



CERP  
Recommendation on best Practices for  
Price Regulation

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## Introduction

Pricing is a key issue for economic regulation. Inappropriate prices give wrong signals to the market, encourage inefficient entry, prevent or distort competition, and lead to inadequate use of the regulated products or services.

Price control should encourage prices that reflect what would be observed in a competitive environment. The principal decision is to determine the form of the price control to adopt. The list below sets out common regulatory goals of the regulator, which provide useful criteria when assessing regulatory options:

- Prevent the abuse of market power – Where competitive forces are insufficient, an important goal of regulation is to ensure that prices are just, i.e. legitimate and fair.
- Achieve economic efficiency – The regulatory mechanism chosen should improve economic efficiency.
  - Productive efficiency requires that products and services to be produced in the regulated industry at the lowest possible cost. It ensures that scarce resources are not wasted.
  - Allocative efficiency requires that the prices observed are based on the underlying costs that community incurs to produce those products and services. It ensures that the optimal amount of the product or service is consumed, given supply and demand conditions. It also ensures that firms have incentives to invest in the proper technologies and that they develop appropriate products and services.
- Promote competition – Where the legal framework permits competition, it is important that a price control at a minimum does not harm competition.
- Minimize regulatory cost – All else being equal, regulators should choose the control mechanism that is least costly to implement.
- Ensure high service quality – All else being equal, regulators should give preference to control mechanisms that result in higher quality.

The optimal price control regime for a given industry depends on its own characteristics. In line with the current and common practice of the European regulators, the European Committee for Postal Regulation (CERP) decided to make and publish recommendations for price regulation, but acknowledges that other regulatory options for price control exist, in particular rate of return regulation.

This document identifies best practices in relation to the particular current circumstances of the postal services in Europe as they are operating in different types of markets from partially liberalized ones to markets that are already fully opened to competition. To reflect the changing markets price controls need to be revised. The report is based on a review of the existing literature and on the knowledge and experience accumulated within the project team. It also refers to experience in regulating other network industries, such as telecommunications and electricity.

Various kinds of price regulation in European countries can be identified. A number of models are commonly referred to but all are derivatives of the two basic forms and three types below:

- *ex ante* price regulation:
  - *ex ante* price approval,
  - price cap (respectively price floor) regulation,
- *ex post* investigations.

The purpose of this document is to help European postal regulators to identify the most appropriate price regulation mechanisms for their respective markets. It firstly reviews the diverse pricing principles to be accepted and implemented (chapter 1). Since price control does not extend equally to the markets being opened and to the markets already fully open to competition, the document considers market segmentation as well (chapter 2). It then examines the characteristics of *ex post* price investigation (chapter 3), *ex ante* price approval (chapter 4) and price cap, respectively price floor (chapter 5). It subsequently details the advantages and drawbacks of each type of price regulation (chapter 6). The final section of the document (chapter 7) summarizes in conclusion the recommendations.

## Chapter 1 – Pricing principles

### 1. 1. Justification for price regulation

Economic literature agrees that in an ideal competitive marketplace efficient prices occur that cover total costs and tend to align prices with marginal costs. Price regulation is typically justified when the market fails to produce competitive prices. Its objective is to mimic the results of efficient competition.

Price regulation may also support other objectives, for example as a justification to regulate the universal service obligations imposed on operators or on the market, as it is the case for postal services market. Thus, in general, regulation of an operator may be desirable to control market power and to address the asymmetry between the operator objectives and policy objectives. Regulation may also be used as a control if the operator has an information advantage, generally referred to as an information asymmetry.

For example, policy objectives may be primarily concerned with new investments or with universal service concerns, characterized by a permanent provision of services, widely accessible to all consumers, at affordable prices, at a specified quality level. An operator is likely to seek to maximize its profits. This profit objective is generally understood to be inconsistent with widely available services at low prices across a defined geographic area in a situation where the operator has market power.

To overcome the asymmetry of information, several regulatory approaches may be applied. Regulators can seek to end market power by subjecting the operator to competitive pressure or they can gather information about the operator and the market and control market power through incentive regulation. In the second case, incentive schemes are designed to persuade service providers to apply their information in ways to achieve desired regulatory goals. Incentive regulation uses the information advantage and the profit motive of the service providers. The regulator controls less the behaviour but rewards outcomes.

When operators are subject to competitive pressures, the profit seeking operator has an incentive to provide service quality and price levels that are best for customers, bearing in mind the need to cover its costs. Competition may thus limit the operator's ability to raise prices.

However, even with the introduction of competition, operators may still retain market power, especially in certain market segments, thus influencing market conditions.

In the postal services market and other service markets where one or several operators have market power and are capable to expand their market power, limit competition or act against consumer interests, the actual or potential problems are usually related to pricing (e.g. excessive prices, predatory prices and price discrimination) and quality (e.g. discrimination by quality, deterioration of quality). An operator with market power has lower incentives to improve its performance which may result in inefficiencies and a lack of investment.

Prices are considered **excessive** if they are well above the costs that are accepted for regulatory purposes, for example costs resulting from an efficient provision of services as set out in chapter 1. 2. 3 and including the cost of capital. Operators with market power or monopolistic operators tend to fix prices well above costs with the aim to maximize their

profits. This behaviour of profit maximisation has as a consequence the reduction of the consumer's welfare, and the economy's welfare and of the social welfare overall. The concept of universal service requires prices to be **affordable**, and so **excessive prices** are not consistent with universal service obligations.

In general terms, **predatory pricing** is the practice of providing services at prices that are set below costs in order to drive competitors out of a market, so as to monopolize the market.

**Price discrimination** occurs when two or more identical services (a) with the same production costs are sold at different prices or (b) with different production costs are sold at the same prices.

Regulatory theory identifies three degrees of price discrimination which are not mutually exclusive:

- The price varies depending on the customer given the fact that the value of goods is subjective. This type of price discrimination is theoretical because it requires the operator to know the maximum willingness to pay of each user. In a market with first degree price discrimination, the producer absorbs the entire market surplus, thus taking it from the consumer and transforming it into producer revenues. From a social welfare perspective, first degree price discrimination is not undesirable, however, it is the complete opposite of a perfectly competitive market, since customers receive no, or a very small amount of a, surplus.
- The price varies according to the quantity sold: larger quantities are available at a lower unit price yet every consumer who buys the same quantity pays the same price. Quantity discounts, or non-linear pricing, is a means used by suppliers to distinguish classes of consumers. This allows the supplier to set different prices to the different groups and capture a larger portion of the market surplus.
- The price varies by location or by customer segment yet every unit of output sold to a certain person is sold at the same price. This is also known as Ramsey pricing.

In some situations price discrimination may be efficient in the way that differences in prices allow customers to buy more of the service, as is the case of Ramsey pricing. Under this pricing strategy operator charge higher prices to customers with inelastic demand and lower prices to customer with elastic demand since customers with inelastic demand do not change significantly their demand when the operator changes its prices whereas customers with elastic demand change significantly their demand when the operator changes its prices. Ramsey pricing may however be inconsistent with policy objectives. For example, in the case of universal postal service obligations, prices of universal postal services must be non discriminatory.

Incentive regulation is generally implemented by controlling the price level of the service(s) provided by the operator(s). Some schemes that can be applied are classified as rate of return regulation. Under rate of return regulation an overall price level is established that allows the operator to receive certain level of profits. Other schemes are identified as price cap regulation, a method that establishes the operator's overall price level by indexing the price level according to inflation minus an offset called X-factor, and revenue cap regulation where the inflation-minus-X formula applies to revenue rather than to prices.

Incentive regulation involves also financial analysis, including the determination of the operator's cost of capital, historical costs and projected costs, as well as accounting separation, which consists of separating the costs, revenues and capital employed of regulated services from those of non-regulated services.

## **1. 2. Pricing principles**

In addition to controls over the price levels that regulated operators can charge, pricing principles are used to set the price of an individual service as to prevent the cases of excessive pricing or predatory pricing.

The Postal Directive (Directive 97/67/EC, amended by Directive 2008/6/EC) establishes in art. 12 that the tariffs for each of the services that form part of the universal postal service shall comply with the following principles:

- prices shall be cost-oriented;
- prices give incentives for an efficient universal service provision;
- prices shall be transparent and non-discriminatory.

According to the same art. 12, “policy” objectives shall be taken into consideration:

- prices shall be affordable and must be such that all users, independent of geographical location, and, in the light of specific national conditions, have access to the services provided;
- whenever necessary for reasons relating to the public interest (Recital 38 of Directive 2008/6/EC), EU Member States may decide that a uniform tariff shall be applied, throughout their national territory and/or cross-border, to services provided at single piece tariff and to other postal items. However, the application of a uniform tariff shall not exclude the right of the universal service provider(s) to conclude individual agreements on prices with users.

Whenever universal service providers apply special tariffs, for example for services for businesses, bulk mailers or consolidators of mail from different users, they shall apply the principles of transparency and non-discrimination with regard to both the tariffs and to the associated conditions. The tariffs, together with the associated conditions, shall apply equally both between different third parties and between third parties and universal service providers supplying equivalent services. Any such special tariffs shall also be available to users, in particular individual users and small and medium-sized enterprises, who post under similar conditions (art. 12 of the Postal Directive).

### **1. 2. 1. Transparency and non-discrimination**

Service providers, including universal service providers, with market power may have the possibility to discriminate between its customers – individual clients, businesses, bulk mailers, consolidators and other type of customers. In order to monitor potential discrimination, the obligation of the service provider to publish information about the prices and the general conditions of the services is a complement for the principle of non-discrimination.

## 1. 2. 2. Cost orientation

The principles of transparency and non-discrimination, *per se*, do not limit the incentive for service providers with market power to fix excessive prices. Thus, the principle of cost orientation is important to prevent abusive situations and protect consumers' interests. It is also important to prevent the application of predatory prices that are detrimental to competition.

Furthermore, unbalanced price structures are not sustainable in a competitive environment. New competitors will generally enter those market segments where profit margins are highest. Incumbent operators will be under pressure to reduce cross-subsidies or risk losing customers in the more profitable market segments.

Unbalanced price structures are also inefficient in that higher-than-cost prices encourage uneconomic entry by high-cost operators. Lower-than-cost prices discourage economic entry, even by low-cost operators.

The clarification on the concept of cost-orientated prices given by the EC for the telecom sector is "cost orientation of tariffs means as a general rule that prices are adjusted such that revenues are balanced with costs" (see Commission Decisions 97/114/EC, 97/310/EC, 97/603/EC and 97/607/EC).

In Case C-55/2006 (OJ C 142, 07.06.2008, p. 3), which is related to costs to be taken into account in establishing rates for unbundled access to the local loop, according to the Advocate General (Opinion, n° 31) "*the concept of cost-orientation... follows from the requirements both of the uniform application of Community law and of the principle of equality, that it is, therefore, an autonomous concept of Community law which must be interpreted in a uniform fashion. An autonomous and uniform interpretation of that kind must be sought taking account not only of the terms constituting the concept in question, but also of the context of the provision of which it forms a part and the aim of the regulations in question*". According to the Judgement (§ 69), the principle that rates are to be set on the basis of cost-orientation, "*...is to be understood as the obligation on notified operators, in the course of the gradual opening of the... market to competition, to set those rates in accordance with the costs incurred..., while deriving a reasonable return from the setting of those rates in order to ensure the long-term development and upgrade of existing... infrastructures*".

Until the present moment it is not known such kind of clarification towards postal services. However this interpretation might be considered, with the necessary adaptations, in the postal sector.

Notice from the Commission on the application of the competition rules to the postal sector and on the assessment of certain State measures relating to postal services 98/C39/02 (OJ C 39, 06.02.1998, p. 2) states that "*the price of competitive services offered by the... [USP] should, because of the difficulty of allocation of common costs, in principle be at least equal to the average total costs of provision. This means covering the direct costs plus an appropriate proportion of the common and overhead costs of the operator*".

