The EUROPEAN COMMISSION

Directorate General XIII

Telecommunications, Information Market and Exploitation of Research

Studies on the Impact of Liberalisation in the Postal Sector

On the Liberalisation of Clearance, Sorting and Transport

by

Brussels and Vallendar, August 1998

The opinions expressed in this study are those of the authors and do not necessarily reflect the views of the European Commission.

August 1998

European Commission Contract Number: 71062

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CONTENT OF THE FINAL REPORT

1. MANAGEMENT SUMMARY

Aims and focus of the study

The study on the liberalisation of clearance, sorting and transport (March 1998 to July 1998) aims at the analysis of the "upstream liberalisation" scenario for the European markets for addressed postal items below 350 grams. Theoretical and practical aspects are discussed and evaluated. CTcon analyses the economic mechanisms of competition in the upstream stages, the practical feasibility of downstream access and the profitability impact of an additional upstream liberalisation on the national postal operators.

"Upstream liberalisation" describes the concept of liberalising the „upper part" of the postal process. This upper part includes all activities of clearance, of sorting and of mail transport between sorting sites. „Liberalisation" means that the provision of these services is no longer reserved to one single institution (incumbent national postal operator), but that these upstream activities can be provided by any organisation fulfilling some basic conditions (e.g. being registered as postal provider or holding a certain national licence). At the same time the scenario analysed in this study assumes that the downstream activities (delivery activities), which are reserved today, stay reserved to a national universal service provider. Consequently, at least one access point to the reserved distribution must be opened in a way that guarantees non-discriminatory access to the distribution system for postal operators offering upstream services („downstream access").

The scope of the study is limited to those postal market segments that are (or can be) subject to reservation under the current European Directive (97/67/EC): items of correspondence including individual letters (single piece or bulk) and direct mail. Since other "letter products" such as press items or small packages - according to the above European Directive - cannot be subject to reservation, there can be no further liberalisation and no further impacts on market shares or profit of the national postal operator[1]. They are therefore not analysed within the scope of this study.

The study clearly does **not** analyse a general downstream access scenario within liberalised market segments (such as e.g. press items). It has to focus on downstream access obligation as a necessary consequence of a reserved distribution for certain items

[1] Press items (newspapers and magazines) and small packages are generally handled in processes different to the standard letter handling (sorting on separate machines, distribution by specialised forces). In those countries that have traditionally liberalised press items, specialised service providers have established. Therefore, the segments of press items on the one hand and items of correspondence on the other hand can be said separate business segments. Cross-influences between the segments can be ignored in this study.

of correspondence.

General method of the study

The results of the study are based upon theoretical discussion, upon published financial statements and upon an in-depth data collection from all 15 postal universal service providers in the European Member States. The data collected via questionnaire and personal interviews from the 15 postal organisations are nationally specific. They were requested as "confidential". Nationally specific detail data are exclusively communicated to the European Commission, DG XIII. They are included only in the secret annexes to this report. Nevertheless, CTcon is able to present quantiative findings in the public report. The quantitative results are generally presented in the form of a European average value, a European minimum and a maximum.

Theoretical issues analysed

As general structure for analysis, CTcon defines a postal value chain model, describing the postal process as "clearance", "sorting (outward)/inward", "transport" and "delivery". In this model the transport stage includes only transport activities between sorting centres. All transports within the clearance or delivery are defined part of the specific process stage.

The analysis of economies of scale per stage of this value chain is based upon CTcon experience and upon in depth analysis of theoretical literature. Substantial economies of scale exist primarily in the clearance and in the delivery stage. In both cases the fixed costs result basically from fixed routes. The cost for serving fixed routes do not vary by volume of items processed in the system, thus causing a cost degression effect (one substantial aspect of economies of scale). The highest level of economies of scale can be observed in the distribution stage.

CTcon discusses the economic advantages of reservation for the distribution phase. On the one hand a legal reservation of the distribution area could prevent unreasonable competitive entry into the market and could therefore prevent losses in economic welfare. On the other hand, the cost reduction and performance increase potential indicated and enforced by competitive market structures may exceed the losses in economies of scale caused by the entry of one or more competitors.

Nevertheless, a universal service obligation to one large postal provider requires a form of extra funding. The necessary funds could be raised within a reserved delivery stage, allowing for a certain level of monopolistic profits. The funding of u.s.o. could also be provided by other sources.

