

# CHAPTER 2. A LEVEL PLAYING FIELD: REGULATING FOR EFFECTIVE COMPETITION

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# CHAPTER 2. A LEVEL PLAYING FIELD: REGULATING FOR EFFECTIVE COMPETITION

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## 2.1. Introduction

Chapter 2 examines the benefits of a competitive communications market and the implementation of regulation for a level playing field. It considers aspects of sector regulation and competition law, market failure, and *ex ante* vs. *ex post* regulation. Different kinds of anti-competitive conduct, such as abuse of dominant market power, are considered as well as possible remedies. Attention is also paid to the control of mergers and acquisitions and the responsibilities of competition authorities and regulators. The role of price regulation, cost concepts and pricing methods are also examined.

## 2.2. Competitive Markets

### 2.2.1. Benefits of Competition

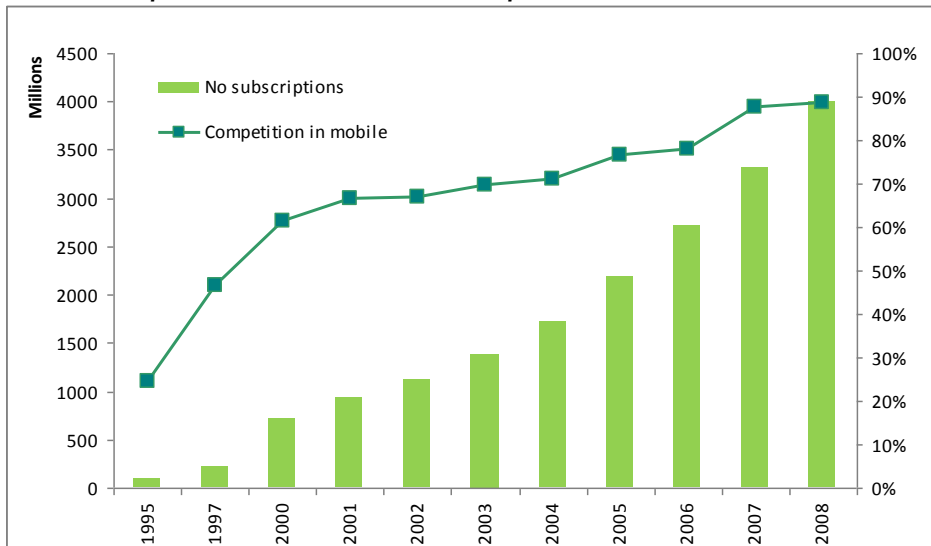
Competition policy and economic regulation are based on the premise that the “public interest” or “social good” is best served when markets work efficiently. This generally occurs in a competitive environment.

Competition is the most efficient and equitable mechanism available for organizing, operating, and disciplining economic markets. Competitive markets distribute resources efficiently and fairly without any need for a single centralized controlling authority. Competition maximizes benefits to society by:

- Ensuring that resources, products, and services are allocated to the person or persons who value them the most (allocative efficiency)
- Forcing market participants to use scarce resources as productively as possible (productive efficiency)
- Encouraging market participants to innovate, and to invest in new technologies at the best time (dynamic efficiency).

There are numerous examples internationally of the benefits of competition in the ICT sector (see Figure 2.1 and Chapter 1).

**Figure 2.1 Growth in Competition and Number of Subscriptions, 1995- 2009**



Source: ITU World Telecommunication/ICT Indicators database.

### 2.2.2. Forms of Competition

There are many different forms of competition. Many people think about competition in terms of the textbook model of perfect competition. Perfect competition is an ideal model of a competitive market, but is unlikely to occur in practice.

Markets that are not perfectly competitive can still deliver significant benefits for buyers and sellers. A useful standard for analyzing real world markets is workable or effective competition. The concept of contestability is also useful for analyzing markets in which there are few players but market power is constrained by the potential for entry.

#### Perfect Competition

The textbook case of perfect competition is an ideal model of a competitive market. Perfect competition rarely (if ever) occurs in practice. It is more an ideal than a market reality, and is therefore of limited use in analyzing the performance of real world markets.

Perfect competition requires a number of conditions:

- The product concerned must be “homogeneous” – that is to say, the product must have identical attributes and quality regardless of who buys or sells it;
- There must be a large number of buyers and sellers for that product;
- Buyers must be homogeneous and perfectly informed;

- No single consumer or firm must buy or sell anything more than an insignificant proportion of the available market volume of that product;
- All buyers and sellers must enjoy the freedom to enter or exit the market at will and without incurring additional costs;
- There must be no economies of scale. Economies of scale arise where the average cost of production falls as the volume of production increases. Where economies of scale exist it is more efficient for a single firm to produce a given volume than for two or more firms that between them produce the same total volume, as the larger firm;
- There must be no economies of scope. Economies of scope arise when different products have significant shared fixed costs, so that a single firm can produce them using a common facility. Where economies of scope exist it is cheaper (and more efficient) to produce different products out of a common plant or facility than to produce them separately;
- There must be no externalities. An externality is an unintended side effect (either beneficial or adverse) of an ordinary economic activity that arises outside the market or price system so that its impact is not reflected in market prices and costs;
- There must be no regulation of the market or franchise obligations; and
- There must be no restrictions on capital.

### **Effective Competition**

Effective competition occurs in economic markets when four major market conditions are present:

- Buyers have access to alternative sellers for the products they desire (or for reasonable substitutes) at prices they are willing to pay,
- Sellers have access to buyers for their products without undue hindrance or restraint from other firms, interest groups, government agencies, or existing laws or regulations,
- The market price of a product is determined by the interaction of consumers and firms. No single consumer or firm (or group of consumers or firms) can determine, or unduly influence, the level of the price, and
- Differences in prices charged by different firms (and paid by different consumers) reflect only differences in cost or product quality/attributes.

In effectively competitive markets, consumers are protected to some degree from exploitative prices that firms, acting unilaterally or as a collusive bloc, could charge. Likewise, firms are protected from manipulation by large individual consumers (or groups of consumers) and from disruption or interference from other firms.

Competition occurs on the basis of both price and the quality or features of the product. Products are often differentiated, that is they are not identical across firms. One form of a product is usually a reasonable substitute for another form of that product. This is often referred to as “functional equivalence”. Sellers may also offer product combinations or bundles that appeal to specific consumers or consumer segments.

Effective competition can occur even in markets with relatively few firms that differ substantially in size, market share, and tenure. However, for such markets to be competitive, it is important that there are no barriers to entry and exit.

### **Market Contestability**

High firm concentrations in a given market may not translate to market power. Even in markets where only one or a few firms can efficiently operate (for example due to economies of scale), it is possible for competition to work.

A market is said to be contestable when barriers to entry and exit are so low that the threat of potential

entry prevents the incumbent from exercising market power.

In perfectly contestable markets there are no barriers to entry or exit. With free entry into and exit from the market, the threat of potential entry will constrain the behavior of incumbent firms. Should an incumbent firm increase prices above the normal level of profits, then new firms will enter the market and force prices down again.

Contestability requires that there are no sunk costs for market entry. That is, should an entrant fail, it can recover its fixed costs (for example by selling assets or reusing them elsewhere).

### **Sustainable Competition**

Competition is a desirable goal not for its own sake, but because of the benefits it can bring to a market and its users. These benefits derive from the pressure competition places on firms to be efficient, innovative and customer focused in order to thrive and survive. They include lower prices, higher productivity, more service choices, and greater connectivity.

The overall aim of competition policy is to achieve sustainable competition, where competition occurs on a “level playing field” and consumers and operators are not subject to anti-competitive practices.

The telecommunications marketplace is increasingly volatile. In many developed countries the industry has experienced ups and downs of financing and development during the last 10 years. This has resulted in spurts of growth in facilities and services deployment, followed by reductions in service operators and consumer choices and a slowing down of connectivity expansion. This has in turn slowed down the financing of some viable communications projects in developing countries.

Against this background, the regulators’ task of fostering the transition to sustainable competition is a complex one. Regulators may be tempted to micromanage the market to ensure that competition (or a particular form of competition) takes place. Alternatively, they may decide prematurely that the market is fully competitive. Neither of these paths is likely to result in sustainable competition.

Regulators are faced with a complex balancing exercise. Individual regulatory decisions need to balance:

## A Level Playing Field

- The long term objective of ongoing, sustainable competition,
- The resolution of immediate short-term concerns, and
- Conformance with the regulatory and legislative provisions under which regulators operate.

### 2.3. Sector Regulation and Competition Law

In practice, many markets do not exhibit all the conditions necessary for workable or effective competition. Market failures occur in many forms. The two forms that are most associated with the need for regulation are:

- Monopoly, including natural monopoly; and
- Externalities.

When market failures arise, it is necessary to consider whether the problem is likely to correct itself. If market failures will not correct themselves, then there may be a need for additional tools to foster effective competition or to prevent socially undesirable outcomes.

This section introduces two broad approaches to promoting competition in the ICT sector, namely competition policy and regulation. Competition policy and regulation are not mutually exclusive. Many countries use a mix of both. However, care is required to ensure that sector regulation and competition laws and policies are developed and applied consistently.

This section discusses the following topics:

- Competition policy
- Regulation
- *Ex ante* and *ex post* regulation
- Advantages and disadvantages of *ex ante* versus *ex post* regulation
- Regulatory forbearance

#### 2.3.1. Competition Policy

Competition policy provides a set of tools to promote sustainable competition and to preserve a market environment in which such competition can flourish. Competition policy may be implemented through general competition laws or through competition enhancing rules in specific sectors. In addition, it must be weighed against other policy

objectives, such as consumer protection and the development of a viable telecommunications industry.

In the ICT sector, such rules might include:

- General prohibitions on anti-competitive behavior and mergers or acquisitions that would reduce competition (as in the case of Hong Kong SAR, China), or
- Specific rules designed to encourage competition in the sectors, such as interconnection requirements or unbundling policies.

Competition laws (or “antitrust laws”, as they are called in the U.S.) aim to promote efficient competition by penalizing or undoing conduct that reduces competition in a market. Competition laws generally include provisions to:

- Prevent competing firms from banding together (“colluding”) to increase prices or reduce quantities of goods and services, or to exclude other firms from a market,
- Prevent firms with a dominant position, or “significant market power”, from using their market power to exclude competitors from the market, or otherwise reduce competition,
- Stop mergers or acquisitions that would reduce competition.

With the exception of provisions for mergers and acquisitions, competition laws are generally *ex post* regulation. They give the competition authority or the courts powers to respond to anti-competitive behavior once it has occurred.

#### 2.3.2. Regulation

Regulation is useful where the market alone would produce undesirable or socially unacceptable outcomes.

Regulation attempts to prevent socially undesirable outcomes and to direct market activity toward desired outcomes. For example, ICT regulation is widely used to promote prices that reflect efficient costs and promote universal access to basic services.

However, regulation has potentially high costs. The regulatory process is inherently time consuming to administer and requires considerable expenditure of resources. In addition, regulation can have unintended consequences which may be detrimental

to customers and the “public interest”. No matter how capable and well intentioned regulators are, they will never be able to produce outcomes as efficient as a well-functioning market.

Accordingly, regulation should only focus on those parts of the ICT sector where there is a clear need for regulation (that is, where effective competition is not feasible) and should only be a temporary measure. Over time, regulators should aim to establish or restore the conditions that provide for effective competition on a sustained basis. This entails, for example, removing or reducing barriers to entry and exit. It also involves enabling the market itself to prevent the incumbent from abusing its market power, for example, through the entry of additional competitors (see Box 2.1).

### 2.3.3. *Ex Ante and Ex Post Regulation*

Practitioners commonly distinguish between “*ex ante* regulation” and “*ex post* regulation.” Various countries have adopted competition policies that rely, to varying degrees, on mixing elements of these two approaches.

#### **Ex Ante Regulation**

*Ex ante* regulation is anticipatory intervention. *Ex ante* regulation uses government-specified controls to:

- Prevent socially undesirable actions or outcomes in markets, or
- Direct market activity towards socially desirable ends.

*Ex ante* regulation is mainly concerned with market structure, i.e. the number of firms and level of market concentration, entry conditions, and the degree of product differentiation.

*Ex ante* regulation often takes the form of sector-specific regulation.

#### **Ex Post Regulation**

*Ex post* regulation addresses specific allegations of anti-competitive behavior or market abuse. *Ex post* regulation aims to redress proven misconduct through a range of enforcement options including fines, injunctions, or bans.

*Ex post* regulation is mainly concerned with market conduct — the behavior of a firm with respect to both its competitors and its customers.

*Ex post* regulation often takes the form of competition laws.

### 2.3.4. **The role of competition authorities and regulators**

Provisions governing mergers and acquisition are generally included in competition or antitrust laws, where these exist. In this case, investigation of proposed mergers is usually the responsibility of a competition authority.

Some countries with no competition law have included sector specific merger provisions in their telecommunications laws.

In countries with both a competition authority and a telecommunications regulator, both agencies may have a mandate to investigate mergers in the telecommunications sector. For example, in the United States the Federal Trade Commission and the Justice Department have a general responsibility to investigate potentially anti-competitive mergers. However, the Federal Communications Commission may also investigate horizontal mergers between telecommunications firms to determine whether or not the merger is “in the public interest”.

Mergers, acquisitions, and joint ventures are all different ways for two or more firms to integrate or coordinate their operations:

- A *merger* is a structural fusion of two firms that results in a common ownership and management structure. Mergers usually happen through stock swaps.
- An *acquisition* is a type of merger in which a firm with more resources and greater market strength may acquire another firm. The acquiring firm usually uses some combination of stocks, debt, and cash to finance the transaction.
- A *joint venture* is a strategic alliance between two firms that share resources, equity, revenues, expenses, and management to pursue a common goal. Each firm usually retains its own corporate identity.