Taking into consideration previous EC Decisions and Court Cases – for example: Decision 2001/354/EC (OJ L 125, 05.05.2001, p. 27), Joint Cases C-83/01 P, C-93/01 P and C-94/01 P (OJ C 200, 23.08.2003, p.4), Decision 2002/753/EC (OJ L 247, 14.09.2002, p. 27) – although

not related to the definition or interpretation of the principle of cost-orientation of prices, it can be concluded that a postal operator operating under normal market conditions should establish prices in order to at least cover the variable costs of the service, an appropriate contribution to the fixed costs arising from the use of the network and an adequate return on the capital employed.

Price regulation may also have the objective to protect consumer or public interests. The affordability principle used to ensure accessibility of users to universal postal services, may be an example. In this regard, the Postal Directive foresees that when necessary for reasons relating to the public interest, Member States may decide that a uniform tariff shall be applied, throughout their national territory and/or cross-border, to services provided at single piece tariff and to other postal items. In this case the possibility for a cross-subsidy is accepted, i.e. higher cost areas subsidized by lower cost areas. Another possibility is cross-subsidies from other services. Both cases need to be subject to the provisions of the Treaty of the European Union.

### **1. 2. 3. Efficiency**

Efficiency can be measured in different ways:

- Productive efficiency: requires that products and services should be produced in the regulated industry at the lowest possible cost, ensuring that scarce resources are not wasted;
- Allocative efficiency: requires that the prices observed are based on the underlying costs that community incurs to produce those products and services, thus reflecting their relative scarcity. This ensures that the optimal amount of the product or service is consumed, given supply (cost) and demand conditions;
- Dynamic efficiency: requires that service providers should have the incentives to invest in new type of efficient technologies and resources, and develop appropriate products and services.

Thus, ideally, in competitive markets efficient prices ensure that customers pay the true economic value of the services they buy and that community's scarce resources are used as best as possible. Efficient prices would equal the benefit that consumers get from the last unit consumed and the cost of producing the last unit supplied, i.e. the marginal cost.

The postal services market is different from a perfect competitive market which is characterised for example by the existence of several suppliers and buyers, without market power to affect prices. Postal service providers usually are network-operators providing several services.

Prices for postal services must recover the variable costs of the service, plus a mark-up to recover the service's fixed costs and common costs, and an adequate return of capital employed to ensure the dynamic efficiency.

### **1. 2. 4. Uniform tariffs**

Uniform tariffs are often applied by postal operators, even when there is no regulatory obligation.

The term “uniform tariffs” could be explained as follows: uniform tariffs refer to a postage rate that, for a given class of service, does not vary according to the range of destination even though it may vary according to the weight, size etc. (*The Evolution of the Regulatory Model for European Postal Services*, WiK-Consult, 2005). Maintaining uniform tariffs could be required in order to ensure the equal opportunity of every individual customer to consume the services within the scope of universal postal service irrespective of the distance or isolation of the area of living.

In any case imposing of such requirement should be done after assessment of the impact of any adjustments that the universal service provider may make in the delivery of services in isolated areas or areas receiving little mail.

### **1. 2. 5. Affordability of prices**

The affordability of prices is a general characteristic of the universal postal service. The content and criteria of price affordability is not defined in the specific sector regulations at EU level but is supposed to be defined dynamically and flexibly by each Member State.

Despite of the fact that until the present moment there is no adopted objective standard or definition for “affordability”, the affordability of prices of universal postal service still could be assessed based on certain criteria. Affordability could be ensured for example by linking the evolution of the price level of the universal postal service to the evolution of the consumer price index or an index of the change of the costs (price cap regulation).

An essential feature of price affordability research is an analysis and assessment from the user point of view, i.e. the ability of all users, businesses as well as consumers, to afford the services at certain prices and at their desired rate. The rate of consumption can be measured for instance by expenditure spent on postal services for a given period or by the volume of mailing services used by a user. This to reflect different measures of affordability either by volumes and individual prices or by spending that are in use.

During the process of defining the requirement for the affordability (i.e. prices of which group of services from the scope of the universal postal service should be affordable respectively concerning to which type of customers the affordability should be assessed) different factors need to be taken into account, such as: the existing system for formation of the price of universal postal service, targeted quality standards for the provision of the UPS, operators’ performance and other social and economical aspects from the regulatory framework.

As well as protecting the interests of private consumers, consideration needs to be given to the affordability of postal services for business customers, and particularly SME.

### **1. 3. Conclusion**

The application of pricing principles – e.g. the requirement for cost-orientation, efficiency, transparency and non-discrimination – and at an overall level the approaches to price regulation, cannot be taken in isolation from the market conditions, the financial conditions of the operators and of the policy objectives defined in the legal framework.

## Chapter 2 – Market segmentation

### 2. 1. Introduction

Concerning the European Union member states, this chapter must be read in conjunction with and within the limits imposed by the Postal Directive.

Market segmentation of postal services involves the grouping of products and services that share one or more characteristics (such as customer type, speed of delivery and format) and exhibit some competitive constraint on each other. For example, it is logical for two postal products that share the same format and delivery speed to belong to the same market or segment if the price of one product constrains the price of the other. Conversely, if two postal products differ to such an extent that they are not deemed to be substitutes for each other, then it would be logical to place these products in separate markets or segments. In these circumstances, the process of determining the grouping of postal products is the same as defining the relevant postal market(s).

The outcomes of the market definition exercise will influence the appropriate pricing regulation, i.e., whether prices should be regulated *ex post* or *ex ante*, and if *ex ante*, whether price approval or price cap regulation is appropriate. The market definition would also determine the appropriate basket of products for the price cap formula. As explained in Chapter 5, products offered in market segments with different intensity of competition should be grouped in separate baskets.

### 2. 2. Tools for market definition

The goal of market definition (both from the product and geographical point of view) is the assessment of the relevant market. The relevant market is that set of products (within a geographical region) that exercise some competitive constraint on each other. The hypothetical monopolist or SSNIP test (Small but Significant Non-transitory Increase in Price) is widely used as a framework for market definition purposes in both product and geographical dimensions. This test seeks to identify the smallest relevant market within which a hypothetical monopolist could impose a significant increase in price and profit from it on the long run.

In applying this test, the question is whether a hypothetical monopolist of a product *A* would find it profitable to increase its price above the competitive level by 5-10%. If the answer is affirmative, product *A* does not face any significant competitive constraints from other products, i.e. product *A* should be considered as a separate market. If, on the other hand, an increase in prices of product *A* redirects demand to product *B*, then a wider market of products *A* & *B* together should be considered. In the new market, the same question of whether a hypothetical monopolist would find it profitable to increase profitably the price of each one of products *A* & *B* separately above their current level by 5-10%, is set. If that rise is profitable, the market consists of products *A* & *B*, otherwise the test continues to include any further products that exercise a constraint on the products already included in the market. In those cases where a firm is investigated for alleged abuse of dominant position, the test should ask whether the hypothetical monopolist could profitably increase prices, not from current prices, but rather from competitive prices.

Competitive constraints on a group of products under investigation might be exercised, not only by products perceived by consumers as substitutes (demand side substitutability), but also by suppliers of different products who possess skills and assets to switch production in a short period of time if a price rise occurs (supply side substitutability). Switching production should not incur considerable sunk costs and any barriers to entry could be overcome in a quick and costless way.

### **2. 2. 1. Implementation Issues**

In implementing the hypothetical monopolist test, an estimate of a product's price elasticity of demand is needed for determining the potential effect of the hypothetical price increase. Low price elasticity indicates that few consumers will turn to competitive products and the price rise would be profitable. Taking into account the impact of different variables (e.g. price and availability of other products, disposable income) on product demand requires the formulation of an econometric model. A sufficient amount of data should be used in price elasticity estimation, paying considerable attention in the time-window used, since consumers do not react immediately to a price change. Also, estimation of cross-price elasticity is a useful tool in understanding the competitive constraints exercised by other products on the product under study. A high estimate of cross-price elasticity of a product indicates that a monopolist will not profitably raise prices, but also it helps to identify the closest substitutes, which may form part of the new market subject to the next stage of the hypothetical monopolist test.

A useful screening device in highlighting those products which are not part of the same market is the price series correlation coefficient (price correlation test). If the correlation coefficient between two products is below a certain threshold, there is a strong indication that these two products belong to different markets. Various versions of price correlation test have been reported, depending on the analysis variable (price, price difference or any appropriate transformation of the price). It is recommended to repeat the test with different time-spans to check result's robustness. The price correlation test is sensitive to the existence of common factors, which induce similar movement in prices of products that are in different markets. Therefore, it is not recommended to use the actual price level of products for market definition purposes.

Consumer surveys and market research studies contribute substantially in understanding consumer's preferences and the degree of substitution between different products. Since technological conditions and consumers' or suppliers' attributes towards the postal market change over time and across countries, there may not be consistency among regulators with respect to market definitions. Advances in sorting and transportation technology may call for changes in market definition.

The hypothetical monopolist test is used in a similar fashion to define geographical markets. It takes the following form: would a hypothetical monopoly seller in country or region C find it profitable to increase prices of product A by 5-10%, or would imports from country or region D render such a price rise unprofitable? If a considerable volume of trade is observed between two regions for a specific product, this is a clear indication that regions' producers exercise a competitive constraint on each other, and the two regions should be included in the same market (shipment test). Finally, if transportation costs are low relative to the price of a given product, and currently the trade between the two regions is marginal, then the insignificant transportation costs would discourage price rise of the product in any of the regions under study.

### 2. 2. 2. Assessing Market Power

Market power refers to an ability of a firm to raise prices significantly above its marginal cost. A theoretical measure of market power is provided by the Lerner index, defined as the ratio of the difference between the price and the marginal cost over price. The Lerner index of a monopolistic firm is the inverse of the elasticity of demand when the price chosen is that which maximizes profits. Regulators may find hard to estimate marginal cost in a real-world application of the Lerner index, due to a less than perfect knowledge of the postal sector, postal technology and the firm itself.

In practice, since there is a positive association between market share and market power, a first step in the analysis of market power of a firm is by measuring its market share. Market share above a certain threshold (say 40%) is a presumption that the firm does hold enough market power to be declared dominant. Market shares in both volume and revenue should be considered. Those firms that are unlikely to be market participants in the future for various reasons (e.g. less efficient technology or impending bankruptcy) should be excluded from the calculation of market shares. Where there is a large variance of market shares over a small time period (because a small number of buyers place large and infrequent orders), it is advisable that market shares are calculated over a longer time period, i.e. three to five years depending on the frequency of the orders. If distribution of market shares among the main players varies considerably over a short period of time, this is suggestive of a competitive situation. On the other hand if a firm's market share is consistently above a threshold over a long time horizon, this is an indication of its dominance. The aggregate level of market power increases with the degree of market concentration.

While market shares indicate that the operator concerned might be in a dominant position, it is important to point out that the existence of a dominant position cannot be established on the sole basis of large market shares. Regulators by and large therefore undertake a thorough and overall analysis of the economic characteristics of the relevant market before coming to a conclusion as to the existence of significant market power. The following criteria can also be used to measure the power of an operator to behave to an appreciable extent independently of its competitors, customers and consumers. These criteria include amongst others:

- overall size of the operator,
- control of infrastructure not easily duplicated,
- technological advantages or superiority,
- absence of or low countervailing buying power,
- easy or privileged access to capital markets/financial resources,
- product/services diversification (e.g. bundled products or services),
- economies of scale,
- economies of scope,
- vertical integration,
- a highly developed distribution and sales network,
- absence of potential competition,

- barriers to expansion.