Operational issues analysed

Access points can be operationally defined at the beginning of outward sorting, at the beginning of transport stage, at the beginning of inward sorting and at the distribution process. Any concrete and technical definition of the entrance point must be done regarding the detailed and potentially individual technical necessities of the universal service provider's processing system.

It can be argued that the number of competitors to enter the postal market is positively correlated to the number of access points (both in the value chain and on geographical dimension).

The CTcon analysis shows that there would be several types of additional costs that would occur, if the universal service provider would have to operate a system allowing non-discriminatory downstream access to the reserved distribution stage. Additional cost include (1) One-time installation costs due to the conditioning of the system for access (multi-provider-environment), (2) One-time set-up costs per injecting competitor, (3) Day-to-day additional processing costs (4) Synchronisation costs in case of changes in the (technical) system and (5) Transaction costs on the side of the regulator.

Furthermore the universal service provider might have to suffer additional cost for capacity provision, if he were obliged to back up for (upstream) service failure of competitors (immediately taking over the upstream volumes if the competitor collapses, or withdraws from business in a certain region?).

Based on the observable cost differences in segments of the postal markets (business mail as opposed to private items, mail from/to urban versus rural or remote areas), a single uniform tariff seems not to be feasible in competitive segments of the postal market. Liberalising upstream activities would therefore limit the applicability of a single uniform tariff to the remaining reserved distribution.

Analysing the logistical aspects of upstream liberalisation/downstream access, CTcon concludes that this concept is operationally feasible. Nevertheless, there are several aspects that require detailed technical solutions: e.g. sovereignty of the universal service provider regarding the technical and organisational structures of the postal system, legal responsibility and cost transparency of the universal service provider towards the national regulator.

A tariff system appropriate for an upstream liberalised scenario must provide regulated access tariffs for sorting, for transport and for delivery. Tariffs should best be based upon the "efficient cost" principle, while the practical interpretation of "efficient cost" will have to be applied individually by the national regulator in co-operation with the universal service provider. The access-tariff for the reserved delivery stage should include mark-ups that provide funding for the universal service obligation as well as for the additional cost of a system allowing access to upstream competitors.

Financial issues of upstream liberalisation

Financial analysis includes a general view upon the financial status of the national universal service providers as well as a view into the cost structures per stage of the postal value chain.

Viewing the data that were specifically generated within the study, the general distribution of costs within the postal value chain may be most interesting. 1996 55% of the cost are allocated to the distribution area.

		EU average	lowest	highest
(1)	Costs for clearance	12 %	6 %	20%
(2)	Costs for sorting (outward and inward)	24 %	14%	37%
(3)	Costs for transport	9 %	3%	14%
(4)	Costs for delivery	55 %	43%	69%

Table 1: Cost per stage of the value chain as percentage of total operational costs[2] (items up to 1000 grams)

The productivity of personnel in the stages (million items per full time employee and year) is heterogeneous in Europe. The average upstream productivity (covering clearance and sorting) in Europe is 230.000 items per full time employee and year (minimum: 150.000, maximum 340.000).

Competitive impact and profit impact of upstream liberalisation

Estimating the potential impact of an upstream liberalisation on the national operators, the CTcon study analyses (a) the strategies and interests of potential new competitors, the economic attractiveness of the national markets for a potential entrant and the potential competitive reactions of the national provider. For each Member State four quantitative scenarios are developed ("zero competition", "minimum competition" "moderate competition" and "maximum competition"). For each scenario CTcon estimates volume effects, price effects, cost effects and deduces a specific profit impact on the national provider. Viewing the entry options and the attractiveness of the markets for entry, the "minimum competition" scenario is found to be the most probable alternative.

Details on the most probable competitive scenario: In the upstream activities, limited competition may emerge. Since direct mail processing requires only very limited upstream activities from the postal operator's side, upstream competition will have to focus on individual letters[3] (bulk and single piece). Expected new players in the upstream letter market can be primarily small business companies acting regionally. Large express carriers and internationally operating universal service providers from the Member States may act selectively. Most probably the upstream volume handled by competitors will not be more than 10% of the business (bulk) letter volume. In some Member States the emerging competition will most probably be negligible. The competition-driven price reduction on business mail by the universal service provider will most probably be about 5% of current letter prices. Single piece items will almost completely be processed by the universal service provider.