Mergers and acquisitions are discussed further in Chapter 2.5.

### 2.3.5. **Regulatory Forbearance**

Regulation is not a panacea. While it may address market power concerns, regulation comes with

costs. Where it is possible, effective competition will generally deliver better outcomes than regulation.

Where regulation is necessary, regulatory forbearance is the key to good outcomes. Regulatory forbearance is about focusing regulation to where it is needed, and withdrawing regulation in those parts of the market where it is no longer necessary. In other words, the concept of regulatory forbearance rests on the goal of a gradual removal of *ex ante* regulation and an accompanying increase in the use of general *ex post* competition regulation.

**Box 2.1 Regulatory Principles - Ofcom (U.K.)**

Ofcom will regulate with a clearly articulated and publicly reviewed annual plan, with stated policy objectives.

Ofcom will intervene where there is a specific statutory duty to work towards a public policy goal which markets alone cannot achieve.

Ofcom will operate with a bias against intervention, but with a willingness to intervene firmly, promptly and effectively where required.

Ofcom will strive to ensure its interventions will be evidence-based, proportionate, consistent, accountable and transparent in both deliberation and outcome.

Ofcom will always seek the least intrusive regulatory mechanisms to achieve its policy objectives.

Ofcom will research markets constantly and will aim to remain at the forefront of technological understanding.

Ofcom will consult widely with all relevant stakeholders and assess the impact of regulatory action before imposing regulation upon a market.

Source: Ofcom.

The concept of regulatory forbearance has two elements:

- A regulator may refrain from applying certain regulatory conditions or from intervening in certain markets. For example, the Canadian Radio-television and Telecommunications Commission has explicitly stated that it will forbear from regulating certain services.
- A regulator may reduce the scope of regulation or withdraw entirely from regulating specified markets.

In the United Kingdom, Ofcom’s approach to regulation is based on seven regulatory principles, as set out in Box 2.1. Amongst other things, Ofcom emphasizes regulatory forbearance in its operations, relying on markets where possible and operating with a bias against intervention. Where intervention is required, Ofcom aims to react firmly and

promptly, using the least intrusive regulatory mechanisms available.

## 2.4. Competition Analysis

### 2.4.1. Markets and Market Definition

The first step in any competition analysis is to define the relevant market.

The purpose of market definition is to determine the boundaries of a given market. Only then will it be possible to analyze the prospects for competition in the market, opportunities for particular firms to acquire and exercise market power, and implications for consumer welfare.

A market exists where buyers wishing to buy a good or service come into contact with sellers wishing to sell that good or service, so that transactions occur. For competition purposes, a market includes all those suppliers, and buyers, between whom there is close competition, that is:

- All those goods or services that are close substitutes in the eyes of buyers, and
- All those suppliers who produce (or could easily switch to produce) those goods or services.

#### The “SSNIP” or “Hypothetical Monopolist” Test

The “SSNIP” or “hypothetical monopolist” test defines a market as:

The smallest group of products and the smallest geographical area in which a hypothetical monopoly could successfully implement a “small but significant and non-transitory increase in price” (or “SSNIP”).

For example, imagine that a hypothetical firm has a monopoly over the supply of the all widgets within a defined geographical area. Could that firm increase the price of widgets, for example by 5 or 10 percent, and sustain the increased price in the future?

If such a price increase would cause consumers to switch to alternative products or to suppliers in neighboring areas, then the relevant market includes those products or areas. Similarly, if the price increase would cause other suppliers to start selling widgets in the geographic area being considered then the relevant market includes those suppliers.

New Zealand’s competition authority, the Commerce Commission, defines markets in terms of five dimensions (see Figure 2.2).



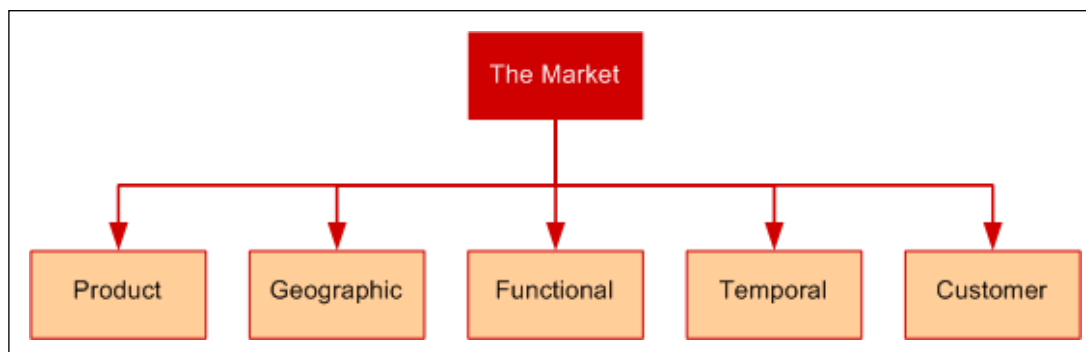
- The goods or services supplied and purchased (the product dimension)
- The geographic area from which the goods or services are obtained, or within which the goods or services are supplied (the geographic dimension)
- The level in the production or distribution chain (the functional dimension)
- The time frame or timing within which the market operates, where relevant (the temporal dimension), and
- The different customer types within a market, where relevant (the customer dimension).

### **Market Definition and Substitutability**

The definition of a market is based on the substitutability of differentiated products or services. Whether two differentiated products should be considered to be in the same market depends on the extent to which they are reasonable substitutes:

- From the point of view of consumers (whether they are “functionally equivalent”);
- From the point of view of suppliers (the ease with which firms not already supplying the product or service in question can start doing so).

**Figure 2.2 Dimensions of Market Definition**



Source: New Zealand Commerce Commission.

As well as considering whether products are substitutes based on their product attributes, a market definition must also determine the geographic boundaries of the market. The test for assessing the geographic scope of a market is:

Can a SSNIP for a product in one location substantially affect the price of the same product in another location?

If the answer is “yes”, then the relevant geographic market includes both locations.

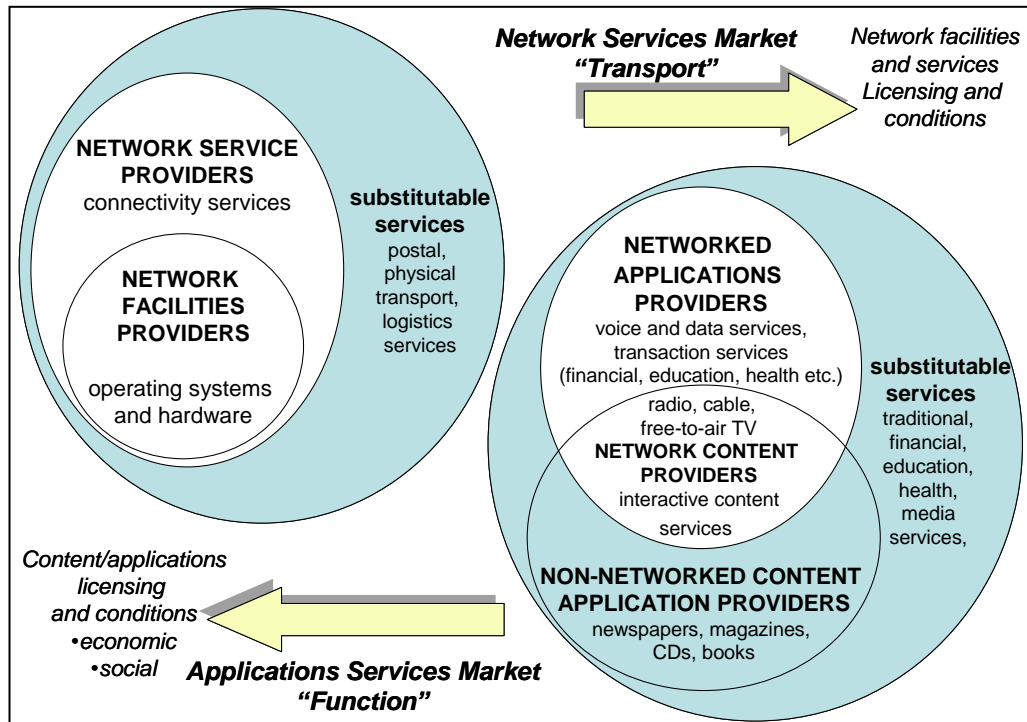
Defining a market in the ICT sector can be difficult. Effective substitutes may not be limited to services supplied by similar telecommunications carriers (or by carriers at all).

For example:

- Voice and data services are now available from conventional wireline or wireless networks, using either circuit-switched or packet-switched technologies;
- Voice mail services are available from telecommunications networks, answering machines, or manned answering services.

Figure 2.3 illustrates the wide range of possible services and technologies that can fall within the definition of a communications market in an era of convergence.

**Figure 2.3 Market Diversification in an Era of Convergence**



Source: ICT Regulation Toolkit.

**Other Dimensions of Market Definition**

Market definition may consider other dimensions of the product or service in question, where they are relevant. Other dimensions include:

- The functional dimension: The relevant level of the production or distribution chain, e.g., is the market at the wholesale or retail level?

- The temporal dimension: The timeframe or timing within which the market operates

The customer dimension: The different customer types within a market. For example should large business customers and residential customers be viewed as separate markets?

**Box 2.2 Malaysia: Defining the Communications Market**

The Communications and Multimedia Act (1998) specifically recognizes the impact of convergence between telecommunications and other communications sectors in defining markets for competition analysis. Under the Act, a "communications market" is an economic market for:

- A network service,
- An applications service,
- Goods or services used in conjunction with a network service or an applications service (e.g., television and telephone equipment, or billing services), or
- Access to facilities used in conjunction with a network service or an applications service.

Malaysia's approach to defining "communications markets" seeks to recognize the impact of convergence in ICT sectors. Under convergence, technological change is creating new opportunities for competitive rivalry, causing traditionally separate service markets to merge. The Act requires market definition to have regard to all sources of actual or potential competition in a communications market. This includes the use of mobile and other wireless access technologies (including, for example digital broadcasting and datacasting).

Source: Malaysian Communications and Multimedia Commission's Guideline on Substantial Lessening of Competition (RG/SLC/1/00(1)).

## 2.4.2. Market Power

### Defining Market Power

Market power has been defined as:<sup>8</sup>

The ability of a firm to raise prices above competitive levels, without promptly losing a substantial portion of its business to existing rivals or firms that become rivals as a result of the price increase.

Market power is only damaging if the firm concerned abuses that power. Should a firm with market power raise prices above competitive levels, this can dampen consumer demand, generate efficiency losses, and harm the public interest.

In addition, firms with significant market power or dominance may be able to implement a range of strategies to reduce competition, and enhance their position in the market.

### Testing for Market Power

The starting point in looking for market power is the competitive price level. Pricing above the marginal or incremental cost of a service cannot be regarded *per se* as evidence of market power. In real world markets, the competitive price level will often be higher than incremental cost. In industries with high fixed costs, such as telecommunications, prices must include mark-ups over incremental costs in order for firms to break even across their whole business.

Regulated prices may also be an inappropriate starting point for detecting market power, as they may differ from competitive price levels. For example, in many countries prices for certain “basic” telephone services are set below their economic cost, to meet universal service goals. In these circumstances market power cannot, and should not, be inferred by comparing any given firm’s price to the regulated price level.

For a finding of market power, the price increase must be sustainable. Firms may be able to temporarily increase prices above competitive levels, for example due to opportunistic behavior or as a result of innovation. However, in the absence of market power, such price increases are unsustainable. True market power requires that the firm be able to profitably implement the price increase for a significant period of time.

A high market share does not necessarily infer market power. Firms may gain high market shares through means other than market power. A firm’s

market share may increase, at least temporarily, due to a successful new invention or better customer service.

Alternatively, a firm may have a high market share for historical reasons. For example, incumbent telecommunications firms were once monopoly franchises in most countries and have high market shares as a result. As competition emerges, an incumbent’s market share cannot guarantee it the ability to charge prices higher than its competitors.

Market share in itself is neither necessary nor sufficient for market power. Firms with high market shares may be constrained from raising prices by a range of factors, including:

- Competition from other suppliers already in the market;
- The potential for competition from new entrants; and
- The “countervailing power” of customers in the market, for example their willingness to do without the service if the price increases.

Several quantitative measures exist that can help to assess whether a firm may have market power. These indexes include measures of market concentration (such as the Hirschman-Herfindahl Index), and measures of price such as the Lerner Index.

### Dominance and Significant Market Power

The mere fact that a firm possesses dominance or Significant Market Power (SMP) does not by itself imply abuse of that dominance or market power. However, such firms have the ability to raise prices above competitive levels, and may also be able to hinder competition.

There is no universally accepted definition of dominance. In general, a firm is considered to be dominant based on its market share. In some jurisdictions additional factors are also considered in assessing dominance. In the United States it has been largely left to courts to decide what constitutes dominance and, for the most part, they have applied criteria based solely on market shares.

The European Commission also takes into account:

- Firm size,
- The role of any essential facility,
- Any technological advantages, or privileged access to financial resources,

## A Level Playing Field

- The strength of the countervailing power of consumers,
- Economies of scale and scope,
- Barriers to entry,
- Product differentiation,
- Potential competition, and
- The type and availability of sales channels.

The European Commission introduced the concept of SMP to bring an element of *ex ante* regulation to competition policy in telecommunications (see Box 2.3). The concept of SMP has since been adopted in other jurisdictions.

The European Commission defines SMP as the ability of a firm to act independently of competitors and customers.