When analyzing market power, it is crucial to assess the extent of barriers to entry (whether entry is rapid and costless). The issue of fixed sunk costs (both exogenous and endogenous) might be a crucial obstacle to entry. Exogenous sunk costs refer to the investment a firm has to incur in order to produce and distribute the good. Endogenous sunk costs refer to R&D and advertising costs that a company make in order to improve product quality.

A high degree of concentration of buyers can offset the effects the market power of the suppliers. A company is free to charge higher prices if its customers are dispersed and are large in numbers. On the contrary, few strong customers can use their bargaining power to stimulate competition among firms, either by switching from one seller to another or by starting upstream production themselves.

The degree of substitutability between physical and electronic ways of communication can also indicate the level of market power and dominance that different firms have. With communications markets becoming increasingly integrated in terms of different types of media and in terms of logistic networks, regulators are also starting to consider the wider communications market when they develop the market segmentation for specific products and services.

### **2. 3. Market segmentation of European Postal Markets**

Regulators can promote the advancement of competition by dividing the postal market into segments and then analyzing each separately in order to impose the appropriate level of regulatory obligations on the postal operator(s) with significant market power in each segment. Accordingly, various regulators have already attempted to identify important market players, report market shares, and determine the degree of concentration in the relevant market segments. Barriers to entry, effective competition and price trends in each market segment have also been examined.

The existence of market segments in European postal markets has allowed new market entrants to build up their business incrementally. For example, in some countries, new entrants offer upstream pre-sorted bulk mail services to the incumbent (an example of access to the incumbent's delivery network). In this way, competition has developed to some extent in the retail postal market leading to cost reduction, improved quality of provided services and increased efficiency.

Postal markets have traditionally been split into letter and parcels market segments. The letter market has been further subdivided by some regulators into the universal and non universal services area. The universal area includes the reserved area, in countries where full market opening is not in effect. The parcels and express delivery market (the main difference between these two products is the delivery time) is usually considered as a competitive segment of the postal market and therefore subject to less regulation.

Another categorization adopted by regulators of the letter market is into bulk mail (items of mail with the same format and weight that are usually mass-produced by means of computer support), office mail (mail that is normally flanked by a franking machine and is usually

distributed as individual items of mail), other individual items of mail (also referred to as “letterbox mail”).

Some regulators have defined a separate upstream market segment, which include the activities of mail preparation, packaging, pre-sorting and postal prepayment (franking). Mailing houses, which specialize in handling direct marketing mail, transactional and general business mail and press subscriptions, are active in this market segment. The corresponding downstream market includes the activities involved in final sorting, sequencing and delivery.

The above segments adopted by European regulators suggest that postal markets can be segmented horizontally (across retail categories) or vertically (across operational pipeline activities). The sections below deal in more detail and summarises some of the academic literature relating to horizontal and vertical segmentation.

### 2. 3. 1. Horizontal segmentation

Generally speaking, the postal market may be horizontally split as follows.

A) **Letter-type mail** comprises of items, with a weight of maximum two kilograms per item and adhering to certain restrictions with regard to size. The letter mail market may be further subdivided as follows:

- **Transactional mail** comprises largely of bills and statements. Out of all the segments of mail, transactional mail is particularly susceptible to electronic substitution. Trends in online transactions and online banking are undoubtedly affecting its volumes.
- **Direct mail (addressed)** has been a key growth of driver of mail volumes in the past, but volumes have been started to decline recently. It is questionable whether electronic substitution and environmental concerns will drive further direct mail volumes decline, or whether the medium has a sustainable future due to its ability to be highly targeted and measurable. Studies have shown that email and direct mail complement each other, i.e. although email is better at communicating brief messages, direct mail is better for presenting detailed messages and a professional image.
- **Publications** include catalogues, books, periodicals & magazines, and newspapers. Newspapers take a special position within letter mail, as in some countries the delivery of newspapers almost completely takes place outside the postal sector and is not included in statistical figures.
- **Other letter mail** includes small parcels, general business mail referring to single item mail delivered in the course of normal business. A particularly important area for small and medium sized mailers, who send a higher percentage of their mail as single items. Social mail (personal letters, post cards & gift cards) subject to electronic substitution to email & SMS, is also included in this category.

B) **Parcel-type mail** concerns postal items that do not adhere to the size restrictions for letter mail. This segment is a major growth area in the mail market, driven largely by internet sales.

C) **Express / courier services** concern services with door-to-door delivery. Currently, the core business of the express / courier industry is the provision of door-to-door transport and deliveries of next-day or time-definite shipments, including documents, parcels and merchandise goods.

Additional ways of defining postal markets can be summarized as follows:

- a distinction between the type of sender / receiver of mail, leads to the following four distinct markets: business to business (B2B), business to consumer (B2C), consumer to business (C2B), consumer to consumer (C2C). Since social mail is a small segment of the market and its handling is costly, new entrants will predominantly focus on B2B and B2C markets. Entrants' ability to compete in these segments is enhanced by the fact that the market is relatively concentrated on the sender side.
- the time sensitivity of delivery (e.g. D+1), or pre-determined delivery arrangements (e.g. delivery on a certain weekday or delivery within a pre-specified short time period), is a further tool for market segmentation.
- quantities of mail submitted and the way the mail is, or could be, produced (e.g. individual mail items and bulk mail that is computer generated). Transaction mail and direct mail is usually sent in bulk and is computer generated.
- domestic / international mail. Business mail generates the majority of domestic mail. Integrator/freight forwarder/express carriers are examples of international / cross-border mail, where new entrants have taken sizable market share from incumbent operators over the past. Overall international mail accounts for a small proportion of the total mail.

Some studies suggest that a good starting point for defining relevant markets, while assessing future proposed mergers or complaints on the abuse of dominant position, can be based on the following seven characteristics of postal services:

- type of mailing (e.g. Letter Mail, Parcel Mail, Express / Courier services),
- physical attributes (e.g. format, size and weight),
- delivery speed (e.g. D+1, D+2 and D+3 to D+7),
- size of sender and receiver in terms of mail volumes (e.g. large business to business, other business to business, large business to customer, other business to customer, customer to business and customer to customer),
- pre-sortation by the sender (e.g. unsorted to walksorted i.e. sorted to the sequence of addresses in a delivery walk),
- distance from origin to destination (e.g. local to local, neighbouring, distant),
- delivery point density (e.g. rural, suburban, urban and city centre).

### **2. 3. 2. Vertical segmentation**

Postal markets can be segmented vertically, as long as certain parts of incumbents' postal operations exercise significantly different competitive pressures to others, in other words, whether certain postal activities are subject to monopolistic bottlenecks. Postal services need to go through some or all of the following processes:

- Collection from customer premises, post offices and post boxes and delivery to outward sorting centres,
- Outward sorting of collected mail for delivery to mail centres,
- Trunking, i.e. distribution between mail centres,
- Inward sorting to delivery codes for delivery to delivery offices,
- Delivery phase, i.e. final mail sortation, sequencing and delivery on route.

An exception being hybrid mail, offered in some countries, where the item is forwarded electronically to printing operations close to inward sorting phase where it is injected for delivery, or *vice versa*.

Studies have shown that the portion of the incumbent's postal network that provides daily delivery service to every address in the country, benefits from extensive economies of scale and scope. Hence that part of the network has natural monopoly characteristics. The activities of collection, pre-sorting and transportation, on the other hand, are subject to smaller economies of scale, scope and have therefore lower natural barriers to entry than the downstream activities of local delivery. If these activities are fully contestable and can be separated easily from delivery, thus qualify as candidates to be split off into an autonomous entity, then they could be subjected to full competition, while leaving the natural monopoly delivery function to be operated by the universal service provider.

Studies of the US Postal Service indicate that most of the delivery costs are fixed. An entrant that has a cost advantage of 50% and delivers once per week would need 15% market share in order to reach cost parity. An entrant that delivers twice per week would need 19% market share if it had a 50% cost advantage, and 23% if it had a 33% cost advantage.

In some European countries, studies conducted show wide variations in critical market share of new entrants to reach cost parity. This is due to the differences in the cost structure among countries, different methodologies adopted, and differences in the quality of the data. These studies conclude that entrants in these countries can operate profitably, even with relatively low market shares.

The presence of legal monopolies influences market definition. The part of the postal service chain which is still under monopoly tends to be put in a relevant market and the rest on a second, separate market. The European Commission has tended to find the first market comprising of collection to the point in the service chain at the border between the reserved and open sectors (it should be kept in mind that the reserved area concerns the delivery of postal products, and does not apply to any of the upstream activities in the postal supply chain), and a second market comprising of that point to delivery to the customer. In two recent cases dealing with domestic mail, the European Commission found an upstream and a downstream market. In the REIMS II re-notification (Decision 2004/139 of 23 October 2003 [2004] OJ L 56/76, paragraph 70-77) dealing with cross-border mail, the European Commission distinguished between "outgoing cross-border mail" and "incoming cross-border mail".

ECORYS (*Development of competition in the European postal sector*, MARKT/2004/03/C) stated, in its discussion on the appropriate level of regulation for downstream access, that facilities of the incumbent postal operators probably do not constitute a monopolistic bottleneck. There are no large sunk costs of investments and the natural entry barriers on the demand side as well as network effects do exist to a smaller extent, but do not seem to prohibit entry. However, it added that offering daily delivery services (particularly in rural areas) may create economies of density may be large and difficult to replicate. The duplication of a delivery network in rural and mountainous areas may prove economically unfeasible, i.e. competitors are not able to develop a profitable business case and will not enter this market segment.

## **2. 4. Conclusion**

The definition of markets and segments is a crucial step in determining appropriate pricing regulation. Studies undertaken into postal markets suggest that postal products can be segmented horizontally into three broad categories; Letter-type items, Parcel-type items and Express / Courier services. Additional segmentation can be made accordingly to factors such as types of sender, delivery class, quantities of mail submitted and letter formats. Studies have also suggested that postal markets can be segmented vertically, depending on the existence of economic bottlenecks within the postal chain.

## Chapter 3 – Characteristics of *ex post* regulation in network industries

### 3.1. Introduction

The postal sector has evolved over recent decades, from a government controlled monopoly to one open to competition in a many European countries and in specific market segments throughout the world. Sector specific regulation has been an important necessity to manage this transition, and in particular to ensure the continued provision of the universal service at a high standard of quality but at the same time ensuring that there are no anti-competitive practices which might foreclose on the development of competition.

WiK-Consult (2006) identified three distinct models in use within the EU. These are *ex ante* price approval (or so called “fixed cost” models), *ex ante* price caps (e.g. CPI-X or RPI-X) and *ex post* investigations. The difference between *ex ante* and *ex post* regulation relates to the timing of intervention by the regulator i.e. before or after the proposed change.

Before selecting the appropriate form of price regulation, each regulatory body, particularly in EU Member States, should consider the requirement of The Third Postal Directive (Directive 2008/6/EC of the European Parliament and of the Council of 20 February 2008 amending Directive 97/67/EC with regard to the full accomplishment of the internal market of Community postal services) i.e. that “prices shall be cost-orientated and give incentives for an efficient universal service provision” and the characteristics of their own postal markets.

### 3.2. *Ex post* regulation

*Ex post* regulation is normally used for monitoring and investigating compliance with competition law. This is where a Competition Authority needs to determine whether there has been an abuse of a dominant position such as excessive or predatory pricing, a refusal to supply, or there is an illegal cartel colluding in keeping prices higher than they would otherwise be or to keep other players out of the market.

In a competitive market, competition between players normally acts as the “policeman” – the possibility of other suppliers undercutting a dominant supplier limits that supplier’s ability to charge excessive prices, while the need to finance losses limits below cost selling. *Ex post* intervention by a Competition Authority is therefore an adequate remedy to address issues that can only arise if there is a failure of the market to control anti-competitive behaviour.