In this most probable scenario the profit impact can be esti-

[2] Costs excluding cost for management and internal services

[3] Items of correspondence excluding direct mail, press and small packages

mated as a decrease in profitability of the letter product[4] by 3,6%-points (EU-average). The least decrease is estimated as 1,9%-points; the maximum decrease in this scenario amounts to 5,8%-points.

Major results of the study in total

Upstream liberalisation / downstream access is operationally feasible.

In the most probable scenario the potential financial impact of upstream liberalisation on the universal service providers is moderately negative and does not endanger the stability of the postal system as a whole.

Nevertheless, upstream liberalisation/downstream access is neither attractive to the incumbent operators nor to potential large new players in the upstream market.

- The universal service providers see the risk of losing sovereignty concerning their operational system and fear additional investment and costs and massive legal proceeding on the question of operational discrimination.
- Potential private competitors complain about the limitation of competitive activity to upstream services and the limited potential to differentiate their prices and services from those of the universal service provider.

The upstream liberalisation/downstream access scenario is of limited attractiveness to the regulatory authorities: On the one hand reservation of delivery may provide means to fund postal universal service, but on the other hand accepting the reservation of delivery would retain an internationally unfair situation towards the postal operators in those Member States who have largely or even completely liberalised. In any case, the complexity of setup and ongoing monitoring of a downstream access solution would permanently draw substantial management capacity on the regulator's side.

Recommendation to the regulator

The positive aspects of an upstream liberalisation / downstream access scenario finally are overcompensated by specific disadvantages, namely the additional costs for a multi-provider environment, the low expected competitive impact, the complex regulation and the limits to homogeneous application in all Member States.

On the way towards totally liberalised postal markets, the European Commission should prefer using other concepts of liberalisation, such as e.g. liberalisation of postal products or further reduction of price and weight limits of the reserved area, where the above specific disadvantages do not occur.

[4] Letter as item of correspondence excluding direct mail. Press items and small packages are also excluded.

2. AIMS AND FOCUS OF THE STUDY

Traditionally the markets for postal services are highly regulated and served by sovereign or state-owned legally monopolised enterprises.

The main reason for this structure used to be the aim to secure the provision of postal services to all citizens independent of their place of residence (universal service), at a guaranteed basic quality, e.g., in delivery times, clearance and distribution frequencies for all citizens and at affordable and if possible uniform prices (necessity for cross-subsidisation of cost-intensive clearance and distribution areas).

Up to now, there are considerable differences between postal services in the Member States concerning legal regulations (e.g., predominant degree of liberalisation) as well as prices, and especially the quality of postal services, for instance, comparing the delivery times of a postal item.

Now, the postal sector in Europe is to be developed into a single market and liberalised. Competition is to be promoted in order to secure an efficient development of high-quality postal services. Under liberalised conditions, the EU Member States are to introduce suitable measures for securing the universal service (permanent provision of postal service of specified quality at all points in their territory at affordable prices for all users). (Common Position (EC) 29.4.97 on common rules for the development of the internal market of Community postal services and the improvement of quality of service (97/C 188/02)).

Aims of the study

This study analyses the impact of upstream liberalisation on the universal service operators, on competitors without universal service obligation and on the customers of postal services.

„**Upstream liberalisation** " describes the concept of liberalising the „upper part" of the postal process. This upper part includes all activities of clearance, of sorting and of mail transport between sorting sites. „Liberalisation" means that the provision of these services is no longer reserved to one single institution (incumbent national postal operator), but that these upstream activities can be provided by any organisation fulfilling some basic conditions (e.g. being registered as postal provider or holding a certain national licence). At the same time the scenario analysed in this study assumes that the downstream activities (delivery activities), which are reserved today, stay reserved to a national universal service provider. Consequently, at least one access point to the reserved distribution must be opened in a way that guarantees non-discriminatory access to the distribution system for postal operators offering upstream postal services („**downstream access** ").

Therefore, different aspects have to be discussed in detail:

1. Economic mechanisms underlying the development of competition in the upstream stages.
2. Economies of scale and range within the postal business.
3. Value chain modelling.
4. Theoretical problems posed by the introduction of non-discriminatory access for third parties to the postal network as well as practical feasibility of downstream access (interfaces, logistic, quality of service, management of peaks, etc.).
5. Comparative and profitability impact of the upstream liberalisation.

The study clearly concentrates on the defined scenario including a reserved distribution area (e.g. up to 350 g for letters).