Under the European model, firms that are found to have SMP are subject to additional *ex ante* regulatory obligations. This allows telecommunications regulators to impose *ex ante* regulatory obligations on firms with SMP, such as:

- Obligations to align interconnection prices with costs,
- Accounting separation requirements, and
- Mandatory publication of reference interconnection offers.

### Box 2.3 European Commission: Market Definition and Assessing Market Power

#### Market Definition

The European Commission uses the "hypothetical monopoly test" to determine an appropriate market definition. A market is defined as the narrowest possible product sphere in which a hypothetical monopolist could profitably sustain a small but significant increase in price (in the range of 5% to 10%).

The following steps describe the Commission's market analysis procedure:

- Tentatively define the product market by determining whether two products belong in the same market.
- Tentatively define the geographic market in terms of competitors' market shares, prices, and price differentials.
- Conduct a more detailed analysis of demand-side and supply-side substitutability: 1) Determine whether customers can switch to an alternate product in response to a small (5-10 percent) increase in price; Determine whether suppliers can readily switch to providing the alternate product in the relevant market.
- Further investigate the conditions in which competing firms operate. This may entail exploring the recent past activities of those firms, consumer behavior and preferences (through demand elasticities and other studies), regulatory or market barriers to entry, market segmentation and the viability of efficient price discrimination.
- Use consultations with firms and consumers and on-the-spot inspections to further inform and refine the market definition analysis.

#### Assessment of Significant Market Power

Under the Commission Guidelines, a firm has significant market power if, either individually or jointly with other firms, it has a position that allows it to behave in a way that is appreciably independent of its competitors and customers. The Guidelines identify a range of factors to consider in determining whether a firm has significant market power:

- Market share. Substantial market share is generally needed for a firm to have market power. Though possible, it would be very unusual for a firm with a market share below 25% to have significant market power. The courts have usually found that firms with market shares of 50% or more have a dominant position,
- Potential competitors that could enter the market. If barriers to entry are low, the possibility of entry may prevent a firm increasing its price despite having a high market share. If barriers to entry are high, the firm is more likely to have the ability to substantially increase its prices,
- Control of essential infrastructure that cannot be easily duplicated. If a firm controls essential network infrastructure such as the main local telephone exchange, it may be able to impede competition
- Absence of customer buying power. If a firm has many small customers it is less likely to have the ability to negotiate than if the firm has a several large customers
- Economies of scale. An established firm may be able to achieve substantially lower per-unit costs than a competitor could, which may act as a barrier to entry
- Economies of scope. An established firm may be able to manufacture several products at once, and achieve lower costs than a competitor
- A highly developed distribution and sales network. A well-established firm may have exclusivity agreements with distributors, making it difficult for competitors to enter the market.

Source: European Commission Guidelines on Significant Market Power (2002/C 165/03).

### 2.4.3. Barriers to Entry

In a competitive market, the threat of potential entry is an important constraint on firms already in the market. Should an incumbent firm increase its price above competitive levels, potential competitors would respond to this opportunity for profit by entering. Competitive entry would force prices down again. High barriers to entry prevent such competitive entry, and thus increase the market power of incumbent firms.

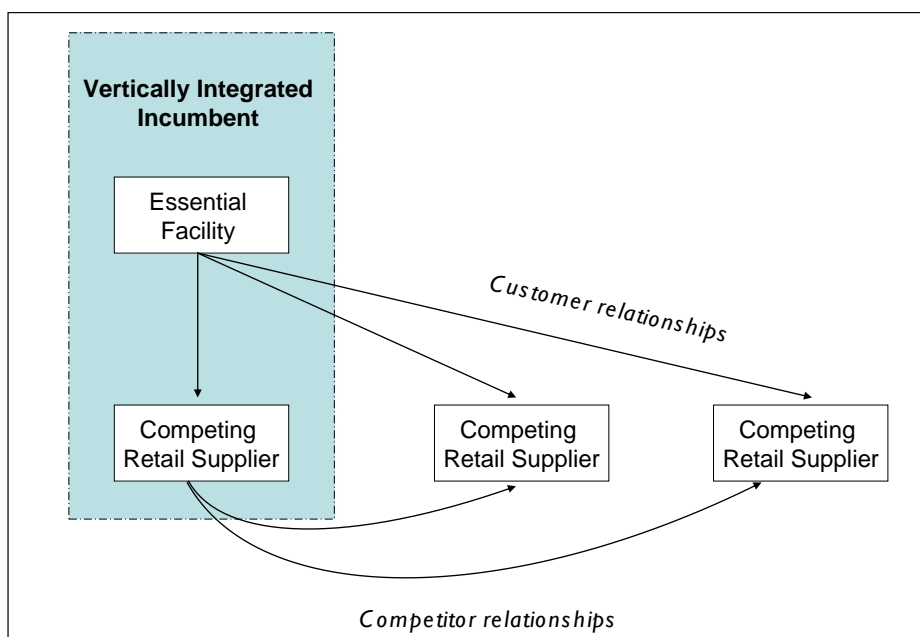
A barrier to entry (typically in the long run) is a cost that a new entrant incurs, but that incumbent firms avoid. This cost asymmetry can prevent the potential entrant from competing with the incumbent even if its other costs are exactly the same as the incumbent's, and both face identical prices. Thus, barriers to entry may prevent entry by otherwise equally efficient competitors.

A barrier to exit is a cost (typically experienced only when exiting the market) that is so prohibitive that it can reduce, or destroy altogether, a firm's incentives to enter the market in the first place. Therefore, a barrier to exit may pose a barrier to entry as well.

Barriers to entry may arise due to:

- *Legal barriers*: Prior to liberalization it was common to prohibit entry into telecommunications markets. This is still the case in some countries.
- *Economies of scale and scope*: For example, in the telecommunications sector, a new facilities-based entrant may have no choice but to start out at a relatively large scale of operations, in order to achieve unit costs close to the incumbent's.
- *High fixed or sunk costs*: If an entrant must incur high sunk costs to enter the market, then the entrant must be prepared to absorb those sunk costs in the event that it fails. However, at the time the new carrier is weighing its prospects and incurring sunk costs, the incumbent carrier faces none of the same risks or costs (even if it did so at an earlier point in time). This basic asymmetry in their positions may pose an entry barrier for the prospective new carrier.
- *Essential facilities*: If an entrant needs access to an essential facility that is controlled by one of its competitors, this creates a barrier to entry. The entrant must incur the cost of purchasing access to the facility — a cost not faced by the firm that owns the essential facility.

**Figure 2.4 Essential Facilities**



Source: ICT Regulation Toolkit.

#### 2.4.4. Essential Facilities

Essential facilities are resources or facilities that have the following properties:

- They are critical inputs to retail production. Essential facilities are located at the wholesale level of the production chain, and are essential inputs in the production or supply of the retail product or service.
- They are fully owned and controlled by vertically integrated incumbent firms. The owner of the facility participates in the retail as well as the wholesale stage of the market.
- They are a monopoly. Retail competitors can only acquire an essential facility from the incumbent firm that owns and controls it.
- It is not feasible, either economically or technologically, for retail competitors to duplicate the essential facility or develop a substitute for it.

At the wholesale level the incumbent supplies other firms with a critical input, and those firms are dependent on the incumbent for that input. At the retail level, the incumbent competes with those same firms (see Figure 2.4). The owner of an essential facility may seek to use its position to prevent or impede competition, by implementing a “price squeeze” or even refusing to supply the facility.

#### 2.4.5. Common Forms of Anti-Competitive Conduct

Telecommunications firms with market power may try to use their position to reduce competition. This section gives an overview of some common forms of anticompetitive conduct, such as:

- Abuse of dominance,
- Refusal to supply,
- Vertical price squeezes,
- Cross-subsidization,
- Misuse of information,
- Customer lock-in and restrictive agreements,
- Exclusionary and predatory pricing,
- Tying and bundling of services.

##### **Abuse of Dominance**

Abuse of dominance occurs when a dominant firm adopts predatory or exclusionary business practices

with the aim of eliminating or substantially lessening competition and excluding competitors. Abuse of dominance may entail:

- Refusals to deal, for example a refusal to supply an essential facility to a competitor;
- Exclusive dealing arrangements, in which a seller prevents its distributors from selling competing products or services;
- Tying and bundling, where a firm sells makes the purchase of one product or service conditional on the purchase of a second product or service;
- Predatory pricing, where a firm sets prices below cost in order to force a competitor out of the market;
- Non-price predation, where a firm adjusts the quality of its product offering to customers with the aim of harming its competitor. For example, an incumbent might offer an improved level of service to just those customers served by a new entrant.

A firm does not need to be dominant (in the sense of possessing a high market share) in order to implement these strategies. However, the consequences for competition can be particularly severe when the firm concerned is dominant (see Box 2.4).

##### **Box 2.4 Abuse of Dominance in Morocco**

Until 2002, Maroc Télécom was Morocco's only incumbent basic telecommunications service provider and operated the only fixed network in the country.

Amidst de-regulatory steps taken in Morocco in 1999 and after, Médi Télécom was licensed to operate a GSM mobile network in competition with Maroc Télécom. In early 2001, Maroc Télécom began offering a 10% discount to anyone calling a Maroc Télécom mobile phone from a fixed line. Its competitor, Médi Télécom charged that this was anti-competitive and complained to the Moroccan National Telecommunications Regulatory Agency (ANRT).

The ANRT reviewed the case and concluded that the discount offered only to Maroc Télécom customers was discriminatory and constituted an act of abuse of dominance, given that Maroc Télécom was to remain the fixed network monopoly until 2002. Maroc Télécom eventually suspended the 10% discount in light of the ANRT's ruling.

Source: "Case Study: Morocco" International Telecommunication Union, Effective Regulation.

## Refusal to Supply

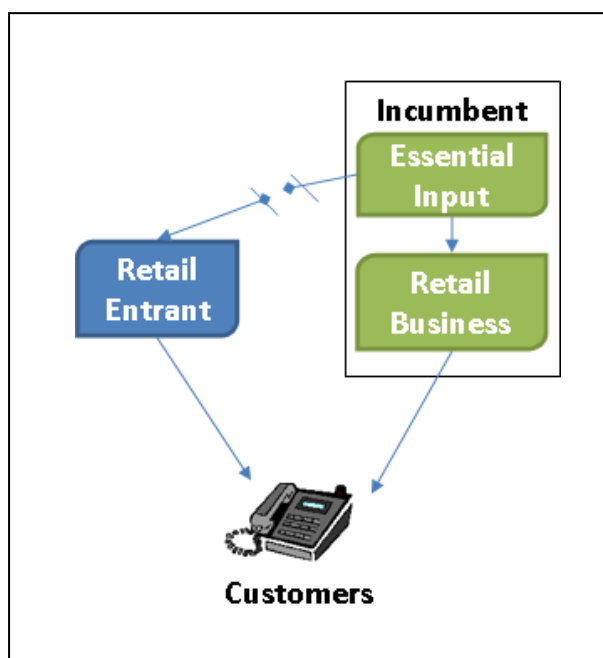
Incumbent firms often control access to facilities that are essential inputs in the supply of services at the retail level. Competing retailers depend on the incumbent for access to the essential facility.

In the telecommunications sector, for example, the local loop connecting end customers to the network is often regarded as an essential facility.

Incumbent firms may attempt to prevent competitors from entering the market by refusing to provide access to an essential facility. To encourage competition, many jurisdictions require firms with control over essential facilities to provide access to retail competitors. Rules may also determine the way in which access prices will be agreed, and procedures for resolving any disputes.

Figure 2.5 shows a vertically integrated incumbent firm and a downstream entrant. The incumbent firm controls an essential input, on which the downstream entrant depends in order to provide services to its customers. The incumbent also competes with the downstream entrant at the retail level. By refusing to supply the essential input, the incumbent can prevent the downstream entrant from competing.

**Figure 2.5 Refusal to Supply an Essential Facility**



Source: ICT Regulation Toolkit.

To be able to implement a vertical price squeeze, a firm must be vertically integrated, and control an essential wholesale input to the retail service. A firm implementing a price squeeze offers to supply this essential input to its retail competitors only at a price greatly in excess of its costs.

## Vertical Price Squeeze

The key elements of a price squeeze are:

- The firm demands a price for the essential facility that is so high that it is not possible for an equally-efficient retail-stage competitor to operate profitably (or even survive) given the level of retail prices; and
- The firm does not charge its own downstream operation this high price.

In an extreme case, the firm might demand a price for the essential input that is higher than the full retail price of the service.

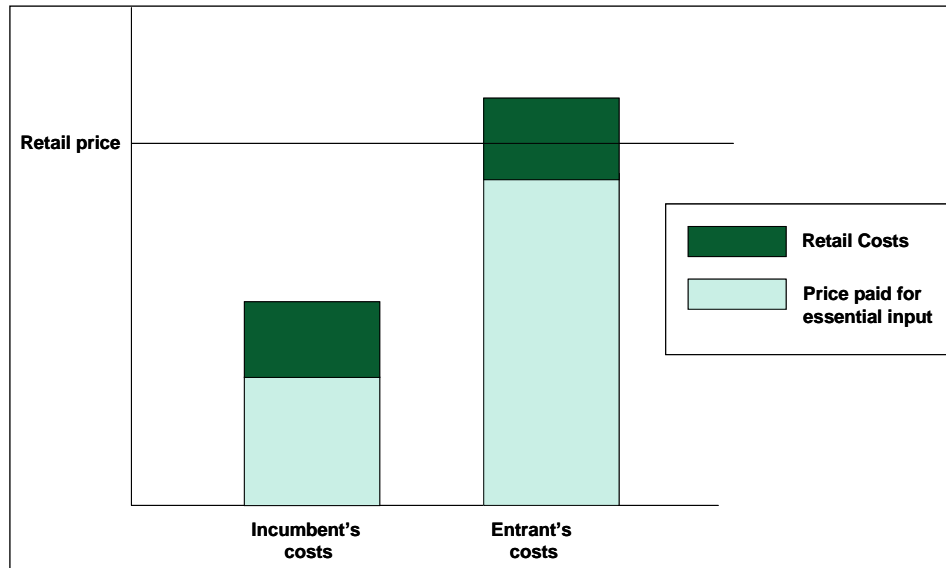
A vertical price squeeze can only succeed if the essential input has no effective substitutes. If such substitutes are available, the price squeeze will simply encourage entrants to use the substitute to produce competing retail services.