However when effective competition has yet to develop because a supplier who formerly had a monopoly over all or part of the market, the *ex post* enforcement of competition law has been found to provide insufficient protection for competitors or customers. That is why legislators invariably require sector specific regulatory authorities to be established to ensure *ex ante* compliance with obligations to facilitate the transition from monopoly to effective competition. Of course in doing this a sector’s regulator cannot do or approve anything that would be in breach of competition law.

As WiK-Consult (2006) identified 10 postal sector regulators use an *ex post* price control for some of their universal services, but only one relies on it exclusively. The *ex post* model uses

the same general formulae as the *ex ante* (or “fixed cost”) model, but with different assumptions, as follows:

$$P_t = (1 - a) \times c_t^* + a \times c_t$$

where

$P_t$  is the price,

$a$  is the proportion of cost overruns borne by consumers,

$c_t^*$  is the expected unit cost,

$c_t$  is the actual unit cost.

But

$a$  is set to 1 (as the model assumes that the consumer bears the entire cost overrun)

so

$$P_t = (1 - 1) \times c_t^* + 1 \times c_t$$

$$P_t = 0 \times c_t^* + 1 \times c_t$$

$$P_t = c_t \text{ (the actual unit cost).}$$

*Ex post* forms of regulation ensure that the firm recovers all of the costs it incurs, and therefore it is a completely incentive-free form of price control.

The method has the advantage that because it is based on actual costs, as recorded in the financial records of the regulated entity, the demands for information are limited.

However, as the price of each product or service is considered individually, it is very suitable for identifying cross-subsidies.

Because it can only be implemented on an *ex post* basis there can be significant problems in enforcing compliance. It is difficult to reverse a price increase after it has been implemented, particular in the case of single piece mail for which no records of sales are kept. Therefore during the period of review, the supplier will most likely benefit from any additional revenues being generated. On the other hand below cost selling will make it impossible for new entrants to compete and the delay in effecting a remedy might well foreclose on market entry altogether.

Implementation costs are low compared to *ex ante* (or “fixed cost”) and price cap models. The accounting information needed should be produced automatically by the regulated entity in order to run its business, and the frequency of investigations can be reduced (to perhaps every two or three years) once it is established that there is compliance with the regulatory principles.

However, the major concern with this approach during the transition from monopoly to full and effective competition is that it provides no incentive for the former monopolist to improve efficiency.

The strengths and weaknesses of this system are now assessed under the following headings.

### **3. 2. 1. Existence of inappropriate cross subsidies**

Cross subsidization occurs when a supplier uses the profits it generates from one market (e.g. a market where it retains a de facto monopoly) to support low prices and gain market share in markets where competition is emerging.

Assessing the existence of cross subsidies can be easier done on an *ex post* rather than on an *ex ante* basis (as actual rather than forecasted data can be used).

In 2001, the Deutsche Post decision raised the question of cross subsidization (and predatory pricing): DPAG had for the period from 1990 to 1995 charged prices for the delivery of mail order parcels which were below the variable cost of network usage. The European Commission considered that prices below variable cost for actual network usage cannot be justified as it makes no contribution to maintain the network capacity to perform the Universal Service Obligation.

With an *ex post* approach, there is however a risk that the new entrant may be forced out of the market, while any investigations of the regulator are pending. It is therefore important that clear procedures are established and timelines set for the incumbent (to provide supporting accounting information) so that such investigations are performed as efficiently and effectively as possible.

### **3. 2. 2. Distortion of competition by below cost selling**

The aim of below cost selling (or predatory pricing) is to give one supplier an unfair advantage over its competitors, so increasing its market power and forcing competitors out of the market. Once the competitors have been removed from the market, and the customer choice been restricted, the dominant operator can then increase the price of its services or products.

The existence of properly prepared regulatory accounts and the review by the regulator on an *ex post* basis will assist the regulatory body in the detection of below cost selling practices. If the regulated firm is found to be carrying on such practices, the regulatory body should require them to adjust its prices immediately.

It is important that services are priced correctly so as to not to discourage the entry of competitors.

As with cross subsidization, the risk with an *ex post* approach is that the regulated firm may benefit from below cost selling to the detriment of its competitors until such time as the regulator has available to it the necessary data to conduct a review. It would be important therefore that clear timelines and policies are in place so as to minimize the negative implications of such practices.

### **3. 2. 3. Excessive pricing in markets that are not contested**

Excessive pricing may occur, *inter alia*, in markets where the supplier has a *de facto* monopoly.

Excessive pricing in effect represents the continued extraction of monopoly rents. If following a review on an *ex post* basis (by the regulator), the supplier is found to have abused its dominant position in this way, the regulator will need to require the supplier to reduce its prices, and to compensate those customers who have been paying the excessive prices in the meantime. The former requires the regulator to have adequate enforcement powers, the latter may in many instances be extremely difficult to put into practice.

Therefore the supplier may benefit from the excessive tariffs pending completion of any investigation by the regulator. However, on the other hand there will be obvious costs to the supplier if it is forced to reduce its tariffs e.g. advertising, printing of stamps, printing of booklets, in addition to the negative implications on brand loyalty (due to negative publicity that it has been forced to reduce tariffs).

As with the issue of below cost selling, it is important that clear timelines and policies are in place so as to minimize the negative implications of such practices.

### **3. 2. 4. Incentive on incumbent to improve efficiency**

In a *de facto* monopoly situation there is no incentive for a supplier to improve efficiency or reduce its costs under an *ex post* regulatory approach. This will mean that any cost increases or inefficiencies can be passed onto the consumer in the form of higher prices.

In circumstances where there is effective competition, it is that competition or the threat of further competition that provides the incentive for the former monopolist to reduce costs and so make its tariffs more competitive in order to retain market share.

### **3. 2. 5. Ability of incumbent to respond to competitive challenges in a timely manner**

Unlike *ex ante* regulation (which can be an inherently time consuming process), *ex post* regulation facilitates the incumbent in responding to competitive challenges in a timely and efficient manner as there is no need to obtain specific approval before it increases or decreases its prices.

However there is not a completely free hand as following a review by the regulator, corrective action may have to be taken to rectify any over (respectively under) pricing.

### **3. 2. 6. Prices of products are cost orientated**

While the prices of products subject to *ex post* regulation should be based on actual costs, the issue for the regulator will be to satisfy itself that the costs which have been allocated and apportioned to such products are accurate and appropriate. In the case of the postal sector, specific rules regarding the allocation of common costs are imposed on EU Member States by the Postal Directives. It must also not be overlooked that below cost selling or excessive

pricing can be realised by an incorrect allocation of costs as well as by setting prices incorrectly in relation to costs.

### **3. 2. 7. Availability of accurate costing information to support the system**

Regulatory accounts should be prepared to a standard and to a sufficient level of detail so as to enable the regulator to investigate and where necessary take appropriate enforcement action regarding non compliance with its obligations in a timely and efficient manner.

In circumstances, where the regulated accounts are not provided at a sufficient level of granularity, additional information requests should be made to and provided by the operator to the regulator within a specified timeline.

### **3. 3. Conclusion**

In conclusion unless there is fully effective competition, a price control will be needed. The *ex post* model of regulation imposes a very light-touch regulatory burden, but as a stand-alone price control it suffers from two major drawbacks – it offers no incentive for efficiency and is difficult to enforce. In the early years of liberalization, this model might be useful to complement a price cap based on a limited number of baskets or a price cap without a floor. As fully effective competition emerges it might be suitable as a price control for those products where competition sets the price and the incumbent is no longer in a dominant position.

## Chapter 4 – Characteristics of *ex ante* price approval

### 4.1. Introduction

*Ex ante* regulation is normally used in circumstances where the incumbent has a dominant position in the market for the provision of certain services/products and there is a need to protect the consumer from excessive pricing and competitors who are active in other segments of the market.

*Ex ante* regulation seeks to prevent a problem occurring rather than curing it once it has happened.

*Ex ante* regulation therefore requires that the incumbent receive prior approval from the appropriate national authority (e.g. the sectors' National Regulatory Authority) before price changes can be implemented.

### 4.2. Characteristics of the *ex ante* price approval model

*Ex ante* price approval is based on the expected cost of the regulated products in the control period. The price is set to the expected cost in a process where the operator applies to change its prices to the regulator. The national regulatory authority on the request by the universal postal service provider gives consent to the prices for each universal service. Each request by the regulated body for a price change must be elaborated upon with cost analysis, in order to establish the actual need for the price change. The regulatory authority processes this information and on basis of it decides if the suggested prices are in line with the expected (future) cost of the products for which the price change is required. It is important to emphasize that the *ex ante* price approval system requires detailed regulatory (separated) accounts. The volume of information required can lead to a long period between application (by the regulated body) and making a decision (by the regulator), which disables the operator's fast reaction to the changes in the competitive activities. It is therefore more appropriate to control the prices where there is little or no *de facto* competition.

The *ex ante* price approval model uses the same general formulae as the *ex post* model, but with different assumptions, as follows:

In this model, prices may be fixed for the control period based on the formula:

$$P_t = (1 - a) \times c_t^* + a \times c_t$$

where

$P_t$  is the price,

$a$  is the proportion of cost overruns borne by consumers,

$c_t^*$  is the expected unit cost,

$c_t$  is the actual unit cost.

But

a is set to zero (as the model assumes that incumbent cannot pass on cost overruns to the consumer)

so

$$P_t = (1 - 0) \times c_t^* + 0 \times c_t$$

$$P_t = 1 \times c_t^* + 0 \times c_t$$

$$P_t = c_t^*$$

With this model, the regulated entity retains the benefit of unanticipated improvements in efficiency and productivity and bears the cost of failing to achieve expected improvements. The latter risk can however be eliminated by seeking to apply for another price increase (to cover these costs). It is therefore of the utmost importance to ensure that there is a legal limitation on the frequency of price reviews in any given period.

In addition, if price changes are requested annually or more frequently, it can lead to a high regulatory burden for the regulatory authority.

### **4. 3. Strengths and weaknesses of the model**

The strengths and weaknesses of this system are now assessed under the following headings.

#### **4. 3. 1. Existence of inappropriate cross subsidies**

Cross-subsidisation involves an undertaking allocating all or part of the costs of its activity in one product or market to its activity in another product or market. Under certain circumstances, cross-subsidisation may distort competition, i.e. lead to beating other competitors with offers which are made possible not by efficiency and performance, but by artificial means such as subsidies.

As part of the regulating authority's *ex ante* assessment of the regulated entities proposed tariffs, it needs to investigate possible abuses including discriminatory pricing or unfair cross subsidisation that may arise if the proposed tariffs are approved. The objective of the regulating authority must be to prevent such practices from occurring.

Providing that the *ex ante* price approval model is underpinned by appropriately prepared regulatory (separated) accounts the model can be very effective in ensuring that there are no inappropriate cross subsidies.

#### **4. 3. 2. Distortion of competition by below cost selling**

The practice of below cost selling (or predatory pricing) involves the operator setting prices at a level lower than what it would under normal competitive conditions. The competitor is forced out of the market as it cannot compete at such prices, this increases the market share of the predator who is then in a position to increase prices to exploit its customers as there is no alternative supplier.

Operators only have the incentive to sell below cost if the service concerned is fully open to effective competition, or such competition is likely to emerge in the short term. If the service concerned is subject to a price control, the *ex ante* price approval model can be effective if the below cost selling is financed by cross-subsidisation from another price controlled product. However if it is financed otherwise, e.g. from past profits, there may be some intangible obstacles – regulators may not like obliging an operator to increase its prices, especially if there is no *quid pro quo*. Nevertheless it is a much more effective mechanism than either price caps or *ex post* regulation.

