and arbitrary interpretation of some results, intrinsic to such surveys.

Collection of relevant data for the assessment of competition

Reliable, up-to-date, and consistent data in accordance with the indicators are indispensable for the accurate assessment of competition in the telecommunications market. Regulators should pay attention to setting up a mechanism for the collection of consistent data for the assessment of telecommunications competition. Qualitative data complement quantitative data when they are inappropriate or impractical. This mechanism also should ensure compliance of operators providing relevant data.

It may be costly for carriers to generate sufficiently disaggregated data in response to requests from regulators based on the proposed indicators. Regulators can establish a threshold for the reporting requirement concerning collection of these data and exempt small firms from such a requirement. They can reduce the number of indicators keeping track of effective competition given the burden of data collection on operators in the relevant market. To avoid unnecessary duplication of data collection, where possible, regulators can rely on data made available from public sources or for other purposes. The reporting requirement should be limited to the purpose defined and necessary data to monitoring the state of telecommunications competition.

The time required for data collection can be quite lengthy and some of the data could be obsolete by the time it is available. Therefore, the timely delivery of data is important in designing the framework for the evaluation of telecommunications competition.

ANNEX I

MAIN SUBSTANCE OF THE FRAMEWORK DIRECTIVE AND THE EC GUIDELINES REGARDING SMP

Although the European Union has maintained a specific telecommunications directive in its new regulatory package, it has sought to bring its provisions in line with competition law. In the Directive of 7 March 2002 on a common regulatory framework for electronic communications networks and services, known as the “Framework Directive”, the concept of SMP is equivalent to that of dominance as defined in the case law of the Court of Justice and the Court of First Instance of the European Communities. In addition to this, the EC relies on competition law principles in defining the markets to be regulated *ex ante*.

Undertakings with significant market power

The concept of significant market power is defined as being equivalent to a position of dominance. Article 14 (Paragraph 2) of the Framework Directive stipulates that an “undertaking shall be deemed to have significant market power if, either individually or jointly with others, it enjoys a position equivalent to dominance, that is to say a position of economic strength affording it the power to behave to an appreciable extent independently of competitors, customers and ultimately consumers.” This article has eliminated the 25% threshold contained in the previous directives for determining operators with SMP. It requires NRAs to take the utmost account of the Guidelines that will be published and regularly reviewed by the European Commission following consultation with NRAs and NCAs.

The EC Guidelines call for certain methodological adjustments to be made in applying the new definition of SMP, *ex ante*, because it relies on a set of assumptions and expectations different from those of market power, *ex post*, in a context of an abuse.

Market definition procedure

According to Article 15 of the Framework Directive, the procedures for defining markets will be set out in a recommendation adopted by the Commission after public consultation and consultation with NRAs, and regularly reviewed. The rule will be the *ex ante* definition of relevant markets that will be included on a list established by the European Commission. Markets may also be defined, if necessary, on a case-by-case basis, depending on national circumstances, “in particular relevant geographic markets” within the territory of each member state. Article 15 of the Framework Directive adds that guidelines for market analysis and the assessment of significant market power shall be in accordance with the principles of competition law.

The EC Guidelines allow the NRAs to consider prospective developments of the market in defining relevant markets for the purpose of sector specific regulation. The EC Guidelines suggest main criteria for defining the relevant market: The behaviour of an operator can be constrained by demand-side substitution, supply-side substitution and potential competition.

Annex 1 of the Framework Directive provides the “list of markets to be included in the initial Commission recommendation on relevant product and service markets.” They are as follows: the provision of connection to and use of the public telephone network at fixed locations; the provision of leased lines to end users; interconnection; network access and special network access, including unbundled access to the local loop and access to public mobile telephone networks, including carrier selection; wholesale provision of leased line capacity to other suppliers of networks or services; services provided over unbundled loops; and the national market for international roaming services on public mobile telephone networks.

Market analysis and regulatory obligations

Article 16 of the Framework Directive lays down a market analysis procedure. The NRAs assess whether the market is effectively competitive or prospectively competitive in a given market and which undertakings have SMP, taking into account the EC Guidelines. If there is effective competition in a relevant market, no obligations should be imposed on any operator. When there are sectoral regulations on the relevant effectively competitive market, the NRA should withdraw these. If a relevant market is not effectively competitive, the NRA should identify undertakings with significant market power in the relevant market. When one or more firms have a dominant position on a market, the NRA will be able to take *ex ante* regulatory measures, which are listed in specific directives of the regulatory package. Regulatory obligations pertaining to the Access Directive encompass transparency (Article 9), non-discrimination (Article 10), accounting separation (Article 11), obligations for access to and use of specific network facilities (Article 12) and price control and cost accounting obligations (Article 13). The Universal Service sets out obligations including regulatory controls on retail services (Article 17), availability of the minimum set of leased lines (Article 18), and carrier selection and pre-selection (Article 19). The NCAs may be asked to comment on the analysis of the markets subject to sector specific regulation.