A price squeeze has a similar effect to a refusal to supply an essential facility. By charging a high price for the essential input, a vertically integrated firm can reduce the effectiveness of its competitors, or in the extreme force them out of the market.

In Figure 2.6, an incumbent firm owns an essential input, on which an entrant depends in order to provide service to its customers. Both firms have the same costs at the retail stage of the market. The incumbent obtains the essential input at incremental cost, but charges the entrant a price substantially greater than incremental cost. As a result, the entrant's total costs exceed the retail price for the service, and it is forced to exit the market.

In 2003, Deutsche Telekom (DT) was found to have abused its dominant position by committing a price squeeze, contrary to Article 82 of the European Commission Treaty (see Box 2.5). DT offered local access services at the retail level to end-users and at the wholesale level on an unbundled basis to competitors. DT was thus active in both upstream and downstream markets even though DT was legally obliged to provide competitors with wholesale access to its local loops.

**Figure 2.6 Example of a Vertical Price Squeeze**



Source: ICT Regulation Toolkit.

In its decision finding that DT had abused its dominant position, the European Commission found that DT charged new entrants higher fees for wholesale access to the local loop than what DT charged its retail subscribers for fixed line subscriptions. The Commission assessed the margin between DT’s wholesale access prices and the weighted average price of its corresponding retail services for access (analog, ISDN, and ADSL). Given that wholesale access prices were higher than the weighted average of the corresponding retail prices charged to end-users, the Commission determined that the price margin was insufficient for new entrants to compete with DT. The Commission concluded that DT’s pricing practices constituted a price squeeze. The Commission further concluded that DT’s pricing for local access services deterred new competitors from entering the local access market and reduced the choice of telecommunications service providers for consumers and suppressed price competition. DT unsuccessfully appealed this decision to the European Court of First Instance (CFI).

**Cross-Subsidization**

In the ICT sector, it is common for firms to supply a large number of services. Network operators generally sell services in both competitive and non-competitive markets. A firm with market power in one area may charge a high price for non-competitive services and use the proceeds to subsidize low prices for competitive services.

If the firm breaks even overall, a given service receives a subsidy if it does not generate sufficient revenue to cover its total service long run incremental cost (TSLRIC).

For example, let us consider an incumbent firm with market power in the provision of long distance calls. The incumbent could use its market power to charge high prices to long distance customers, and use the excess revenue to support low prices for internet access, thereby undercutting competing internet access providers.

**Box 2.5 Article 82 - European Commission Treaty**

Any abuse by one or more undertakings of a dominant position within the common market or in a substantial part of it shall be prohibited as incompatible with the common market in so far as it may affect trade between Member States.

Such abuse may, in particular, consist in:

- (a) directly or indirectly imposing unfair purchase or selling prices or other unfair trading conditions;
- (b) limiting production, markets or technical development to the prejudice of consumers;
- (c) applying dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage;
- (d) making the conclusion of contracts subject to acceptance by the other parties of supplementary obligations which, by their nature or according to commercial usage, have no connection with the subject of such contracts.

Source: ICT Regulation Toolkit.



By cross-subsidizing competitive services, a telecommunications firm can:

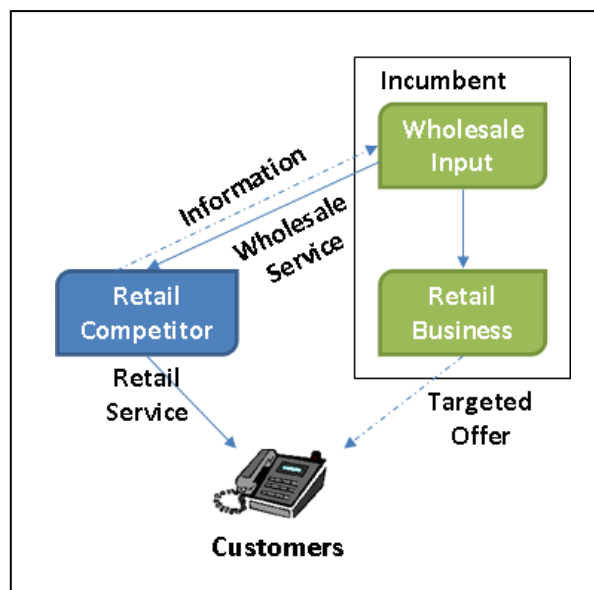
- Ensure that it covers its overall costs, including fixed costs, and
- Strengthen the firm's competitive position where it matters most, namely in the supply of its more competitive products.

Cross-subsidization will only maximize the firm's profitability if the resulting gain in market share in the competitive market outweighs the loss in revenue from the reduced price. This is because the firm could still increase prices for the non-competitive service, even if it did not subsidize the competitive service. So its next best option would be to increase the non-competitive price and keep the resulting revenue.

### Misuse of Information

It is common for vertically integrated firms to sell wholesale products ("essential facilities") to other firms, while competing against those same firms in retail markets. In this situation the vertically integrated firm can obtain sensitive commercial or business information through its wholesale transactions that gives it a competitive advantage in its retail activities.

**Figure 2.7 Misuse of Information**



Source: ICT Regulation Toolkit.

For example, suppose a vertically integrated incumbent firm is the sole source of dedicated access lines needed to provide retail private line

services. Other firms may have no choice but to acquire wholesale dedicated access lines from the incumbent. To complete the wholesale transaction, the incumbent needs information about the identity, size, and other characteristics of end-users being targeted by its competitors. It could use this information to target the same end-users with superior service offerings, placing its competitors at a considerable competitive disadvantage. This would constitute a misuse of information (see Figure 2.7).

### Customer Lock-In

Service providers may attempt to "lock in" customers to prevent them from switching to alternative products, technologies, or suppliers. Customer lock-in involves raising customers' switching costs so that the cost of switching outweighs the potential benefits from switching.

Switching costs may be:

- Transactional, for example the cost of replacing existing equipment and technology in order to move to a different service provider, or
- Contractual, for example penalties for breaking an existing contract with one service provider, in order to switch to a new service provider.

Contractual provisions that increase switching costs are not necessarily anti-competitive. Service providers may use contractual provisions that ensure customer loyalty to recover legitimate underlying costs over a period of time, for example:

- Service providers may incur substantial upfront fixed costs to acquire and serve customers. For example, it is common for mobile service providers to subsidize the cost of mobile handsets and recover the cost of the subsidy through service charges over time.
- Service providers may have incentives to spread non customer-specific fixed costs over as many customers as possible. In order to do this, a service provider may use contractual provisions to ensure customer loyalty and maintain its installed customer base.

Where the customer's switching cost is less than the present value of the expected revenue from the customer, competing firms may offer to pay the customer's switching cost. In this case, switching costs are not effective as a means of locking in customers.

### **Exclusionary or Predatory Pricing**

Predatory pricing is a pricing strategy used by an established firm to eliminate competition from equally efficient firms, and secure a monopoly position in a previously competitive market.

A firm practicing predatory pricing lowers its price below cost and maintains it there until equally efficient competitors are forced to incur unsustainable losses and exit the market. The firm then raises its price to a monopoly level in order to recoup its lost profits.

Predatory pricing is a risky strategy. The firm involved incurs high up-front losses, with no guarantee of future gains from monopolization. The strategy will only be profitable if, once all competitors have been forced out of the market, the incumbent is able to raise its prices to a monopoly level and keep them there. If the firm is subject to either direct price regulation or some other form of control, predatory pricing is unlikely to succeed.

Predatory pricing requires high barriers to entry. If firms are able to enter the market easily, then each time the incumbent increases its price, new entrants will be attracted to the market, forcing the incumbent to drop its price again.

A less aggressive type of exclusionary pricing is known as limit pricing. This occurs when a firm with low costs sets prices above its own costs, but below a potential competitor's costs. This can discourage new firms from entering the market, but may not force existing competitors out of the market.

For it to succeed, limit pricing may require tacit collusion from all or most existing firms. Existing firms must be willing to reduce the market price below profit maximizing levels, so that any higher cost entrants have no prospect of making a profit.

Limit pricing may only discourage entry by less efficient firms. So even though limit pricing may deter new entry, it does not necessarily hurt customers or reduce social welfare.

### **Tying and Bundling**

#### *Tying*

Tying of services occurs where a service provider makes the purchase of one product or service over which it has market power (the “tying good”) conditional on the purchase of a second, competitively supplied, product or service (the “tied good”). By tying services, a service provider can try

to use market power in one market to give itself an advantage in another, competitive market.

Customers who opt to buy the tied good from a competitor cannot find a feasible substitute for the service provider's tying good. Tying is primarily a strategy to maximize profits. It can be profitable in the following cases:

- Where the demands for the two products are complementary, such that end users consume both products together (for example a network subscription and local calls); or
- If the tying good is regulated and the regulated price is below the service provider's profit maximizing level. In this case a successful tying strategy would enable the service provider to increase its overall profitability by increasing the price of the tied good.

Tying will not be profitable where:

- The demands for the two products are independent, so that end users are unlikely to consume them jointly;
- The price of the tying good is already at the service provider's profit maximizing level. In this case there is no room to increase profits further; or
- The two products are consumed in fixed proportions. To maximize its profits, all the service provider needs to do is set the price for the product over which it has market power at its profit maximizing level.

A tying strategy is only likely to exclude competitors from the market for the tied good if competitors are unable to overcome the loss of sales to customers who have been successfully tied. For example this might be the case if:

- Competitors face economies of scale, so that a loss of sales causes their average costs to increase, or
- The tied good is associated with network externalities, so that a loss of sales to some customers causes other customers to leave as well.

Even where tying does have an exclusionary effect, this may be an unintended consequence of a strategy to maximize profits.

#### *Service bundling*

Service bundling occurs where a service provider offers two or more services separately, but gives a

discount to customers who purchase the services as a combined bundle. Bundling is typically pro-competitive and consumer friendly.

Bundling is common in telecommunications and other multiproduct industries, reflecting both cost savings from producing services jointly, and consumer preferences for service bundles. In telecommunications, local and long distance services are often bundled with services such as call waiting, call forwarding, voice mail, or Internet access. “Triple play” offerings bundle telephone, TV and Internet services, while “quad play” strategies may also include mobile services.

#### 2.4.6. Remedies for Anti-Competitive Conduct

This section provides an overview of the remedies available to governments and regulators for responding to:

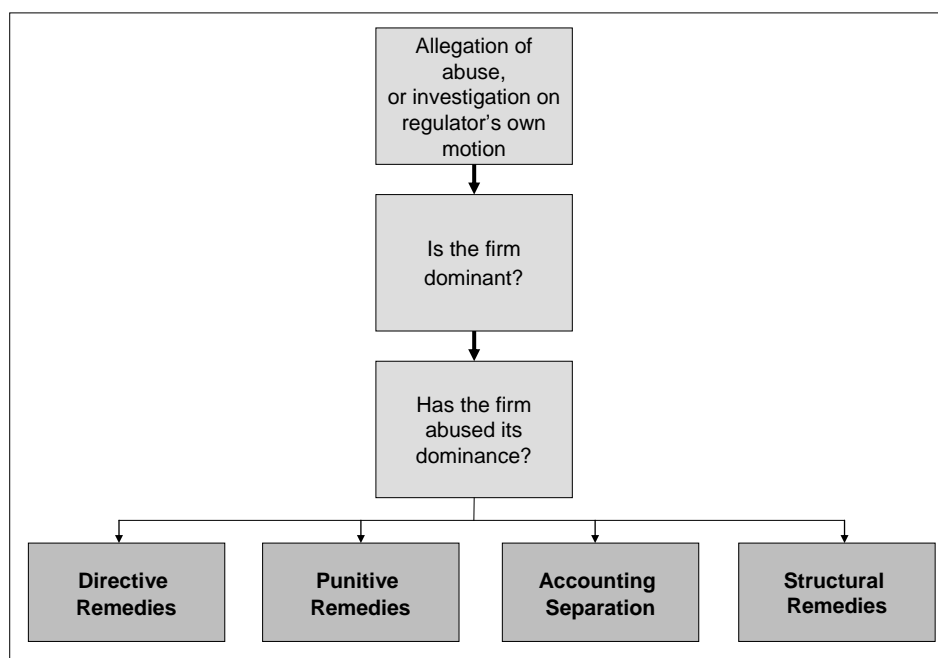
- Abuse of dominance,
- Refusal to supply and vertical price squeezes,
- Cross-subsidization,
- Misuse of information,
- Customer lock-in and restrictive agreements,
- Exclusionary and predatory pricing,
- Tying and bundling of services.

#### Remedies for Abuse of Dominance

Abuse of dominance occurs when a firm uses its dominant position in a market to lessen competition in that (or another) market.

The first step in any investigation of alleged abuse of dominance is to determine whether the firm in question has a dominant position, or significant market power, in the relevant market (Figure 2.8).