#### **4. 3. 3. Excessive pricing in markets that are not contested**

An advantage of *ex ante* price approval is the fact that it may be better at preventing excessive pricing (where there is imperfect competition). On the markets which are not yet fully opened or where competition does not emerge and there is therefore only one operator this advantage is of great benefit. The prices for the universal postal service are based on the operator's cost for provision of this service and the price level should enable coverage of these costs.

Excessive pricing (or monopoly pricing) arises when the operator uses this *de facto* monopoly position to charge prices that would not be normal if there was effective competition.

Under *ex ante* regulation, this practice should not be allowed to occur as all prices must be “cost orientated”. As with an assessment of below cost selling, it is important that the regulatory authority has adequate supporting information available to it to make such an assessment. The regulatory authority may therefore impose on the regulated entity a requirement to implement a cost accounting system in order to support price controls. While excessive pricing can be identified by reviewing costing data, it can also be identified by conducting a benchmarking analysis of the prices charged by other operators.

#### **4. 3. 4. Incentive on incumbent to improve efficiency**

An important consideration in adopting any price control system is the obligation to comply with the requirement in the Third Postal Directive regarding incentives for an efficient universal postal service provision.

*Ex ante* price approval systems allow regulators to set prices which ensure customers benefit to a predetermined extent from planned improvements in efficiency and productivity. However, efficiency and productivity gains above those anticipated when setting the price remain with the operator.

On the other hand, if the operator exceeds its planned costs due to lack of fulfilment of anticipated improvement in productivity and efficiency, the operator itself should, in principle, bear those costs. However, where the operator does not achieve the expected improvements in productivity and efficiency, i.e. it did not accomplish the effect of the price increase, the *ex ante* price control system may enable the operator to seek another price increase if there is no legal limitation on the frequency of price increase submissions. In these circumstances the operator may not be fully incentivised to offer an efficient universal postal service provision. It is vital therefore that there is a minimum interval of at least one year between price increase submissions.

#### **4.3.5. Ability of incumbent to respond to competitive challenges in a timely manner**

*Ex ante* regulation due to the inherently time consuming process would not facilitate the incumbent to react fast enough to competitive changes (in a fully competitive market). However a lot depends on the extent of the services subject to price control and on the period of time established for the regulator to make a decision after application by the regulated operator. In countries where the price control is restricted to products and services which *de facto* are not subject to any competitive forces (e.g. where the universal service is restricted to single piece mail) the operator will have the flexibility to respond in a timely way to changes in the competitive market and the scope of the price approval will be somewhat limited and will not impact on the competitive situation.

#### **4.3.6. Prices of products are cost orientated**

The prices of products subject to *ex ante* regulation should be based on actual costs (incurred and forecasted) of the incumbent for each product/service. The regulating authority in deciding whether to concur with the incumbent's price changes should also consider budgeted efficiency or productivity improvements that the incumbent intends to generate over the coming years from particular investments.

#### **4.3.7. Availability of accurate costing information to support the system**

The *ex ante* price approval model is focused on projected (expected) costs, using as its starting point the real (actual) costs of the regulated products. In this context, using the *ex ante* system the regulator determines whether the prices are in accordance with certain standards and relevant actual costs, and if they do not, the regulator may force the operator to correct its prices. Hence, the main difference between *ex ante* and *ex post* price control systems is the regulatory burden and the uncertainties involved in projecting costs.

It is important therefore that the regulator establishes or approves a cost accounting system and allocation regime so as to give it the assurance that all of the incumbent's costs that relate to regulated services are clearly identifiable and consistent with the (approved) cost accounting system. The new Postal Directive specifically provides that: "Keeping separate and transparent accounts should provide Member States and their national regulatory authorities with accounting information of sufficient detail to [...] ensure that the tariffs applied to the universal service comply with the principles on tariffs as set out in this Directive, [...]" (Recital 41).

The ECJ has specifically endorsed the principle that compliance with the principle of cost orientation can be determined using forward looking costs (Case C-438/04 Mobistar).

### **4.4. Conclusion**

*Ex ante* price approval is a price control system which meets all the requirements of the EC Postal Directives, providing that it is implemented correctly. In particular there is a need for accurate comprehensive regulatory (separated) accounts, reliable forecasts for cost movements over the medium term (1-2 years) and a limitation on the frequency at which proposals to increase prices can be submitted for approval.

The regulatory burden can be high when the number of services subject to price control is large. Furthermore if some of the services under the price control are subject to effective or emerging competition the flexibility of the operator to respond to that competition may be restricted. However where the services subject to price control are limited to those where there is no *de facto* competition the model can be very effective.

## Chapter 5 – Characteristics of price cap regulation

### 5. 1. Introduction

Price control by means of a price cap ensures the appropriate balance between pricing flexibility and consumer protection. It is contrasted with cost-based regulation where the prices of single services are regulated. This traditional cost-based approach was criticized because there is a lack of incentives to minimize costs as well as a lack of productivity improvement. Recognizing this fact the majority of the regulators (see WiK-Consult, *Main Developments in the Postal Sector (2004-2006)*, pp. 83-86) concluded that a regulatory system which is rather better able to operate effectively in a dynamic environment marked by competition and technological change should be established. The price cap might be such a regulatory instrument.

Contrary to this traditionally cost-based approach the price cap can be viewed as an effective way to incentivize the incumbent to increase the efficiency of its administrative and operational processes.

Productivity gains as assumed in price control will benefit consumers. In addition, price cap controls offer to the regulated operator the incentive to achieve productivity gains beyond the level determined by the regulator, e.g. by the use of innovative and efficient technologies enabling the regulated company to yield higher returns that remain available to the company. This would not be the case of the individual approval regime, where profits would be redirected to the rate-payers.

The implementation of price controls via price cap facilitates prices based on the (aggregated basket related) costs of the operator on the one hand and preventing abusive pricing strategies on the other hand. The risk of excessive pricing may be limited by determining a productivity growth rate which is largely based on the present and projected future costs.

Regulators around the world established price cap extensively in the telecommunications industry. This instrument was introduced 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 established a price cap system for the telecommunications industry. This regulatory method was also applied to the postal sector (see WiK-Consult, *Main Developments in the Postal Sector (2004-2006)*, pp. 83-86).

When designing the new regulation framework, the legislators or the regulators have to ensure that these measures are in line with the tariff principles (chapter 1). Insofar there is no restriction, but high flexibility for the regulators to design a price cap system.

### 5. 2. Design of price cap

This regulation system is primarily based on price cap formula which prescribes whether and to what extent prices for regulated postal services should change in each annual period and by how much, and secondarily of baskets, time periods, parameters, etc. The regulator or the legislator usually specifies in advance how long the formula will apply for, generally 3 to 5 years.

Pursuant to this formula the regulated firm can adjust its average price for a basket of regulated postal services at the rate of the so called price cap (I - X). This parameter is defined as the difference between the general level of inflation (I) and the efficiency factor that reflects the regulated firm's expected efficiency (the "X-factor"). It may be necessary to set a ceiling on price increases for individual services within the basket as well. This additional constraint would limit the scope for rebalancing prices within the basket. It would also to some extent address the concern about anti-competitive cross-subsidies discussed below. For example, the price cap on individual services could be defined as a percentage mark-up on the index (RPI, labour cost index etc.).

A general example of a price cap formula is:

$$\sum_{i=1}^n \frac{q_{i,t-1} \times p_{i,t-1}}{\sum_i q_{i,t-1} \times p_{i,t-1}} \times \frac{(p_{i,t} - p_{i,t-1})}{p_{i,t-1}} \leq RPI_{t-1} - X_t$$

t	period for which a price is to be approved
t-1	period with current prices
i	index for a specific service in a basket, i = 1, ..., n
n	number of services in a specific basket
p <sub>i,t</sub>	unit price for service i in period t to be approved
p <sub>i,t-1</sub>	unit price for service i in the period immediately preceding period t
q <sub>i,t-1</sub>	volume of sales for service i in reference period t-1
X <sub>t</sub>	expected productivity growth rate for period t
RPI <sub>t-1</sub>	macroeconomic price increase rate (reference index I) in the reference period

RPI is the Retail Price Index (in many countries: CPI, Consumer Price Index) reflecting the inflation rate (or an alternative index of inflation).

X is an adjustment factor for expected and projected individual efficiency gains of the regulated firm.

### 5. 2. 1. Composition of baskets

The approval of the prices for postal services in a basket depends on the compliance with the price cap formula for the basket. Each basket should have a separate price cap. According to the formula, the prices in a basket are only eligible for approval if the above mentioned price cap conditions are met.

When defining and grouping services in basket the following main criteria have to be taken into account:

- **Expected intensity of competition**

In principle the basket may only comprise postal services which do not differ significantly in terms of their expected intensity of competition. Consequently services offered in market segments with different intensity of competition (*de facto* monopolized, competitive) must be

grouped in separate baskets. This aims to limit the possibility of admissible anti-competitive cross-subsidies. In absence of this rule the incumbent could abuse the pricing-flexibility of the benchmarking method to gain unfair competitive advantages for services offered under more intense competitive conditions.

The criterion of the expected intensity of competition should also consider the relations toward substitute products. This implies the question to what extent particular letter services are exposed to a competition from substitute services provided outside the market of letter post services. The larger the number of customers using other services such as e-mail, text messaging, telephone, fax, etc. thus limiting the incumbent's market opportunities, the higher the intensity of competition to be expected in the relevant market.

- **Homogeneity of products**

As a general rule, only products which are comparable in terms of their production conditions should be grouped together in one basket, thus allowing a productivity growth rate to be determined which is the same for all products. The more heterogeneous the grouping of services in a basket the more difficult the regulator's task to determine an appropriate productivity growth rate for this basket.

Price cap controls have advantages over individual approval in particular where the number of services in each basket is as large as possible. The smaller the number of baskets the lower the administrative costs of regulating prices will be. Another reason for maximising the number of services in each basket is to enable the dominant operator to adopt and implement flexible and innovative pricing strategies.

However, services should be grouped in separate baskets wherever the intensity of competition of the services concerned is expected to differ significantly. This is true in particular where there is a risk of price dumping in a competitive environment on account of the possibility of cross-subsidising services provided under competitive conditions through monopoly services.

## **5. 2. 2. Determination of benchmarks**

Prior to the approval of prices for the relevant postal services the regulator must determine the benchmarks, which include the reference price index (retail price index, consumer price index, labour cost index ...) and the productivity rate X.

- **Determination of the reference index I – macroeconomic price increase rate**

For postal price cap controls reference index I is usually based on the retail price index published by the Statistical Offices. It measures the average change of price for all goods and services that private households buy for consumer purposes. It fully reflects consumer price changes. Among the macroeconomic price indices available, the retail price index is best suited for use in particular because it also reflects to a certain extent general cost increases, especially payroll and material cost increases, incurred by the regulated operator. As opposed to company-specific cost values, this macroeconomic index cannot be influenced and its use is therefore justified. Price regulation should be effectively regulated on the basis of commonly available data.

It is important to avoid choosing an index which is significantly influenced by the prices of the regulated firm. That is why a sector index should not be selected.

Moreover, because one goal of a price cap is to provide the postal operator and also the market sufficient visibility on future tariffs, the use of *a priori* index is recommended like the projection of inflation provided by the Ministry of Finance and used in the state budget. This index for the year  $n$  has the advantage of being available in the Initial Finance Bills at the end of the year  $n-1$ .