According to the EC Guidelines, *ex ante* obligations are imposed on undertakings with SMP to ensure that their market power is not used to restrict or distort competition on a relevant market or is not leveraged onto adjacent markets. The SMP designation does not mean that such undertaking has abused its dominant position within the meaning of Article 82 of the EC Treaty or national competition laws. As in the case of the assessment of a relevant market, the Guidelines also emphasise the assessment of competition on a relevant market on a prospective, forward-looking approach.

The EC Guidelines propose a set of criteria to determine whether an operator possesses a dominant position: overall size of undertaking; control of infrastructure not easily duplicated; technological advantages; absence of or low countervailing buying power; easy or privileged access to capital markets/financial resources; products/services diversification; economies of scale; economies of scope; vertical integration; a highly developed distribution and sales network; absence of potential competition; and barriers to expansion.

NOTES

- ¹ That is, after it has been determined that the market is not fully competitive, then specific firms are targeted for a review of market power.
- ² European Commission, *Principles of implementation and best practice on effective competition in electronic communications markets*, February 2001.
- ³ U.S. Federal Trade Commission, *1992 Horizontal Merger Guideline*, p. 2.
- ⁴ Canadian Radio-television and Telecommunications Commission, *Review of Regulatory Frameworks: Telecom Decision CRTC 94-19*, September 1994.
- ⁵ Office of Telecommunications, *Draft Guidelines on Market Influence Determinations*, April 1999, paragraph 1.1-1.2.
- ⁶ For the application of this methodology to an existing telecommunications market, see the following reports: Office of Telecommunications, *Effective Competition Review: Mobile*, February 2001 and September 2001.
- ⁷ The HHI squares the market shares of all firms in the relevant market to arrive at a statistical measure of concentration. The HHI ranges from 10 000 in a pure monopoly to 0 in an atomistic market. The Italian delegation has emphasised the use of the HHI to measure the level of competition in the telecommunications market.
- ⁸ To simplify the discussion, the concept of 'joint or collective dominance' is excluded from this report.
- ⁹ European Commission, *Towards a new framework for Electronic Communications Infrastructure and Associated Services: The 1999 Communications Review – NTL's Comments on the Commission's Communication*, 2000, paragraph 112.
- ¹⁰ European Commission, *Determination of Organisations with Significant Market Power (SMP) for Implementation of the ONP Directives*, March 1999, p. 2.
- ¹¹ European Commission, *Working Document on the Draft Guideline on Market Analysis and the Calculation of Significant Market Power*, March 2001, p. 19.
- ¹² For more details, see Office of the Directors of Telecommunications Regulation of Ireland, *Responses to Consultation from the ODTR on the European Commission's Working Document on Proposed New Regulatory Framework for Electronic Communications Networks and Services*, July 2001, Paragraph 1.1; GSM Europe, *GSM Europe's comment on the proposed Guidelines on market power and the calculation of significant market power*, June 2001, p.3-5.; Deutsche Telekom, *Comments on the Draft Guidelines on market analysis and the calculation of significant market power*, p.1-3.
- ¹³ For full details, please refer to Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive), 24. 4. 2002, and Commission Guidelines on market analysis and the significant market power under the Community regulatory framework for electronic communications networks and services, COM(2002).