**Figure 2.8 Responding to Abuses of Dominance**



Source: ICT Regulation Toolkit.

The second step is to consider whether the behavior in question constitutes an abuse of the firm’s dominant position. Is the behavior harmful to competition and to consumers? It is important to distinguish between aggressively competitive behavior that harms individual competitors but

benefits customers (for example by reducing prices), and behavior that is anti-competitive.

A range of possible remedies exists. The appropriate remedy will depend on the specific nature and

## A Level Playing Field

seriousness of the behavior, and the likelihood that the firm will repeat the behavior in the future.

### *Directive Remedies*

Directive remedies, such as injunctions or bans, require the firm to:

- Cease its abusive behavior, or
- Make specific changes to its behavior so it is no longer damaging to competition.

Directive remedies may require ongoing monitoring, to ensure that the behavioral change is sustained.

### *Punitive Remedies*

Punitive remedies include:

- Fining the firm,
- Ordering the firm to pay compensation to its competitors and/or customers,

Fining company officers with direct responsibility for the behavior.

Punitive remedies are intended to discourage abusive behavior in the first place by making such behavior unprofitable. However, this objective must be weighed against the potential to “chill” the behavior of dominant firms. If the cost of being found to have abused a dominant position is very high, then dominant firms will err on the side of caution. They may not engage in aggressively competitive behavior, in case such behavior is found to be anti-competitive.

### *Accounting Separation*

Accounting separation aims to separate out the competitive and non-competitive parts of the firm’s business, without going to the extent of full structural separation.

For example, this can be achieved by requiring the dominant firm to publish a set of regulatory accounts for the non-competitive part of its business. The objective is to make the costs of non-competitive services transparent so that regulators and others can more easily detect possible abuses. New Zealand used this approach as part of its “light handed” regulatory regime, prior to 2001. New Zealand’s current regulatory regime also obliges the Commerce Commission to require the incumbent service provider to undertake accounting separation and to publish information related to its accounts.

Accounting separation is a form of *ex ante* regulation – it is more concerned with preventing future anti-competitive behavior than punishing past abuses.

### *Structural remedies*

If the anti-competitive behavior is very damaging and there is a high probability of repetition, structural separation may be necessary. For example, this might involve breaking the firm into two competing firms with smaller individual market shares, or separating monopoly and competitive elements of the firm. A landmark example of structural separation is the United States break up of AT&T in 1984.

Functional separation describes a situation in which a business establishes operationally separate entities, without any change in overall ownership or control. In the United Kingdom, functional separation was implemented in the incumbent BT as of January 2006 and is credited with resulting in a surge of broadband connections (from 100,000 unbundled lines in December 2005 to 5.5 million in 2008).<sup>9</sup> BT’s Openreach was set up to ensure that all rival operators have a quality of access to BT’s local networks.

## **Remedies for Refusal to Supply and Price Squeezes**

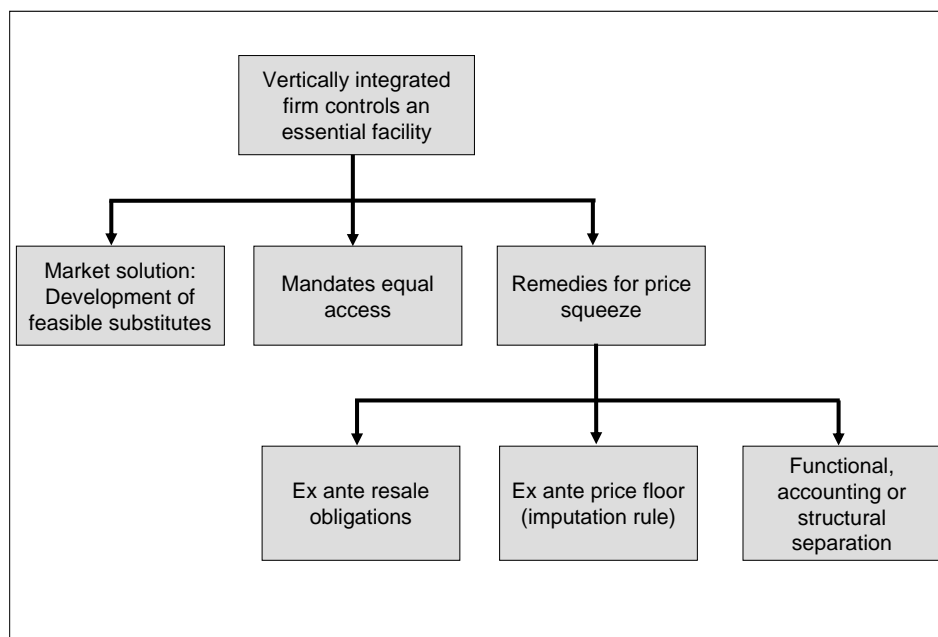
Where a vertically integrated incumbent firm controls a facility that is an essential input to its retail competitors, this can create a “bottleneck” to competition. The vertically integrated firm may prevent competitive entry by refusing to supply the essential input. Or it may charge a price for the input so high that it is not possible for competitors to operate profitably, given the level of retail prices.

There are two possible remedies (see Figure 2.9):

- The market may provide a technological solution, by developing feasible substitutes for the facility.
- The government may require the vertically integrated firm to provide equal access to the essential facility to any firm that requests access, including competitors. Typically, this means imposing non-exclusion and non-discrimination obligations on the owners of essential facilities.

Even if the vertically integrated firm agrees to supply the essential facility to its competitors, it may still attempt a vertical price squeeze. A number of remedies for vertical price squeezes exist, including:

- *Ex ante* resale obligations;
- *Ex ante* price floors; or
- *Ex post* structural remedies.

**Figure 2.9 Remedies for Refusal to Supply and Vertical Price Squeezes**

Source: ICT Regulation Toolkit.

#### *Ex Ante Resale Obligations*

Resale obligations require the vertically integrated firm to make its retail services available for resale by any competitor. Competitors gain access to the wholesale components of the service when they resell the vertically integrated firm's retail services. This approach is used in the United States, under the Telecommunications Act 1996.

The generally accepted price rule for resold services is "retail minus" or "avoided cost discount". Under this rule, the price paid by resellers is equal to the retail price of the service, less the cost resellers avoid by substituting their own retailing functions for the vertically integrated firm's.

Not all competitors are interested in using resale as their retail market strategy. Alternative protections against price squeezes may be needed.

#### *Ex Ante Price Floors*

A price floor sets a minimum retail price for the incumbent's retail service, with reference to wholesale prices. A price floor should ensure that competitors are as efficient as the vertically integrated firm, so that they are able to cover their costs. The rule for setting a price floor, i.e. the "imputation rule", can be stated in a number of ways:

- The retail price must be no less than the wholesale price plus the direct incremental cost of the vertically integrated firm's pure retailing functions.
- The retail price must be no less than the vertically integrated firm's wholesale price, plus the direct incremental cost of the vertically integrated firm's pure retailing functions, plus the difference between the firm's direct incremental cost to provide the wholesale facility to itself and its direct incremental cost to provide that same facility to its competitors.
- The retail price must be no less than the vertically integrated firm's direct incremental cost to supply the product, plus the profit margin it could earn from selling the essential input to its competitors.
- The profit margin on the vertically integrated firm's price for the retail product must be no less than the profit margin it earns from selling the essential input to its competitors.

The above imputation rules are equivalent, but provide different insights into the conditions that must hold for a vertical price squeeze to be impossible.

*Ex Post Structural Remedies*

Structural remedies seek to separate the wholesale and retail operations of the vertically integrated firm, to remove the opportunity for a price squeeze, through:

- Functional or accounting separation of the firm’s wholesale and retail operations, or
- Full structural separation of the firm’s operations (by divesting either the wholesale or retail operation).

These measures may achieve the objective of preventing a price squeeze, but they can have substantial costs. In particular, under structural separation the firm would lose any efficiencies or cost savings from vertical integration. This loss would ultimately fall on customers, through higher prices.

**Remedies for Cross-Subsidization**

A firm with market power in one market may charge a high price for non-competitive products and use the proceeds to subsidize low prices for competitive products.

The remedies for cross-subsidization are preventive in nature. A regulator might:

- Implement and enforce a price floor;
- Require accounting separation of the costs of the firm’s competitive and non-competitive products.

*Price Floor*

For a firm that at least breaks even across all of its products, any single product receives a subsidy if the revenue it generates fails to recover its total service long run incremental cost (TSLRIC). Thus, the effective price floor in a test of whether a product receives a subsidy can be stated as:

$$\text{TSLRIC of the service} / \text{number of units produced}$$

For a multiproduct firm, the rule for preventing cross-subsidization requires that, for a firm that at least breaks even, every product must satisfy this price floor test.

*Accounting Separation*

The objective of accounting separation in this context is to separate the costs of the firm’s competitive and non-competitive products. This can be achieved through price regulation (either direct

regulation, or a “price cap”). Such regulation can prevent cross-subsidization by allocating competitive and non-competitive products to separate “baskets”, with separate controls or rules for each basket.

**Remedies for Misuse of Information**

It is common for a vertically integrated firm to supply an essential wholesale facility to other firms against which it competes at the retail level. The firm may obtain commercially sensitive information in the course of providing the wholesale service, which it may use at the retail level for marketing purposes. This can place a potential entrant at a substantial competitive disadvantage.

Remedies for misuse of information are generally *ex ante* in nature, and include:

- Establishing strict rules or procedures governing the use or disclosure of commercially sensitive information, and setting limits on the sharing of sensitive information between a carrier and its affiliates;
- “Win back” rules, limiting the extent to which the vertically integrated firm may directly market to customers that choose to switch to a competitor.

**Remedies for Customer Lock-In**

High switching costs and customer lock-in tactics do not necessarily cause problems for competition or exclude competitors. Most service agreements that seek to lock-in customers do not warrant regulatory interference. Indeed, in some cases, high switching costs may trigger market responses that improve efficiency.

Cases of lock-in need to be considered on a case by case basis, taking account of the following:

- The degree of competition in the market;
- Whether the firm in question has market power, or a dominant position; and
- The effect of the locking-in arrangements on competition (are the arrangements blocking efficient competitors)?

**Remedies for Predatory Pricing**

A firm engages in predatory pricing by temporarily pricing below cost in order to force its competitors out of the market.

Predatory pricing is notoriously difficult to prove. It can be difficult in practice to distinguish predatory pricing from aggressively competitive below-cost

pricing (such as “loss leaders” and promotional activities).

Establishing whether predatory pricing has taken place requires that two tests be met:

- Whether the firm is pricing below cost; and
- Whether the firm has an “objectively reasonable expectation” of being able to recover the losses it must incur by pricing at below cost.

#### *Is the Firm Pricing Below Cost?*

There is no universally accepted test to determine whether a firm is pricing below cost.

Under the Areeda-Turner rule, prices must be below a firm’s short run marginal cost to qualify as predatory pricing. Recognizing that short run marginal cost is very difficult to measure, alternative short run measures of cost may be used - short run average variable cost (SRAVC) or short run incremental cost (SRIC).

Many economists promote the use of long run incremental cost (LRIC) as the appropriate cost threshold for predatory pricing. If two firms are equally efficient, they must have the same long run incremental cost. When one of them sets a price below LRIC, the other firm cannot match that price without incurring a loss.

Regardless of the measure used, calculations of firm-specific costs for individual services can be highly contentious.

#### *Does the Firm Expect to Recover its Losses?*

Many practitioners are skeptical about the prospect that a firm could know in advance all of the information needed to implement a predatory pricing strategy. In order to have a reasonable expectation that the strategy will succeed, the firm must know:

- How long it must price below cost before it succeeds in forcing its competitors out of the market;
- The size of the loss that it must withstand while predatory pricing is in effect; and
- The probability that it will recover its losses once it has achieved a monopoly.

#### *Remedies*

*Ex post* antitrust remedies, such as fines or compensation, may be available for proven instances of predatory pricing. However, predatory pricing is

difficult to prove with sufficient certainty to justify punitive measures.

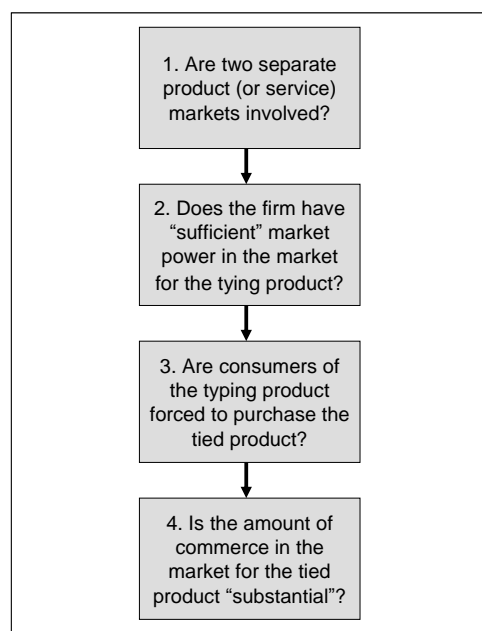
A more useful remedy for predatory pricing is an appropriate price floor for the affected product or service. This is a preventive remedy, requiring *ex ante* regulation.

### **Remedies for Tying and Bundling**

There are few circumstances in which tying can be profit-enhancing for the firm concerned.

Accordingly firms with market power will often have no incentive to engage in a tying strategy.

**Figure 2.10 Test for Alleged Tying**



Source: ICT Regulation Toolkit.

In recognition of this, the courts in the United States have developed a four-part test for analyzing allegations of tying (see Figure 2.10).

In addition to these tests, some courts require that the alleged harm exceed any efficiencies produced by the alleged tying, before allowing a complaint to proceed.