- **Expected productivity growth rate**

The benchmarks for approval under the price cap regime include the expected productivity growth rate of the regulated company (X-factor – according to circumstances, X can be positive, negative or equal to zero). The ratio of the initial price to the efficiently incurred costs of providing service must be taken into consideration when setting benchmarks, most notably when determining the expected productivity growth rate. The efficiently incurred costs of providing service may be based on the long run incremental costs of providing service and an appropriate mark-up for volume-neutral common costs, each inclusive of a profit mark-up corresponding to the entrepreneurial risk, in so far as these costs are required for providing service. If the initial price exceeds the efficiently incurred costs of providing service, the expected productivity growth rate must be increased accordingly to approximate prices to costs. When setting the X-factor for each price cap period, due regard must be given to the fact that it will not perhaps be possible to fully realise the efficiently incurred costs of providing service due to legal obligations or other objectively justifiable reasons.

During the price cap objectively justifiable expenses should be considered in addition to the efficiently incurred costs of providing service. These expenses include the costs of providing postal services throughout the country (expenses incurred by the provision of the universal services including the maintenance of a nationwide postal and outlet network). Should there be evidence of such legal obligations or other objectively justifiable reasons for individual cost items in future, they will also have to be reflected in the ratio of the initial price to the efficiently incurred costs of providing service.

Additionally, the productivity growth rates of companies in comparable competitive markets should be taken into account when setting benchmarks. The regulator can apply different methods to evaluate and compare cost- and price-related data of other companies. Under the aspect of comparability and representativeness these companies could provide logistical services. In doing so, it is also necessary to estimate the development of productivity of the regulated operator. Using time series data, a relevant forecast could be based on an econometric estimate. Productivity may, as a rule, be defined as output-input ratio. Based on this definition, productivity can be increased by providing a given output, i.e. a specific volume of items based on unchanged quality standards and a lower input factor. Productivity can however also be increased by improving the output, most notably in terms of quality, based on given input factors, i.e. a given network infrastructure.

Under the price cap regime the initial price is taken into account in the benchmarking process dealt with in the following key elements. The ratio of the initial price to the efficiently incurred costs of providing service has to be considered when setting benchmarks.

Determining the efficiently incurred costs of providing service and setting the expected productivity growth rate require detailed disaggregate company data to be submitted. The regulator should request appropriate cost statements.

### **5. 2. 3. Price cap-related documents**

The documents submitted by the regulated operator comprise a draft of general terms and trade with a detailed description of the product features and services to be provided. These statements and details of the economic impact of price changes on customers are required for grouping the services in baskets. Cost related documents and data including calculations should be provided to the regulator. Based on these data the expected productivity growth rate and the efficiently incurred costs of providing service can be estimated.

The supporting documents provided must also show in a transparent manner the financial relationships between the individual services in a basket and the operator's other services. These other services include other postal services (licensed and non-licensed postal services such as the conveyance of addressed parcels) as well as services that do not qualify as postal services within the meaning of the Postal Act (e.g. unaddressed mail, but also services provided by the operator's other business areas or for other operators as far as there are financial relationships with these operators).

In order to prevent underperformance as a consequence of price cap induced cost-reductions the regulator should specify and define the quality standard of the services to be provided. This requires that the services should be described in sufficient detail. As a result future quality deviations can be detected and appropriate measures (penalties) can be taken by the regulatory authority. In particular, information on the quality standards such as number of fixed-location facilities, letter boxes, distance information, letter conveyance times, etc is required in this respect.

### **5. 2. 4. Price cap period**

The regulatory body has to set the period in which the benchmarks and the formula remain unchanged. The regulator should give priority to planning certainty. A sufficiently long-period allows the regulated operator to optimize its production-process and incites to enlarge its efficiency potential in the production process. Furthermore it provides competitors with a sufficiently long-term planning horizon for further investments. Additionally, there is uncertainty about the development of productivity growth rates and competitive conditions of the regulated company, which may require prices to be adjusted, where necessary.

The overall period for which the framework for price cap controls is set must be subdivided into individual price cap periods (because of the frequency of the parameters). The price set for each basket remains constant within each of these periods and must be adhered to at all times during each period. The periods chosen should not be too long so that the regulated operator is able to continually adjust the price over the total period. Based on the price cap formula shorter periods allow timely adjustments to be made to the sales volumes (weighting) which serve as a basis for determining price adjustment requirements. This helps to keep distortions of price structure and level which may occur due to a lack of up-to-date information on sales volumes within the baskets to be limited. However, the periods should not be too short in order to avoid that the regulated operator is forced to make unnecessarily frequent price changes.

### 5. 2. 5. Constraints

It has been a basic constraint of paramount importance so far that fully paid (undiscounted) and reduced individual prices may not unfairly disadvantage others. This condition can be viewed as a benchmark within the scope of price cap procedure.

Although the regulatory body's further obligations to examine discounts and discrimination these investigations are limited to an evident compliance test, this restricted test by no means exempts the regulated operator from compliance with the legal requirements. Under rates regulation of the price cap regime the regulated operator is always obliged to comply with the benchmarks, no matter whether the regulatory authority is no longer in a position to ascertain a possible violation of the regulatory requirements during the price approval process or whether the authority is not yet in a position to ascertain a violation, but could only establish such violations by *ex post* price regulation. The benchmarks considered in the price cap controls refer to the service features of the products specified by the regulated operator at the beginning of the procedure and included in the price cap regime.

The constraints therefore imply regulations which impose consequences on those regulated operators which reduce the scope of their services, e.g. delivery time, frequency of delivery, scope of provision and density of postal infrastructure (number of mail boxes or post offices), etc.

### 5. 3. Extensions of the price cap formula

The price cap formula can be completed by taking into account other parameters than only the efficiency factor.

#### 5. 3. 1. Introduction of a Service Quality index

Since the incentive in the price cap regulation is focused on cost reduction, it could have the effect of degrading service quality. To avoid this, it is possible to introduce adjustments for quality into the price cap constraint in order to penalize the postal operator when the service quality falls below its quality targets. Then, the postal operator is obliged to reduce prices; which can be viewed as a manner to compensate the consumers for a past poorer quality of service.

To set up such a mechanism it is necessary to quantify the quality of service. The regulator should first select a number of service quality indicators and the targets requirements per annum for each indicator. Secondly, a weighted contribution of those indicators should be decided in order to construct a global indicator. Finally, the level of the performance of the global indicator should be graded in terms of the reduction which should be applied in the price cap formula.

One example of such a mechanism is provided in the article of A. Franco and J. Castro (2008). The price cap formula is given by the following formula:

$$\Delta P_t = CPI_t - X - d_{t-1}$$

where

CPI is the inflation for the year  $t$  officially forecasted by the government and used in the state budget for year  $t$ ;

$X$  is the adjustment factor;

$d_{t-1}$  is the deduction attributable in case of quality of service non-compliance in the year  $t-1$ ;  $d_{t-1}$  varies between 0% and 1%.

$d_{t-1}$  is computed by the sum of the deduction associated with the non-compliance of any of the quality of service indicators plus the deduction associated with the non-compliance with an overall quality of service indicator (GQSI), which is calculated by weighting the relative performance of each individual quality of service indicators.

The regulatory regime described in the article establishes two levels of targets for each quality of service indicator, an Objective target and a Minimum target, the last one being lower than the Objective. The Objective is the quality level that the USP should achieve. The Minimum is the quality level that still is considered satisfactory.

The deduction is activated if the Minimum target of any quality of service indicator is not achieved. In this case, the deduction applicable is equal to the relative importance of that quality of service indicator (the sum of the relative importances of all quality of services indicators is 1). For example, if the relative importance of a quality of service indicator is 0.1, the deduction would be 0.1%, which is equivalent to  $0.1 \times 1\%$ . If the Minimum targets of two or more quality of service indicators are not met, then the deduction applicable is equal to the sum of the relative importances of those quality of service indicators.

In order to prevent the USP to achieve only the Minimum target, and not the Objective target, a GQSI indicator is calculated. For example, if the performances for all quality of service indicators comply with the Minimum targets but not with the Objective targets, a deduction would be applied, between 0% and 1%.

The percentage of the deduction associated to the non-compliance of GQSI is computed as follow:

$$\begin{aligned} d_{\text{GQSI}} &= 0 && \text{if } \text{GQSI} \geq 100 \\ d_{\text{GQSI}} &= 1\% \times (1 - (\text{GQSI} - 90)/10) && \text{if } 90 < \text{GQSI} < 100 \\ d_{\text{GQSI}} &= 1\% && \text{if } \text{GQSI} \leq 90 \end{aligned}$$

As  $d_{t-1}$  cannot be larger than 1%, a deduction of 1% will be applied if the sum of the deduction associated with the non-compliance of any of the quality of service indicators plus the deduction associated with the non-compliance with the GQSI is larger than 1%.

For a mathematical explanation of the calculation of GQSI, please refer to A. Franco and J. Castro (2008), pp. 44-45. An alternative explanation is:

- Firstly, for each individual QSI is given a classification in accordance with the following methodology:
  - if the performance for the QSI is equal to the Objective, then a value of 100 is given to that QSI;

- non-fulfilment of the minimum value = 0;
- a proportional value from 0 to 100 is given to the QSI for performances in the interval between the Objective and the Minimum;
- for performances above the Objective, the classification will also be above 100, in proportion to the positive variation regarding the Objective;
- Secondly, sum of the classifications given to each QSI, weighted by the corresponding relative importance of each QSI.

When designing the price cap, the regulator could introduce a service quality factor. If the regulator does not include any adjustment related to service quality, the regulator should be very careful to monitor the results of the service quality and to find another mechanism to ensure the improvement of the quality during the price cap period.

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” or “cost pass through”).

If the regulatory body would like to implement a cost pass through mechanism, the degree of cost controllability of each category of costs should first be studied by the regulator. This first step leads to determine the set of uncontrollable costs. This set should be limited to cost changes due to legislative or judicial acts or events that do not represent normal business risk. These costs for pass through are included in the price cap formula via the introduction of a Z-factor.

Because the impact of such events could be an increase or a decrease in the amount of uncontrollable costs, the following way can be applied. The Z-factor should be introduced in order for the onus to be placed on the operator to request for it to be activated, having the regulator the power to decide about its application or not. However, if the Z-factor event decreases the operator costs, then there should be a possibility for the regulator to activate it, ensuring that savings are passed on to consumers.

### **5.3.2. Inflation**

For price cap controls, the reference index is usually based on the retail price index published by the Statistical Offices.

Where the regulator has chosen the projection of inflation provided by the Ministry of Finance as the inflation index, an adjustment for inflation can be introduced in the case. This adjustment can take into account a percentage (or the totality) of the difference between the forecast value of the Ministry of Finance and the value of the actual reference price index observed at the end of the year.

### **5.3.3. Volume**

A volume-related adjustment can also be introduced. It allows taking into account the risks on the demand side. Where such a mechanism has been set up, the price cap framework foresees that in the case of a loss in volumes in excess of the baseline estimations the price cap constraint has to be relaxed – a volume parameter is taking into account in the X-formula and so at the beginning of the price cap period, the regulator needs to project an estimation of the

baseline of the mail traffic. If the observed outcomes of postal traffic are more favourable than projected, the framework enforces a tightening of the price cap constraint.

#### **5.4. Conclusion**

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 (but set up costs may be large). Price cap 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. On the other hand, there is a need to ensure that quality is not negatively impacted.

Price cap regulation adjusts the operator's prices according to the price cap index that reflects the overall rate of inflation in the economy, the ability of the operator to gain efficiencies relative to the average firm in the economy, and the inflation in the operator's input prices relative to the average firm in the economy.

## Chapter 6 – Advantages and drawbacks of the different types of price control systems

### 6.1. Introduction

There is a presumption that regulators will need to review prices to ensure that prices for universal services are in accordance with tariff principles (chapter 1). Attention then turns to the most appropriate form of price regulation, which has the potential to yield better outcomes in terms of economic efficiency while requiring relatively minimal regulatory effort. The effectiveness of different types or categories of regulation may vary depending on the circumstances. De facto, there is a wide disparity in the way that the price regulation has been implemented in the various European countries, in terms of scope (universal service, reserved services), form (price cap, price approval) and timing (*ex post*, *ex ante*).