- 14 Besides the following factors, economies of scale and economies of scope could provide insights into the characteristics of the telecommunications market and any examination of market power and effective competition. In particular, economies of scale of an operator are highly associated with high sunk costs in providing telecommunications services.
- 15 Office of Telecommunications, Draft Guidelines on the application of the Competition Act in the telecommunications sector — Consultation, January 1999, paragraph 3.4.
- 16 Office of Telecommunications, *Effective Competition Review*, February 1998, paragraph 2.16 – 2.17.
- 17 W. Viscusi, J. Vernon and J. Harrington Jr., *Economics of Regulation and Antitrust*, Cambridge, MA: The MIT Press, 1995, p. 146.
- 18 According to the French delegation, the hypothetical monopolist test seems largely theoretical, and is rarely used in the telecommunications sector in Europe. In the field of telecommunications, judicial practice in the EU until now has been based on an approach to defining markets that is more pragmatic than econometric, in particular regarding the monitoring of mergers.
- 19 Office of Telecommunications, *Effective Competition Review*, paragraph A.19.
- 20 U.S. Federal Trade Commission, p. 5-6. This evidence is also the same for a consideration of substitution in terms of geography.
- 21 This argument can be found in the following documents:
- Office of Telecommunications, *Draft Decisions and Explanatory Memorandum on the Director General's intention to determine that Vodafone and BTCellnet have Market Influence under Conditions 56 of their respective licenses*, March 2001, and
- TeleNomic Research, LLC, *Measuring Local Competition in a Changing Telecommunications Market*, August 2001.
- 22 TeleNomic Research, p. 15-16.
- 23 Office of Telecommunications, *Draft Decisions and Explanatory Memorandum on the Director General's intention to determine that Vodafone and BTCellnet have Market Influence under Conditions 56 of their respective licenses*, paragraph 31-35.
- 24 Office of Telecommunications, *Draft Guidelines on the application of the Competition Act in the telecommunications sector – Consultation*, paragraph 5.25-5.27.
- 25 European Commission, *Determination of Organisations with Significant Market Power (SMP) for Implementation of the ONP Directives*, p. 3.
- 26 Office of Telecommunications, *Guidelines on Market Influence Determinations*, March 2000, paragraph 3.5-3.8.
- 27 This parameter is often associated with first mover advantages and subsequent economies of scale.
- 28 Canadian Radio-television and Telecommunications Commission, *Forbearance – regulation of toll services provided by telephone companies*, Telecom Decision CRTC 97-19, December 1997, paragraph 54.
- 29 However, caution should be used in applying financial difficulties of firms as a criterion to determine effective competition.
- 30 Lemay-Yates Associates Inc., *Monitoring the Canadian Telecommunications Industry: Background Report*, May 2001, p. 95.

31 Office of Telecommunications, *Draft Guidelines on Market Influence Determinations*, paragraph 3.16.

32 In economic theory, the concept of consumer benefit is identical to that of consumer surplus. Consumer surplus refers to the difference between the actual amount paid for a service and the amount the consumer would willingly pay. Consumer surplus at the aggregate level can be measured through the change of a market price and quantity purchased over a given period of time. An aggregate demand curve can change because of the change in the price or take-up of new services. However, it is difficult to derive the aggregate demand curve and the direction and extent of a shift in demand curve. Therefore, a calculation of consumer surplus is quite complicated and could change depending on assumptions made. Furthermore, there is no guarantee that an increase in consumer surplus is equivalent with effective competition. If a telecommunications market achieves effective competition without substantial cost reductions or demand surge/drop, prices for the service will remain at the equilibrium. Hence, consumer surplus will remain relatively constant over time in that situation.

33 For more detailed information, please see Australian Communications Authority, *Telecommunications Performance Report 1998-1999*.

34 For more information, please the Chapter III of Canadian Radio-television and Telecommunications Commission, *Review of Regulatory Framework*, Telecom Decision CRTC 94-19.

35 Canadian Radio-television and Telecommunications Commission, *Status of Competition in Canadian Telecommunications Market*, September 2001.

36 Office of Telecommunications, *Guidelines on Market Influence Determinations*, paragraph 3.3.

37 Office of Telecommunications, *Competition in International Markets*, November 1999 and *Competition in the Mobile Market*, February 1999.

38 Office of Telecommunications, *Market review guidelines: criteria for the assessment of significant market power*, April 2002 and *Data gathering for EU market reviews*, 19 September 2002.

39 Office of Telecommunications, *Market Information: Fixed Update*, July 2001.

40 If there is meaningful economic competition between providers of a service and, therefore, if a particular regulation of that service is no longer necessary in the public interest, then the FCC must repeal or modify that regulation.

41 Federal Communications Commission, *Local Telephone Competition: Status as of December 31, 2000*, May 2001.

42 Federal Communications Commission, *Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services*, FCC 01-192, July 2001.

43 U.S. Federal Communications Commission. *In the Matter of Motion of AT&T Corporation to be Reclassified as a Non-Dominant Carrier*, FCC 95-427, October 23, 1995.

44 Ministry of Public Management, Home Affairs, Posts and Telecommunications of Japan, *Information and Communications in Japan*, 2001 White Paper (Japanese version), 2001 and National Telecom Agency of Denmark, *Telecom Statistics – first half of 2001*, 2001.