On the other hand, bundling is generally a pro-competitive, and customer-friendly, strategy. As such bundling does not call for regulatory intervention.

## 2.5. Control of Mergers and Acquisitions

### 2.5.1. Horizontal Mergers

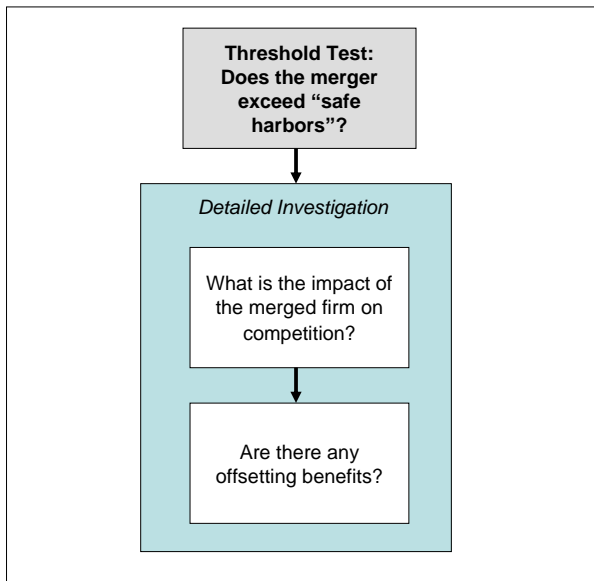
A horizontal merger brings together firms that produce the same product within the same market.

Horizontal mergers can be either beneficial or detrimental overall. By definition, horizontal mergers reduce the number of actual competitors in the market. Horizontal mergers may also produce cost savings and other benefits. If these benefits outweigh any reduction in competition, then the merger should be allowed to proceed.

#### Analyzing Horizontal Mergers

Competition authorities commonly take a two-stage approach to analyzing horizontal mergers (see Figure 2.11).

**Figure 2.11 Two Stage Process for Analyzing Mergers**



Source: ICT Regulation Toolkit.

The first stage uses measurable thresholds or “safe harbors” to determine whether a merger is likely to raise serious competition concerns. If a merger falls within the specified threshold then it is considered to be “safe”, and may proceed without further investigation. For example, in the United States, antitrust authorities set thresholds based on the change in market concentration from a proposed merger. In Europe, the *Merger Control Regulation*

applies only to mergers, acquisitions, and joint ventures that satisfy thresholds based on the turnover of the firms involved.

The purpose of these thresholds is to focus resources on investigating those transactions that are most likely to raise serious competition concerns. Those mergers that do not fall within specified safe harbors are investigated in depth.

A full merger investigation should consider a range of factors to determine whether the merger would increase market power, and to evaluate any offsetting benefits. Relevant factors include:

- Technological change and dynamic efficiencies that would result from the merger;
- Cost savings and other efficiencies claimed by the merging firms;
- The ease of market entry, or existence of any barriers to entry;
- The potential for collusion among firms in the market following the merger;
- The possibility that the merged entity may act anti-competitively;
- Whether one or both of the merging firms are likely to survive or fail if the merger does not proceed;
- Whether the merger would eliminate any potential competitors;
- Whether customers in the market have “countervailing power” that would constrain the merged entity.

#### Remedies

If a merger is found to substantially reduce competition, or give the merged entity a dominant position in a market, the first step is to evaluate any benefits from the merger. If the merger is likely to generate benefits that outweigh the damage to competition, then it should be allowed to proceed.

In some jurisdictions regulatory authorities may impose *ex ante* obligations on a merged firm, where the merger would otherwise be anti-competitive. For example, in both the United States and Europe, National Regulatory Authorities may impose conditions on a merger that would otherwise be anti-competitive.



## 2.5.2. Vertical Mergers

A vertical merger brings together firms in potential customer-supplier relationships, such as that between a firm that provides wholesale or intermediate products to a firm that produces retail or final products.

Vertical mergers are generally considered beneficial. Vertical mergers can:

- Reduce transaction costs by streamlining the process of acquiring and converting inputs into outputs;
- Improve efficiency through more integrated production; and
- Eliminate the potential for a “double markup”, which can occur where there is market power at both the wholesale and retail stage of the market.

Vertical mergers may raise competition concerns in limited sets of circumstances.

A vertical merger may “foreclose” the market by preventing non-integrated retail competitors from staying and competing in the market (see Box 2.6). Foreclosure generally requires pre-existing market power at one or more levels in the new vertically integrated firm. For example, a firm controlling an essential facility at the wholesale level might merge with a retailer. The merged firm may withhold supply of the essential facility to its retail competitors, preventing them from competing.

Alternatively, a vertical merger may be motivated by the goal of raising costs for rivals. For example, a retail firm might merge with the supplier of a wholesale input. By removing a source of supply from the wholesale stage of the market, the retailer is able to increase the price of the input to its competitors (but not itself).

### Analyzing Vertical Mergers

Analysis of vertical mergers focuses around the two areas of concern above. In the United States, competition authorities typically pay attention to three key issues, namely whether the merged firm can:

- Raise the costs of its retail rivals - if it can, the remedy is a requirement that the wholesale resource be made available at non-discriminatory prices.

- Misuse competitively sensitive information gathered about rivals when selling them the wholesale resource - if it can, the remedy is to implement rules and procedures to prohibit information-sharing between the firm’s retail and wholesale operations.
- Foreclose retail competitors from the market by exercising market power at the wholesale stage of the market - If it can, the remedy is to require the merged firm to provide equal access to the wholesale resource to its non-integrated retail-stage competitors (See Figure 2.12).

#### Box 2.6 Telia/ Sonera Merger

In May 2002, a merger was proposed between Telia, a Swedish telecommunications and cable television operator and the largest service provider in Scandinavia, and Sonera, Finland’s largest mobile telephony operator and provider of national and international long distance services as well as local loop and cable TV infrastructure. The proposed merger raised both vertical and horizontal issues. The European Commission raised concerns regarding continued competition in the Finnish wireless telephony market, given Sonera’s dominant position if it didn’t have Telia as an actual and potential competitor in Finland. The Commission also raised various antitrust issues based on the following:

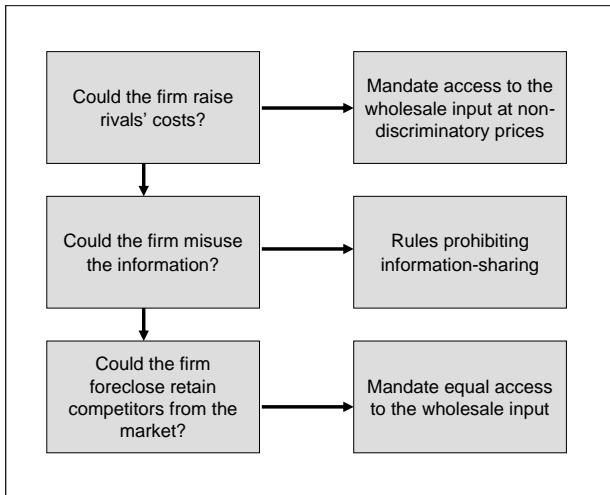
- Both had strong positions in the supply of various retail services
- Both had monopolies over wholesale termination on their respective fixed and mobile networks
- Both were leaders in the provision of wholesale international roaming services on their respective mobile networks

The Commission feared that the companies’ strengths in the wholesale markets could lead to foreclosure of retail competitors and monopolistic behavior.

In July 2002, the European Commission approved the merger, but imposed several “commitments” on the merging companies. Those commitments began with specific legal and structural separation guidelines to ensure future competition. Telia and Sonera were required to operate their fixed and mobile networks as separate subsidiaries in both Sweden and Finland, and grant third parties non-discriminatory network access. Telia was required to divest its mobile network in Finland, and potential buyers were allowed nationwide roaming on commercial terms on Sonera’s mobile network. In addition, the European Commission required that each new company arising from the merger appoint a new, external director.

Source: European Commission.

**Figure 2.12 Analyzing Vertical Mergers**



Source: ICT Regulation Toolkit.

### 2.5.3. Joint Ventures

Joint ventures can have many different objectives, and have different implications for competition.

Joint ventures with the purpose of fixing prices, restricting output, or allocating markets between firms reduce competition, and generally should not be permitted.

Joint ventures may generate efficiency gains and cost savings. In this case, regulators or competition authorities should consider whether the joint venture will increase market power sufficiently to cause a substantial lessening of competition. Will the joint venture lead to an increase in prices or a reduction in output? If the potential gains from the joint venture outweigh any competitive damage, then the joint venture should be allowed to proceed.

In some cases joint ventures include an agreement for the parties to acquire assets or voting rights in their respective firms. This type of arrangement is more durable than a conventional joint venture, and so requires additional scrutiny. The investigation should consider factors such as:

- The level of competition in the relevant market;
- The number and power of competitors in the relevant market;
- The market power of the parties in the joint venture;
- The background of, and the relationship among, the parties in the joint venture;

- The setting in which the joint venture was created;
- The relationship between the lines of commerce of the joint venture and of the individual parties in the joint venture.

### Telecommunications Joint Ventures

Telecommunications joint ventures come in many forms. They may have one or more of the following objectives:

- Integration of operations at one or more stages of the production process,
- Pooling of diverse resources and talents in order to conduct research and development, or
- Building efficient marketing and sales channels.

Telecommunications joint ventures raise three broad types of competition concern:

- The potential for collusion among the parties in the joint venture,
- A loss of potential competition, and
- The potential for market exclusion and access discrimination.

Ultimately, regardless of the benefits they produce for the collaborating parties, joint ventures must deliver consumer benefits and entail limited integration (in both duration and scope) in order to enhance the public interest.

## 2.6. Regulating Prices

### 2.6.1. Why Regulate Prices?

If effective competition is not possible in wholesale or retail markets, it may be necessary to regulate the prices dominant firms can charge. Without price regulation, dominant firms can increase prices above competitive levels, harming their customers.

Regulation has potentially high costs. Among other things, it substitutes the regulator's judgment for market interactions. No matter how capable and well intentioned regulators are, they will never be able to produce outcomes as efficient as a properly functioning market.

Regulators should therefore forebear from interfering in pricing decisions unless regulation is justified (see Box 2.7). In other words, unless the expected benefits from regulating prices outweigh the expected costs from doing so, they must not

intervene. Intervention requires that prices are set too high overall or they are anti-competitive:

- *Prices are set too high:*  
If an operator or service provider has market power they may increase prices above competitive levels. This will suppress demand for the service, leading to a loss of social welfare.
- *Prices are anti-competitive:*  
An operator or service provider with market power may engage in pricing practices that hinder competition in a market. Three important anti-competitive pricing practices are cross subsidization, price squeezes, and predatory pricing.

#### *Regulatory Options*

If there is a case for regulating prices, a number of regulatory options exist, such as:

- Rate of return regulation;
- Incentive regulation,; and
- International benchmarking of prices.

#### **Regulatory Criteria**

The following common regulatory goals provide useful criteria for assessing options for price regulation:

- *Prevent the exercise of market power:*  
An important goal of regulation is to ensure that prices are fair and reasonable, where competitive forces are insufficient. Any regulatory price control mechanism should encourage prices that reflect what one would observe in a competitive environment,
- *Achieve economic efficiency:*  
The regulatory mechanism chosen should improve economic efficiency. There are several measures of economic efficiency:
  - Technical efficiency (or “productive efficiency”) requires that goods and resources produced in the telecommunications industry should be produced at the lowest possible cost. This ensures that society’s scarce resources are used efficiently and are not wasted,
  - Allocative efficiency requires that the prices one observes in a market are based upon and equal to the underlying costs that

society incurs to produce those services (generally the long run incremental cost of producing the service). This will ensure that customers whose valuation of the service exceeds the cost of producing the service will purchase the service. Customers who place a lower valuation on the service will forgo it. This ensures that the “optimal” amount of the service is consumed, given cost and demand conditions. In the ICT sector prices must include some mark-up to recover shared and common costs. Mark-ups should be set so as to minimize the impact on allocative efficiency, and

- Dynamic efficiency requires that firms should have the proper incentives to invest in new technologies and deploy new services,

- *Promote competition:*  
Many regulators operate under a legal framework where the goal is to permit and promote competition. Where the legal framework permits competition, it is important that regulation (at a minimum) does no harm to competition,
- *Minimize regulatory cost:*  
All else being equal, regulators should choose a regulatory mechanism that is less costly to implement over one that is costlier to implement;
- *Ensure high quality of service:*  
In addition to ensuring that the prices of telecommunications services are fair, regulators are also concerned that consumers should receive a high quality service. In ranking alternative regulatory options, regulators should give preference to mechanisms that result in higher quality service, all else being equal;
- *Ensure telephone prices are competitive with other jurisdictions:*  
This is a relevant objective in countries, such as Singapore, that use telecommunications infrastructure as a tool for competitive advantage. In these countries, telecommunications infrastructure plays an important role in attracting foreign investment. It is therefore important that telecommunications prices are competitive with other possible destinations for foreign investment;

**Box 2.7 Hong Kong SAR, China: Price Regulation**

In January 2005, the Office of the Telecommunications Authority (OFTA) announced the lifting of the prior approval requirement on the dominant operator, PCCW-HKT Telephone Limited's (PCCW-HKT) prices. This change was made by issuing a new fixed carrier (FC) license. Under the new FC license, PCCW-HKT does not have to get its prices approved by the Telecommunications Authority (TA), including moves to offer discounts and other benefits in response to price competition.