Across EU Member States, the implementation of the pricing requirements in the previous Postal Directives (Directive 97/67/EC, Directive 2002/39/EC) has been carried out in many different ways, as has been shown for example by WiK-Consult (2006). However, these price controls have in many cases been set up before full market opening, and thus it is important to recognize that there may be a need for reviewing current price controls to the situation after full market opening and the full implementation of the Third Postal Directive. Moreover, the Third Postal Directive (Directive 2008/6/EC of the European Parliament and of the Council of 20 February 2008 amending Directive 97/67/EC with regard to the full accomplishment of the internal market of Community postal services) requires that prices give incentives for an efficient provision of the universal service.

This chapter will discuss three types of price control systems, namely *ex ante* price approval, *ex post* price control and price cap, and how they may be applied after full market opening.

### 6.2. *Ex ante* price approval

*Ex ante* price approval is based on the expected (unit) cost of the price regulated products in the control period. So this type of regulation takes as its starting point the European Postal Directive's requirement of cost oriented prices. It is effective in ensuring that there are no inappropriate cross subsidies.

Simply put, the price is set to this expected cost, after a process where the regulated entity in most cases applies to change its prices to the regulator. The regulator then has to decide, based on required information, if the suggested prices are in line with the expected cost of the products for the control period. Thus, *ex ante* price approval counteracts both excessive pricing and below cost selling.

*Ex ante* price approval implies that the regulated operator can retain the benefit from unanticipated improvement in productivity, whereas it will have to bear the cost of failing to achieve expected efficiency improvements. The latter risk can however be eliminated by the operator by seeking to re-open the price control procedure whenever it recognises that it is not meeting the expected improvements. If such a response by the operator is not legally prohibited, this implies that the risk is asymmetric: if the operator exceeds the planned efficiency gains, it keeps the gain, which is not passed on to consumers. If expected efficiency gains are not achieved a price increase might be sought. In other words, the incentives for

efficient universal service provision might be regarded as limited unless the price approved makes explicit provision for a quantified improvement in efficiency and there is an enforceable limitation on re-opening the price approval procedure within a set period.

With respect to the implementation of *ex ante* price approval, important issues are the amount of detailed costing information required, the necessity to project future costs and the delay that is incurred while the regulator analyses the data.

The *ex ante* price approval model is perhaps the most intrusive form of price regulation. In recent times, the *ex ante* price approval model of regulation has come under criticism, most of which has focused on the cost of regulation; as price changes may be requested annually, or even more frequently, this altogether may lead to a high level of regulatory burden.

Another criticism is the risk asymmetry. In this model, the regulated entity retains the benefit of any unanticipated improvement in productivity over the control period and bears the cost of failing to achieve expected improvements. However, in many instances, the regulated entity can eliminate the risk of underachieving by seeking to re-open the price control procedure if there is no legal impediment to doing this. Indeed in most cases the regulated company initiates the process by “applying” for a price increase at intervals it estimates appropriate.

Implementation of *ex ante* price approval might also be difficult. Issues that need to be considered are the amount of detailed costing information required, the necessity to base the pricing decision on projected or future costs and the delay incurred while the regulator analyses the relevant data. In case of a multi-product or multi-service firm such as those in the postal sector, there is normally a control on each of the firm’s services or products. If price changes are requested annually or more frequently, then it can lead to high level of regulatory burden.

Finally, a major theme is the principal-agent problem. This problem has two dimensions. First, the regulated company (the agent) is likely to be subject to different incentives and motivations than the government department, agency or commission (the principal). Consequently, the agent may pursue the objectives set for it in a manner that is contrary to the anticipation of the principal. Second, the agent usually possesses substantially more information about its customers, costs and market conditions than the principal. This information asymmetry can be used to the advantage of the agent in order to manipulate outcomes to its advantage. The conclusion from the principal-agent debate is that the outcomes of regulation can be very different to what was intended by the legislator. In such an environment, prices set by the regulatory body may result in a range of unintended consequences and inefficiencies.

Finally, because of the possibly long period between application (by the operator) and decision (by the regulator), this type of price control will be quite impractical on a completely liberalised and highly competitive market, because the operator will, for example, not be able to react to actions by competitors fast enough.

### **6.3. *Ex post* price control**

*Ex post* price control, sometimes referred to as *ex post* investigations or “cost plus” model, also use as its starting point the costs of the regulated products. Whereas the *ex ante* controls are forward looking, focusing on projected costs, the *ex post* controls are based on actual

costs. In practice, the regulator's focus is to investigate whether prices match the relevant costs or other standards, and if not, to force the operator to correct its prices. This means in practice that the operator can change prices without constraint but that the regulator is allowed to modify prices, "if, after investigation, it appears that prices are inconsistent with statutory or regulatory standards (e.g., 'cost-based' or 'affordable')" (WiK-Consult, *Main Developments in the Postal Sector (2004-2006)*, Study for the European Commission, 2006, p. 83).

An advantage of such approaches is that since it is based on actual costs, recorded in the operator's financial records, data collection and processing may be less complex. Thus, implementation costs are lower. It is also very useful for identifying cross-subsidies.

However, one immediate drawback with *ex post* price regulations is that it will ensure that the operator recovers all of its incurred costs. Thus, it gives no incentives to efficiency improvements, and stands in quite clear contrast to the Third Postal Directive's requirement of pricing structures that give incentives for an efficient universal service provision. Another issue is timing, i.e. incompatible prices can be in effect on the market for a long period before they eventually can be corrected. This assuming that there are no problems in enforcing compliance.

*Ex post* regulation also move the burden of proof onto the regulator that needs to compile robust costing data during an *ex post* procedure. The time used for the process of collecting and analysing data gives an advantage to the universal service provider as it can operate assuming business as usual during the time of the *ex post* procedure.

In addition, the existence of *ex post* investigation may rely in some cases on complaints from customers and other operators.

#### **6. 4. Price cap regulation**

Price cap (and, possibly, price floor) regulation is an alternative to *ex ante* price approval, developed as a practical regulatory tool in the early 1980s in the United-Kingdom. In 1983, the newly privatized British Telecom was regulated by price caps after the recommendations of a report by Stephen Littlechild. In his report, Professor Littlechild argued that price cap regulation would provide desirable incentives to achieve and improve productive efficiency, while reducing the information burden of regulation. He also argued that the simplicity of price caps would reduce the likelihood of regulatory capture.

In the price cap model, the firm can set a price at or below the cap for the period of the price control, usually a few years. In turn, the firm is expected to produce with the cost-minimizing input mix, invest in cost-effective innovation, and adjust optimally to changes in input cost conditions. The reason for this behaviour is rooted in economic incentive. Since the firm is allowed to retain as profit (or, at least, a portion of the profit) any cost reductions achieved relative to the price cap, it will choose (in theory) to produce efficiently.

A price cap system eliminates, or at least weakens, the linkage between cost and prices. Prices are controlled by a formula reflecting the normal variations in the prices of inputs used by the firm, offset by expected productivity improvements. This contrasts with traditional price regulation, where prices are varied within the context of a rate case based upon whatever changes have occurred in costs and productivity since the prior proceeding.

In a price cap system, prices are regulated by focusing on the changes in the overall level of costs that the firm faces (inflation of input costs), and subtracting the impact of productivity or expected productivity growth as it impacts the industry generally. Although logically the price cap should rise if the prices of a firm's inputs rise, the price cap is not linked directly to changes in the specific cost of service of the firm in question.

Whenever management reduces costs, the benefits will immediately and directly flow to the firm. The same can be said about traditional *ex ante* price approval regulation between rate cases; however, when a rate case occurs, incentives are diluted, because these cost savings will be redirected to the benefit of consumers (or of the community regarded as a whole). The price cap mechanism also imposes a penalty for inefficiency; if the firm's costs increase by more than the formula, output prices will not cover the costs actually incurred. Thus, it can be argued that a price cap system provides stronger, more lasting incentives for management to cut costs and increase efficiency, at least in comparison with a scenario in which there are frequent rate cases, or the ever-present threat of a regulatory proceeding to roll back prices due to excess profits.

There are other benefits of price cap. It is set only at the beginning of the price control period instead of annually and therefore avoids some of the regulatory costs associated with traditional regulation. It also provides stability and predictability in prices.

Nevertheless, in implementing a price cap, the regulatory body needs to weigh the desirability of increased pricing flexibility for the regulated firm against the need to protect customers and competitors. Similarly, under a price cap regime, the regulated firm may be able to implement anti-competitive pricing strategies, for example by subsidizing more competitive services from less competitive services. This can be addressed by setting a price floor (at least, for certain products or group of products) below which the firm is not permitted to reduce prices, or by placing the different products in separate baskets.

There are some other drawbacks. If the price cap approach is not accompanied by quality of service obligations, the regulated firm may seek to compromise on quality to exceed the productivity targets. In addition, the baskets used for each element of the price cap need to be carefully constructed to avoid the risk that the price of products with little effective competition are increased significantly whereas the price of products subject to effective competition are reduced while keeping overall within the cap. Similarly, the formula needs to be constructed in a manner that avoids a lack of coherence between the factor composition of the general inflation index used and the firm's actual inflation factor composition.

Another criticism is the information asymmetry, like in the case of *ex ante* price approval. But the problem is alleviated since the frequency and the need for detailed information are reduced. De facto, the price cap approach allows to regulate prices in accordance with industry-wide factors, while *ex ante* price approval compels to regulate prices in accordance with company specific data, i.e. in a rate case.

The risk asymmetry is lower than in the case of *ex ante* price approval. By subtracting the effect of productivity growth or expected productivity growth in the industry, the firm is required to at least keep up with overall productivity in the industry, in order to maintain its profitability: if it fails to keep pace with the industry, profits will decline. A timely review of the price cap reduces more the risk asymmetry and provides a means of ensuring that consumers (or the community) benefit from efficiency improvements induced by the price cap

plan, whereas the new control is generally more challenging in order to reflect the higher than expected gains in productivity. Such a review process is also beneficial to the firm when it includes a correction mechanism. This correction mechanism becomes effective if cost increases occur for reasons outside the control of the regulated entity. When the firm experiences profit losses because of forces beyond management control, a timely review can provide it with the opportunity to argue for higher allowable prices through a revision of the value of the parameters used in the price cap formula. However, the price cap should remain viable over the course of the control period in response to changing circumstances through a transparent adjustment process specified in advance. This stability is the basis for incentives under price caps.

The presence of a review process nevertheless introduces the risk of strategic behaviour by the firm, which could dilute the desired incentives, and reduce the potential cost reductions. For this reason, the review process should be carefully developed. The review ideally focuses on the factors which explain changes in profits. Of course, if the price cap has been optimally designed, such periodic reviews would be routine, with few surprises and no need to take any further regulatory action.

By heeding the lessons about the implementation of price caps, the positive attributes of a price cap scheme can be protected.

## 6.5. Implementation

WiK-Consult (2006) has shown in a community wide study that the pricing requirements and regulations have been implemented in different ways across EU Member States in terms of scope, form and timing. Most EU Member States have at the time of the study a combination of different types of price controls. These range from universal service v/s reserved services only, *ex ante* regulation of reserved services combined with price cap regulation of other services of the universal service, *ex ante* regulation of some services combined with *ex post* regulation of others, *ex ante* price regulation only, *ex post* investigation only, etc.

It could be concluded that there is a widespread use of different combination of regulatory methods. According to the conclusions in the WiK-Consult study, three quarters of the postal universal service is subject to dual price control regime (different combinations of *ex ante* price approval, price cap and *ex post* investigation). This wide disparity in implementation may be driven by how each market has developed and to what extent there is competition on the national market for postal services. Additionally, it may be because some EU Member States have opted for light-touch or heavy-touch regulation as a policy decision.