This decision reflects a change in OFTA's approach from ex ante regulation to ex post regulation. The change to ex post regulation was prompted by significant changes in market circumstances for the fixed telecommunications service segment in Hong Kong SAR, China since ex ante tariff regulation was first implemented in 1995. Key market changes include:

- Persistent market share erosion for the incumbent,
- The emergence of alternative products, and
- The lowering of barriers to entry.

The TA found that, under the current market circumstances, the existing ex ante tariff approval scheme was no longer effective in facilitating competition. It is implementing ex post regulation through a new Fixed Carrier (FC) license. Under PCCW-HKT's new FC license:

- PCCW-HKT does not have to get its prices approved by the TA, including moves to offer discounts and other benefits in response to price competition. However, any amendments to any published tariff of PCCW-HKT for interconnection, which was in force at 1 December 2004 and continues in force must first be approved by the TA in writing with a view to safeguarding against any anti-competitive interconnection charges. This includes tariffs for:
  - o Interconnection between PCCW-HKT and mobile carrier licensees, public mobile radiotelephone service licensees or personal communications services licensees,
  - o Interconnection between value added services and the public switched telephone network operated by PCCW-HKT,
  - o Broadband copper local loop and exchange co-location services,
  - o Internal protocol — virtual private network services, and
  - o Residential cell relay services.

Interconnection requirements that arise after 1 December 2004 will relate to new networks or products not yet in operation. OFTA considers that existing operators will have had fair opportunity to develop competing products, and so it would be inappropriate to apply ex ante tariff regulation over any such new interconnection requirements.

- PCCW-HKT is required to notify the TA of any discount to its published tariffs at least one day before the discount becomes effective. The exception to this is external call services and external bandwidth services, which have been found non-dominant by the TA in the past, reflecting the absence of competition concerns. The TA may amend the list of services exempted from the requirement of discount notification from time to time,
- The TA can publish a discount notified by the licensee, when "public interest" justifies it, according to consumer, competition and government policy considerations,
- PCCW-HKT must still meet accounting separation requirements. Furthermore, the company is required to supply information sufficient for the TA to establish a reasonable cost basis for the service, including but not limited to the long run average incremental cost (LRAIC) on a current cost basis.

Following submissions in response to the consultation, the TA decided that other existing operators will also have the option of exchanging their existing ex ante license for an ex post FC license. To exercise this option, operators must make a written request to change their license to the TA.

Source: OFTA, Office of the Telecommunications Authority, Hong Kong SAR, China.

- *Generate compensatory earnings:*  
Any regulatory mechanism should provide the regulated company with the opportunity to earn a reasonable profit and to achieve compensatory earnings. If not, the firm may be forced to reduce investment and quality of service may decline.

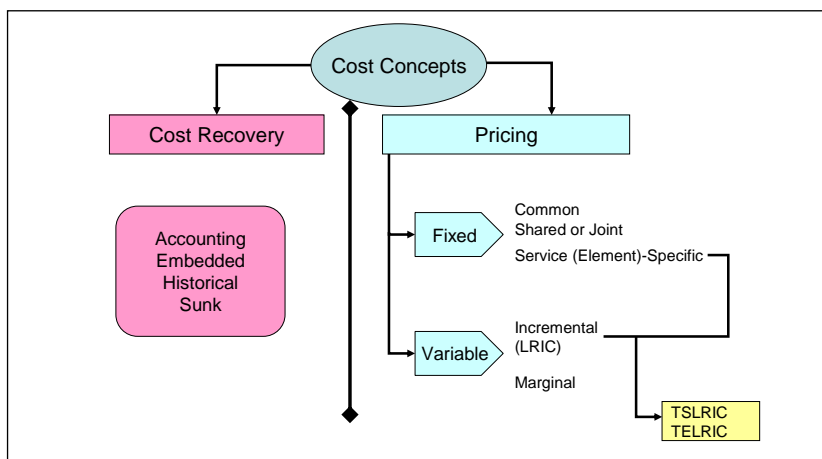
**2.6.2. Measuring Costs**

There is a variety of cost concepts that can be useful in answering key questions about a firm's activities. This section provides an overview of cost measures that are particularly relevant to price regulation, namely:

- Historic costs;
- Sunk costs;
- Forward-looking costs;
- Fixed costs (service specific, shared and common costs);
- Variable costs: marginal costs, incremental cost (including LRIC and TSLRIC);
- Stand-alone cost;; and
- Short and long run cost concepts.

Figure 2.13 shows how these cost concepts relate to each other.

Figure 2.13 Cost Concepts in Regulatory Economics



Source: ICT Regulation Toolkit.

*Historic cost* is an accounting cost measure. The historic cost (or *embedded cost*) of an activity is the sum of the costs the firm actually attributes to providing that activity in a given accounting period. Historic cost reflects what a firm actually pays for capital equipment, its actual costs of operating and maintaining that equipment, and any other costs incurred to provide service during that accounting period.

*Sunk cost* is an economic cost concept, but like accounting cost concepts, measures costs incurred in the past. Sunk costs are historic costs that are irreversibly spent and independent of the future quantity of service supplied. An example of a sunk cost is the cost of a marketing campaign for a new service. Once spent, this cost cannot be recovered regardless of whether the service continues to be provided.

The *economic cost* of an activity is the actual forward-looking cost of that activity. This is the cost of accomplishing that activity in the most efficient way possible, given technological, geographical and other real world constraints. Forward-looking costs are the costs of present and future uses of a firm's (or society's) resources. Only forward-looking costs are relevant for making pricing, production, and investment decisions in the present, or the future.

Costs can be broken into the fixed costs and variable costs of providing a given service.

*Fixed costs* do not vary as the volume of a service provided changes. For a firm that provides several services, fixed costs can be categorized as follows:

- *Service-specific costs*: Costs the firm must incur to provide a specific service. A firm supplying any level of the service would incur service-specific fixed costs, but would avoid these costs altogether by ceasing production of the service.
- *Shared costs*: Costs the firm must incur to provide a group of services. Shared fixed costs do not vary with the level of any individual service in the group, and do not vary with decisions to produce or cease producing any service or subset of services within the group. The firm can avoid shared fixed costs if it no longer provides any of the services in the group.
- *Common costs*: These are fixed costs that are shared by all services produced by the firm. The cost of the president's desk is a classic example of a fixed cost that is common to all services.

*Variable costs* vary with the volume of service provided. Two measures of variable costs are incremental cost and marginal cost.

*Incremental cost* is the additional cost of producing a given increment of output. How much do the firm's total costs change if the volume of a particular service increases (or decreases) by a given amount?

*Marginal cost* is the incremental cost of producing one additional unit of output. Marginal cost is a limiting case of incremental cost, where the increment is a single extra unit of service in addition to the amount currently provided.

Incremental cost is usually considered over the long run. *Long-run incremental cost (LRIC)* is the cost of producing a given increment of output, including an allowance for an appropriate return on capital to

reflect the costs of financing investment in facilities used for interconnection, as well as the capital costs of those facilities.

*Total-service long-run incremental cost (TSLRIC)* is a special case of incremental cost, where the relevant increment is the total volume of the service in question, and the time perspective is the long-run. TSLRIC is the additional cost incurred by a firm when adding a new service to its existing lineup of services (holding the quantities of all those other services constant). For an existing service, TSLRIC measures the decrease in costs associated with discontinuing supply of the service entirely, other things being constant. TSLRIC is equivalent to the concept of total element long-run incremental cost (TELRIC) used in the United States.

*Stand-alone cost (SAC)* is the cost that a stand-alone firm (producing no other services) would incur to produce a particular service. For a single-service firm, TSLRIC and SAC are equal. For a multiple service firm, SAC will generally be greater than TSLRIC, because SAC incorporates shared fixed costs and common fixed costs.

Firms incur costs in the short run or the long run. *Short run costs* are the costs of providing a given service, assuming that the current stock of capital is fixed. Over the long run, firms can vary their stock of capital, e.g., by investing in new plant. The *long run cost* of a service therefore includes the cost of the capital plant required to supply that service.

### 2.6.3. Methods of Price Regulation

Different approaches have been developed over the years to regulate telecommunications prices. Traditionally, in many countries *ad hoc* and discretionary methods were often used to support social objectives. These have increasingly given way to methods involving rules-based approaches which are designed to provide stability and certainty.

#### Rate of Return Regulation

Rate of return regulation is a way of regulating the prices charged by a firm. It restricts the amount of profit (return) that the regulated firm can earn. Rate of return regulation has been used extensively to regulate utilities in many countries. It has been used in the United States since public utility regulation began in the early 1900s.

There are two steps to implementing rate of return regulation:

- First, determine the economically appropriate revenue requirement. This is based on prudently incurred expenses and a “fair” return on invested capital, and
- Second, set prices for individual services so revenue earned from all the regulated services is not greater than the revenue requirement.

#### Calculating the Revenue Requirement

The revenue requirement is generally calculated using the following formula:

$$\text{Revenue Requirement} = \text{Operating Expenses} + \text{Depreciation} + \text{Taxes} + (\text{Net Book Value} * \text{Rate of Return})$$

The rate of return used is the post-tax rate of return the firm is permitted to earn. This is also known as the opportunity cost of investor capital. It is based on a weighted average of the cost of debt and equity financing.

Operating expenses should include only those expenses the firm has prudently incurred to provide the regulated services.

The net book value of the firm’s capital assets should include only those capital assets used by the firm specifically to provide the regulated service. The formula includes an allowance for depreciation, so only the book value of the assets net of depreciation should be included in this amount.

#### Setting Prices for Regulated Services

The regulator needs to set prices that allow the regulated firm to collect its revenue requirement. This requires that the sum of total expected revenue for each regulated service is no greater than the permitted revenue requirement. This can be expressed mathematically as:

$$\sum_{i=1}^N P_i * Q_i \leq RR$$

Where  $P_i$  and  $Q_i$  are, respectively, price and quantity of service  $i$  and  $N$  is the total number of regulated services.  $RR$  is the revenue requirement

As indicated in the formula above, in order to calculate prices under rate of return regulation, the regulator first needs a reasonable forecast of demand for the regulated services.

For a multiple-service firm, there is an element of discretion in allocating the revenue requirement amongst different services. As a guiding principle,

the regulator should ensure that prices of individual services are set at prices that minimize distortion of customer behavior.

The costs used to determine prices under rate of return regulation are the actual embedded costs of the firm, not forward-looking economic costs.

Under rate of return regulation, the firm can request rate increases if, for whatever reason, it believes revenues are not sufficient to achieve a normal return on invested capital.

### **Incentive Regulation**

The term “incentive regulation” refers to the types of regulatory mechanisms that seek to improve on the weak incentives for efficiency in traditional rate of return regulation.

Incentive regulation includes:

- Banded rate of return regulation;
- Earnings sharing;
- Revenue sharing;
- Price freezes;
- Rate case moratoriums;
- Pure price caps; and
- Hybrid price caps.

#### *Banded Rate of Return Regulation*

With banded rate of return regulation, the regulator specifies a range of authorized earnings for the regulated firm at the beginning of the regulatory period. If actual company earnings fall within the range, the company’s prices are considered to be fair and the regulator does not intervene.

If the firm’s earnings fall outside the permitted band the regulator intervenes in the following cases:

- If earnings are higher than the permitted ceiling, the firm must share these gains with its customers;
- If earnings are lower than the floor, the company is permitted to increase rates.

Prices are thus initially set so that earnings fall within the permitted band, and price adjustments are required only if earnings fall outside the defined range.

Banded rate of return regulation is not a common form of price regulation. This is because banded rate of return shares most of the weaknesses of traditional rate of return regulation. It does not eliminate the need for frequent rate hearings and

does little to provide incentives for the regulated firm to reduce costs, unless the regulator defines a very wide band.

#### *Earnings Sharing*

Earnings sharing is similar to banded rate of return regulation, but uses a more precisely defined mechanism for sharing excess profits with customers. The regulator defines a band (referred to as a “deadband”) within which the firm is free to keep all earnings. Earnings above or below some deadband are shared in various proportions between the company and the customer.

The deadband under “earnings sharing” tends to be wider than under “banded rate of return regulation”. As a result, the firm has greater incentives to achieve productivity growth and increase efficiency.

Some regulators have used earnings sharing mechanisms when a price cap plan is first introduced, to reduce the risk to customers and the firm of moving to a new form of regulation.

For example, earnings sharing plans were popular forms of incentive regulation and were a component of some of the initial price cap plans implemented in the United States. However, earnings sharing does dilute the incentive efficiency properties that exist under a pure price cap regime and, as a result, companies and regulators have moved away from this form of incentive regulation.

#### *Revenue Sharing*

Revenue sharing regulation is not common. Revenue sharing requires the regulated firm to share with customers any revenues over a specified threshold. This contrasts with earnings sharing regulation in which regulated firms are required to share earnings net of costs. Typically the regulated firm retains all of its revenue provided that its total revenue does not exceed a specified threshold. The firm must share some proportion of any revenue generated above that threshold with its customers.

#### *Price Freezes*

A price freeze specifies that a company’s prices cannot change within a defined period of time. At the end of the defined period, the regulator may undertake a rate review. The ability to capture any additional profit during the period of a price freeze gives the firm an incentive to reduce its costs.

Regulators tend to use price freezes in conjunction with other forms of regulation, especially price cap

regulation. In telecommunications, price freezes in a price cap plan usually apply to basic residential service. These services have historically been set at low levels due to universal service concerns and there is often a desire to maintain that policy under a price cap regime.

*Rate Case Moratoriums*

A rate case moratorium is an agreement between the regulator and the regulated company to abstain from general rate increases for particular services. A rate case moratorium usually also suspends investigations of the firm’s earnings, guaranteeing the regulated firm that profits made at current prices will not be taken away.