## 6.6. Pros and cons – conclusions

Price changes for postal services are also important as input costs for a wide range of economic sectors. Frequent requests for price changes can also increase planning uncertainty for the operator as well as for its customers.

As the market becomes liberalised and the competition develops, there will be a need to change the price control system to respond to new conditions. One key issue is to eliminate cross-subsidies while preventing below cost selling where competition develops and excessive pricing where there is a lack of competition. The challenge facing regulators and legislators, therefore, is to devise price control systems that on one hand allow operators to

respond to the changing needs of consumers, and on the other hand prevent inappropriate behaviour. As a result of the implementation of the Third Postal Directive, EU Member States are also required to make sure that prices give incentives for an efficient universal service provision. The administrative burden a price control system generates could also be an important issue.

Both *ex ante* price approval and *ex post* price control systems can be effective when it comes to preventing excessive pricing and below cost selling. *Ex post* investigations is furthermore useful for identifying cross subsidies. One advantage that speaks in favour of an *ex post* price control system is the limited regulatory burden, since actual costs are used as a base for the analysis, unlike *ex ante* types of price regulation (*ex ante* price approval and price cap) where costs has to be forecasted. On the other hand, it may take a significant amount of time before prices inconsistent with regulatory standards can be modified by a regulator's intervention. A major drawback for both *ex ante* price approval and *ex post* price control systems is the possibility of complying with the requirement in the Third Postal Directive regarding incentives for an efficient universal provision. When ranking *ex ante* and *ex post* price control systems in this particular aspect, *ex ante* types of price regulation (*ex ante* price approval and price cap) are favoured since incentives can be imposed subject to legally enforceable limitations on the frequency of price reviews. On the other hand *ex post* systems provide no incentive at all, and it is very difficult and time consuming to require excessive prices to be reduced. In summary, it appears that neither *ex ante* price approval or *ex post* price control systems will be very suitable for price control after full market opening, unless combined with price caps.

Owing to the incentives that they promote, price caps seem to have the potential to yield better outcomes in terms of economic efficiency while requiring relatively minimal regulatory effort. However, the desirable properties of price caps can be eroded due to poor implementation. In particular, price cap regulation may still leave prices too high if the initial price cap is set to recover the historical costs inherited from another type of regulation.

## Chapter 7 – Conclusions on the appropriate form of price regulation

### 7.1. Introduction

Liberalisation in postal markets within Europe means that regulators face a choice of using sector specific *ex ante* price setting and/or *ex post* investigations for the regulation of prices. Regulators need to choose a regulatory pricing system that:

- removes excessive pricing in markets that are not contested;
- provides incentives on the incumbent to improve efficiency;
- ensures that the price of each product is cost-oriented;
- allows the incumbent to respond to competitive challenges in a timely manner;
- removes distortion to competition of below cost selling;
- removes inappropriate cross-subsidies;

Additionally, regulators should keep any regulatory burden on the operator to a minimum.

Chapters 3 to 6 of this document have outlined various approaches to price regulation and include a discussion on the merits and drawbacks of the following three regulatory pricing systems:

- *ex ante* price cap
- *ex ante* price approval
- *ex post* price investigations

Many sector specific regulators across member states use *ex post* investigations alongside one of the *ex ante* pricing systems. Both *ex ante* and *ex post* regulatory pricing systems can, depending on circumstances, be effective in achieving the above goals.

### 7.2. Factors to consider

There are no hard and fast rules about which of the above systems should be applied. However, there are several factors that have proven in the past to be significant that each regulator should consider collectively in relation to their own postal market. These factors are outlined below. Other factors, not discussed in this document, might also be identified as significant for a postal market.

#### 7.2.1. Level of competition

As outlined in Chapter 2, an important factor to consider is the degree to which competitive forces exist within the postal market and segments. In fully competitive markets, *ex post* regulation is usually the norm, that is, none of the market participants need to be subject to prescriptive obligations (i.e. through licensing) in order for the market to function effectively. Any failings that do occur in competitive markets are usually dealt with under competition law. Accordingly, as competition develops in postal markets and segments, this type of regulation is likely to be more appropriate than *ex ante* regulation, which is normally applied to participants in non-competitive markets.

Therefore, the first step in the liberalisation process is to consider which markets are potentially contestable in that other postal operators can enter rapidly if prices exceed costs by a significant amount. Within a perfectly contestable market entry and exit can be relatively costless and immediate and this will result in a competitive outcome even if there is only one firm in the market. However, this is unlikely to be the case in postal markets that have been recently liberalised, and regulators would probably need to apply some form of *ex ante* price cap or price approval to protect consumers' interests.

### **7. 2. 2. Scope of the universal service**

One of the main duties of each regulator is to ensure that consumers have access to an affordable and cost reflective universal service. An *ex ante* price control can do a substantial job for the regulator, particularly when the scope of the universal service is large, as individual prices need to be set at affordable cost reflective levels and the relativity between prices must also be considered.

Where the universal service scope is limited to single-piece services for social and small scale business users, the regulator's task is much easier. There are fewer prices to be considered, and the universal services are unlikely to be contested on any significant scale. In these cases *ex ante* price approval can be simpler than I-X price caps because all that is needed is to apply projected I movements from actual prices in year 0. In the case of a price cap, in determining the value of X, much more detailed information is needed about the scope for efficiencies and cost movements, which is usually projected over a much longer period (five years for a four year price cap).

### **7. 2. 3. Availability of robust costing data**

The assessment of excess pricing or anti-competitive conduct through an *ex post* investigation can be a lengthy process. Not only is there a need to ensure that the investigative process obtains robust evidence on which to evaluate the conduct of the incumbent but also the assessment must take into account case law precedence. For this reason it may be some years from the outset of the start of the investigation to publication of the final decision.

There is a greater chance of these investigations being completed quickly if the incumbent postal operator produces robust cost data on a timely basis. Ideally, the incumbent's costing information is sufficiently developed to allow the regulator to determine with some precision the profitability of individual postal services. Accordingly, the regulator needs to ensure that the incumbent has the financial information in place to conduct *ex post* investigations fairly quickly.

Although detailed costing data is required for *ex ante* price controls, the need for it on a regular basis is less critical.

### **7. 2. 4. National legal framework**

In certain countries, regulators have concurrent powers which mean that they can directly apply EC and national competition legislation as well as act as economic regulators. In other

countries only the national Competition Authority has powers to lead anti-competitive investigations.

Where the regulator has full powers it has a full array of tools at their disposal and must decide which is the most appropriate for the problem at hand. It is important to understand the legal framework in which a regulator operates as it determines the approach to adopt in the liberalisation of the postal sector. A regulator which does not have the necessary powers to conduct anti-competitive investigations is more likely to regulate prices using *ex ante* systems.

### **7. 2. 5. Ownership structure**

One of the main features of an *ex ante* price control system is that it provides positive incentives for improving operating efficiencies. However, this form of price control was designed to regulate privatised utilities, where shareholders and external analysts exert strong pressure on management to meet efficiency targets set by the regulator. Under government ownership, there is likely to be less pressure on management to meet (and out perform) efficiency targets. This may mean that the benefits of the I-X approach to price setting are lost. Given that many postal operators across Europe are government owned, the benefits of I-X price regulation may be restricted.

### **7. 2. 6. Degree of wholesale separation**

A regulator can impose some separation between the retail and wholesale operations of the incumbent postal operator in order for rival operators to have access to downstream operations on an equivalent basis to the incumbent's upstream operations. The greater the degree of separation, the more likely that upstream competition will be effective. If there is effective structural separation of an incumbent's downstream delivery operations, the upstream products would be more contestable. In these circumstances, an *ex ante* price control would be more appropriate for the wholesale products and less so for retail products, such as pre-sorted bulk mail products.

Each of the above factors should be considered by regulators when determining the appropriate regulatory pricing policy. As stated earlier, the use of *ex post* investigations is often used in conjunction with the either of the *ex ante* systems. Therefore, the two questions a regulator needs to answer are:

1. Is it appropriate for a regulator to rely exclusively on *ex post* investigations to regulate prices?
2. If not, which *ex ante* pricing system (price approval or I-X price cap) is appropriate for use along-side *ex post* investigations?

With regards to the first question, regulators need to determine whether conditions exist for investigations to be carried out in a straight-forward and timely manner. Such conditions might include a high degree of competition in truly contestable markets, a well developed wholesale market where all market participants can access the incumbent's downstream activities on an equivalent basis and the existence of timely and robust fully allocated costing and long run (average) incremental costing product data from the incumbent. In addition, the regulator should be confident that it has the necessary legal powers to conduct these investigations promptly, in accordance with the EC and national competition legislation.

The figure below shows those conditions that should exist if the *ex post* investigation approach is to be used exclusively for regulating prices compared with other forms of price regulation. Only in these circumstances can a regulator feel confident that consumers' interests would be protected without the need of *ex ante* regulation. This is unlikely in a postal market which is in the early stages of liberalisation, and for this reason, the majority of regulators are likely to apply some form of *ex ante* pricing system, and thus consider the second question above.

<b>Development</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>Factors</b>	<b>Price Approval</b>	<b>Price Cap</b>	<b>Ex-post</b>
<b>Level of retail competition</b>	Low level of competition in markets with significant barriers to entry	Competition developing in fully contestable markets	High degree of competition in fully contestable markets
<b>Scope of Universal Service ("US") provided by the incumbent</b>	US is limited to single-piece services to customers with low posting profiles	US scope being reduced over time but still accounts for the majority of products	US covers a wide range of products in terms of volumes and revenue for the incumbent
<b>Level of private capital in ownership</b>	Publicly owned operator with no effective shareholder pressure on management	Partial private ownership with some pressure on management to improve efficiency	Full private ownership where incentive to achieve efficiency targets are maximised
<b>Degree of separation of wholesale/retail markets of incumbent</b>	Operations are fully vertically integrated and lack of access regime	Operations are fully integrated but obligations on incumbent to provide access	Structural and accounting separation is in place that provide for full equivalence
<b>Robustness of product cost data</b>	Cost allocation is highly aggregated - ie. no data on individual products	Some disaggregated cost but no data on different formats	Robust FAC and LRIC exist for individual products and formats
<b>Scope of competition law powers available to the NRA</b>	No competition law powers for investigations	Licence conditions that replicate some powers	Ex-post - Full concurrency of powers with Article 81 & 82
<i>Key: Areas in grey represent circumstances where ex-post investigations can be used exclusively</i>			

For example:

- (1) A I-X price cap would be most appropriate when:
  - postal prices are already fully compliant with the cost oriented principle,
  - the scope of universal service includes services to corporate customers for which there is significant competition,
  - it is possible to forecast cost movements 3-4 years ahead.
- (2) An appropriately designed *ex ante* price approval model would seem to be desirable when:
  - prices are currently not cost oriented,
  - the scope of universal service is restricted to single piece mail for which there is little or no significant competition,
  - forecasting is not particularly well developed.

When these examples do not fully align with the circumstances in a particular country, then the appropriate form of price regulation has to be chosen on the balance of advantages.

In many countries, the scope of the universal service extends well beyond single piece items. Therefore an I-X price control would be more appropriate, particularly for postal markets that are in the early stages of liberalisation. Before implementing an I-X pricing system, regulators should ensure that there are sufficient management incentives to improve efficiency where there is an absence of effective shareholder oversight.

### **7.3. Conclusions**

In summary, a consideration of certain factors will help regulators determine the regulatory pricing systems appropriate for postal markets that are in the process of liberalisation. The appropriate model will depend on the particular circumstances in the country concerned. There is no universal solution but the principles and arguments set out in this report will help postal regulators determine which price regulation mechanism (or combination of mechanisms) best suits their circumstances and objectives for their postal market.