A moratorium imposes a regulatory lag. This is intended encourage the regulated firm to reduce operating costs, because the firm will be able to retain the resulting increase in earnings. The length of a rate case moratorium is typically between two and five years, and is usually specified in advance.

*Pure Price Cap Regulation*

Under price cap regulation, the regulator controls the prices charged by the firm, rather than the firm’s earnings. This focus on prices (and not profits) is what provides for improved efficiency incentives.

The regulator determines an annual price cap formula. This formula determines whether prices should change in each annual period, and by how much. The regulator usually specifies in advance how long the formula will apply for.

Under a typical price cap, the regulated firm is permitted to alter its average price for a basket of regulated services at the rate of the general level of inflation minus an efficiency factor based on the regulated firm’s expected efficiency (the “X-factor”). Some regulators also allow the firm to adjust for changes in costs beyond its control, by including an exogenous cost component in the price cap formula (the “Z-factor”).

An example of a price cap formula is set out below:

$$PCI_t = PCI_{t-1} * [1 + CPI - X \pm Z]$$

In the above formula, PCI<sub>t</sub> and PCI<sub>t-1</sub> are the price cap index in the current year and the previous year, respectively. CPI is the Consumer Price Index (or an alternative index of inflation). X and Z are adjustments for expected efficiency gains and for exogenous costs, as discussed above

Price caps have a number of advantages over other forms of regulation that focus on the firm’s realized earnings. The fact that the regulated firm is permitted to retain any realized earnings creates strong incentives to improve efficiency and reduce costs, beyond the level required by the X-factor. The infrequent reviews of the price cap formula reduce regulatory costs (by avoiding frequent rate cases), and encourage the firm to implement strategies to reduce costs in future periods, as well as in the current year. Finally, under price cap regulation, the regulated firm has much more flexibility in the prices that it can charge its customers as long as average prices do not exceed the cap.

Regulators around the world have used price caps extensively in the telecommunications industry. The regulator in the United Kingdom introduced price caps in 1984, and they are now increasingly common in the rest of Europe. In the United States, price cap regulation began replacing traditional rate of return regulation for telecommunications carriers in 1989. By the mid to late 1990s, nearly every state had a price cap regime in place for the telecommunications industry.

*Hybrid Price Cap*

Under a hybrid price cap scheme the regulator combines a price cap mechanism with a mechanism that uses realized earnings to determine prices. The most common type of hybrid price cap is one where the regulator sets a price cap formula and an explicit earnings sharing requirement. If the firm’s regulated earnings exceed a certain threshold then it must share part of the gains with customers. Conversely, if earnings fall below the threshold, a share of the losses falls on customers. This provides the firm an incentive to improve its efficiency, while also addressing concerns about excessive profits (for example, if the regulator sets an X-factor that subsequently appears to be too generous).

**Rate of Return Regulation vs. Price Caps**

Table 2.1 compares the advantages and pitfalls of rate of return regulation and price caps, against the regulatory criteria discussed in this section.



**Table 2.1 Comparing Rate of Return and Price Cap Regulation**

	Rate of return (ROR)	Price cap
<b>Prevent exercise of market power</b>	<b>Yes.</b> The regulated firm can only earn a normal rate of return.	<b>Yes.</b> The CPI-X constraint in the price cap formula prevents the firm from exercising market power (if chosen with care). The firm may exercise market power in prices for individual services, provided that the average price of the basket of services is within the cap. Some regulators impose additional caps on individual services to prevent this.
<b>Technical efficiency</b>	<b>No.</b> The regulator directly controls profits. If the firm lowers costs by becoming more efficient, and so increases profits, prices will be lowered in the next rate case. The firm will not reap the benefit from reducing costs and so has no incentive to do so.	<b>Yes.</b> Firms are automatically rewarded with higher earnings when they reduce costs or expanding demand (and penalized when costs increase). This encourages efficient behavior
<b>Allocative efficiency</b>	<b>No.</b> Prices usually based on embedded costs, not forward-looking costs. Prices for individual services need not equal the costs of the service.	<b>Yes.</b> Firms have flexibility to set prices for individual services based on forward-looking costs. It is possible for individual prices to deviate from costs, particularly if the X-factor is set incorrectly.
<b>Dynamic efficiency</b>	<b>No.</b> The firm does not retain any increase in profit from introducing new technology or services, and so has no incentive to do so.	<b>Yes.</b> The firm has incentives to invest efficiently, because it must justify its investment on the profits it expects to earn from the investment (like firms in competitive markets).
<b>Promote competition</b>	<b>No.</b> Does not generally permit pricing flexibility for the firm to set prices to reflect forward-looking costs in response to competition. Compared to price cap regulation, the firm is better able to misreport costs between competitive and non-competitive services, in order to cross-subsidize competitive services.	<b>Yes.</b> The firm is less likely to cross-subsidize services. It is common to group regulated services into separate baskets for less competitive and more competitive services, preventing cross-subsidization. The firm has sufficient pricing flexibility to respond to competitive pressures by setting prices that reflect underlying costs and demand conditions
<b>Minimize regulatory costs</b>	<b>No.</b> Rate proceedings are often lengthy and resource intensive.	<b>Yes.</b> Price cap proceedings are less costly than rate proceedings, and are infrequent (once every 3 to 5 years). Between reviews, regulatory costs are low.
<b>Ensure high service quality</b>	<b>Yes.</b> The higher the net book value of the firm's assets, the greater the return it is permitted to earn. There is a risk that service quality may be higher than efficient levels.	<b>No.</b> Firms have strong incentives to reduce operating costs, which may lead to reduced service quality
<b>Prices competitive with other jurisdictions</b>	<b>No.</b> Prices are generally set with no reference to prices in other jurisdictions.	<b>No.</b> Prices are generally set with no reference to prices in other jurisdictions.
<b>Generate compensatory earnings</b>	<b>Yes.</b> Rate of return regulation ensures that the regulated firm generates sufficient compensatory earnings.	<b>No guarantee.</b> If the X-factor is chosen correctly and the firm performs, the firm should generate sufficient compensatory earnings. A sound price cap penalizes the firm for business mistakes or poor performance.

#### 2.6.4. Benchmarking Prices

International benchmarking is the process of establishing the price of a service based on prices in other jurisdictions. Benchmarking can be used as a common sense check on the results of cost models (see Box 2.8). Alternatively, it can be used directly to set prices.

For example in Singapore, the price SingTel can charge is based on the prices of telephone services in

neighboring Asian countries, New York, and London.

Benchmarking involves the following:

- *Selecting a sample of countries or operators* (countries used in the benchmark should be at similar stages of socio-economic and industry development as the country whose interconnection rates are being considered);

A Level Playing Field

- *Gathering price data* for the service(s) under consideration in each of the sample countries; and
- *Adjusting benchmarked rates* to account for differences between the country being regulated and the benchmark countries.

While using benchmarking for tariffs, it is important to take into account the various factors that can justify differing tariff cost structures. For instance:

- The size of populations, subscriber density and geographical dimensions of the territory are key factors that influence costs.
- Different topographies may cause significant cost differences. For example, providing

coverage and capacity will be more costly in areas with mountains, compared to level terrains.

- Differences in cost structures can reflect different rents for premises and offices, labor costs, tax, etc.
- Differences in traffic demand and patterns influence network structure, network dimensions, and, therefore, underlying costs.
- Spectrum licensing costs and the availability of spectrum may vary.

Figure 2.14 illustrates decisions that may be necessary when benchmarking is used to determine a competitive level of tariffs.

Figure 2.14 Benchmarking Issues

Issues	Services to be benchmarked	Currency Conversions	Assumptions	How were tariffs set?	What is the benchmark?	Application of a benchmark
Options	<p>Mobile termination</p> <ul style="list-style-type: none"> <li>• Averages</li> <li>• Peak, off-peak</li> <li>• Minutes</li> <li>• Fixed charges</li> </ul>	<ul style="list-style-type: none"> <li>• PPPs</li> <li>• Exchange Rates</li> <li>• Mix</li> </ul>	<ul style="list-style-type: none"> <li>• Call durations</li> <li>• Peak/Off-peak shares</li> <li>• Cost taken into account</li> </ul>	<ul style="list-style-type: none"> <li>• Commercial agreements</li> <li>• Regulatory Decisions</li> </ul>	<ul style="list-style-type: none"> <li>• Average</li> <li>• Best</li> <li>• 3<sup>rd</sup> best</li> <li>• Best per class</li> </ul>	<ul style="list-style-type: none"> <li>• Same for all operators</li> <li>• Operator-specific</li> <li>• Reactions to changes</li> </ul>
Remarks	Different results are possible	<ul style="list-style-type: none"> <li>- Labour costs</li> <li>- Investment costs</li> </ul>	Factors vary across countries	Different results are possible	Justification	<ul style="list-style-type: none"> <li>- Distribution of market shares differ</li> <li>- Review of Benchmark</li> </ul>

Source: ICT Regulation Toolkit.

**Recommendations**

Benchmarking of tariffs is recommended in cases where there is no available costing data, or only rudimentary data is available, and a decision has to be taken in a very short time frame. The methodology is relatively easy and requires a limited set of input data. It is especially important that the costing methodology of the underlying benchmarks is known, as there is a risk that benchmarks will be based on other benchmarks.

In benchmarking, regulators should choose methodologies used in countries in the same region, or countries with comparable circumstances. This helps ensure that the selected methodologies are relevant and useful. Benchmarking of input data should include checking that the input parameters for costing models reflect international best practices. Several public data sources should be used, and the variety will ensure a higher quality for input data.

### **Box 2.8 The Bahamas: Benchmarking of International Long Distance (ILD) Call Prices**

In May 2006, the Public Utilities Commission of The Bahamas authorized The Bahamas Telecommunications Company (BTC) to introduce reduced prices for International Long Distance (ILD) calls as part of a wider price rebalancing program. The decision was informed by price benchmarking. This box summarizes the justification for resorting to benchmarking, the methodology employed, and the Commission's final decision.

#### **Background**

BTC is the dominant fixed operator and holds an exclusive license in cellular mobile services. System Resource Group (doing business as IndiGO Networks) operates a fixed radiocommunications systems offering local access, International Long Distance (ILD) and Domestic Long Distance (DLD) calls in competition with BTC.

The government of The Bahamas mandated the state-owned BTC to gradually rebalance its prices, to make them more cost reflective). In January 2005, BTC made a formal application to increase monthly prices for telephone lines and reduce prices for ILD calls. In analyzing BTC's application, the Commission was required ensure that rebalanced prices were not anti-competitive. For those services where BTC faces competition this means rebalanced prices must not be below cost.

#### **Reason for Benchmarking**

In support of the application, BTC estimated the forward-looking economic costs it incurred to provide services along with details of the cost standard and principles underlying those estimates. As is the experience in some other Caribbean markets, the Commission encountered delays in completing its examination of the forward-looking cost study.

The Commission is required by statute to act in a timely manner. Rather than delay price rebalancing, the Commission sought to make its decision based on existing information. The Commission was able to approve increases in monthly prices for telephone lines based on historic cost data available to it. However, no such data existed for ILD calls. The Commission therefore used price benchmarking to evaluate the proposed decrease in ILD prices.

#### **Benchmarking Methodology**

The purpose of the benchmarking exercise was to establish whether the prices proposed by BTC were above or below the efficient cost incurred by operators in competitive markets to provide ILD services. Prices in competitive markets are assumed to be reasonable proxies of the efficient cost of providing ILD services.

The study compared BTC's proposed prices with prices in 16 countries with both competitive and monopoly markets in ILD services. Of the 16 countries, 13 had competitive ILD markets while liberalization had not yet occurred in the remaining three countries (Antigua & Barbuda, Turks & Caicos Islands, British Virgin Islands). There were also disparities amongst the countries, in population, network size, geography/topography, and income.

#### **Countries were selected based on:**

- Their economic importance to The Bahamas (the United States, Canada, the United Kingdom, and Switzerland are The Bahamas' principal trading partners),
- Per capita income (high income island economies with per capita GDP of \$17,000 to \$40,000 — Guernsey, British Virgin Islands, Barbados, Bermuda, Cayman Islands), and
- Economic structures that were similar to The Bahamas (Antigua & Barbuda, Turks & Caicos Islands, Cayman Islands, Barbados, Bermuda, British Virgin Islands, Anguilla, Jamaica, Dominica, St. Vincent & Grenadines, and Grenada). These regional economies compete with the Bahamas in tourism and or financial services.

The main findings of the benchmarking exercise were:

- The price of making a call from The Bahamas to countries with competitive ILD markets were significantly higher than the price customers in competitive markets paid to make a call to The Bahamas,
- Customers in countries with competitive ILD markets paid significantly lower prices to make telephone calls to The Bahamas than their counterparts in monopoly markets,
- BTC's existing and proposed prices were more comparable to prices in monopoly markets.

#### **Commission's Decision**

The Commission concluded that the prices proposed by BTC were not below the efficient cost incurred by BTC to provide ILD calls. The Commission also took note of the disparities between the countries. It concluded that limited competition in the market, coupled with BTC's pricing structure were the principal reasons why BTC's existing and proposed prices were comparable to prices in monopoly markets.

The Commission noted that BTC's proposed prices were still high by international standards. However, BTC indicated in its response to the Commission's public consultation document that it proposed to apply for approval for further reductions in prices for international and domestic long distance calls.

As a result, the Commission saw no justification to deny BTC's request to reduce ILD prices. The Commission granted approval for BTC to introduce the proposed prices, and modified Schedule 1 of BTC's License accordingly.

**Source:** Public Utilities Commission of The Bahamas.