The study clearly does not analyse a general downstream access scenario within fully liberalised[5] market segments (such as e.g. press items). It has to focus on downstream access obligation as a necessary consequence of a reserved distribution for certain items of correspondence.

Focus on upstream liberalisation of items of correspondence

When thinking of parcel and courier services, liberalisation in the postal sector has already started a long time ago. With regard to the recently published directive „97/67/EC of the European Parliament and of the Council of 15 December 1997 on common rules for the development of the internal market of Community postal services and the improvement of quality of service" liberalisation in Europe (15 Member States) is now to be extended to the letter market. Lowering the price and weight limits, the volume of postal items accessible to competition increases further. Within the liberalised volume competitors are allowed to offer the complete range of services - from clearance to delivery.

Since letter products such as press items or small packages - according to the European Directive 97/67/EC - cannot be subject to reservation in the Member States, there can be no further liberalisation and no further impacts on market shares or profit of the national postal operator. Those letter products are therefore not analysed within the scope of this study.

The focus of this study must be put on items of correspondence, comprising letters and direct mail as defined in the Directive 97/67/EC, Article 2, especially within the price and weight limits for reservation.

The special case of customers processing their own mail is not regarded as a market transaction in the sense of this study. It is in none of the Member States subject to regulation. Therefore this special case is not analysed in the study.

[5] *„**Full liberalisation**" describes a regulatory situation were reservation on products or on activities or on weight/price bands in the postal sector is no longer existing. In a fully liberalised postal market, any institution would be allowed to offer postal services covering the total postal value chain or parts of it.*

Limited relevance of direct mail to the question of upstream liberalisation / downstream access

Direct mail is already liberalised in several member states (e.g. Finland, Netherlands, Spain, Sweden). According to interviews several national regulators envisage the liberalisation of direct mail in 1999. It is most probable that after 2003 the reservation of direct mail will at best be the exception in only very few European Member States.

Large percentages of direct mail are injected directly into the sorting plant of the national postal operator. Direct mail is generally pre-sorted (during printing). Thus, for direct mail items national postal operators execute only limited upstream activities. In most European countries this is expressed by the substantial discounts on direct mail items as compared to the single uniform tariff (for letters). If only very limited upstream activities are executed and if direct mail prices basically cover downstream activities, the impact of upstream liberalisation in the direct mail segment must be negligible, regarding the analysed scenario (reserved distribution area).

For those Member states, where direct mail is already liberalised or will be liberalised until 2003, there can be no further impact of upstream liberalisation. Analysis of upstream liberalisation in the direct mail segments in these countries is of no practical relevance. For the remaining Member States the effect of upstream liberalisation of direct mail is negligible (see above). Consequently, upstream direct mail volumes can be ignored when analysing the potential competitive (volume, price, cost, profit) impact of upstream liberalisation.

Differentiation of bulk mail and single piece items

Differences in quantity and quality of mail reveal the distinction between single piece mail and bulk mail. Bulk mail refers to a larger quantity of mail items injected „en bloc" (without explicit minimum limit), often pre-sorted to a certain degree. Discussing competitive scenarios, separation of single piece (private) mail and bulk mail (business) will be of major importance.

Focus on upstream liberalisation/downstream access as exclusive concept of liberalisation

In search of maximum clarity of results, CTcon analyses and discusses the scenario of upstream liberalisation / downstream access under "ceteris paribus" conditions – as far as strategies of liberalisation are concerned. This approach is supposed to be most appropriate to the concept of the five parallel studies, namely to the study that integrates the results of the sectoral studies in one comprehensive model.

3. ANALYSIS OF THE THEORETICAL ISSUES OF UPSTREAM LIBERALISATION

3.1 The value chain model as an analytical framework to discuss the theoretical issues of upstream liberalisation

In order to analyse the 15 national postal service providers CTcon has built up an analytical framework. The framework supports structured discussion of overall economic, but also microeconomic, operative, technical, and regulatory/legal considerations. Furthermore, it can be customised to suit the cross-national examination of the selective liberalisation of single value creation stages in the post-specific performance process.

With regard to upstream liberalisation - liberalising all stages in the postal value chain besides the process of delivery -, these single stages have to be clearly identified and strictly separated in order to describe actual and/or potential interfaces. The most feasible description of the postal sector reveals the following segmentation of the whole value chain:

Figure 1: Postal value chain model

As a common basis the geographical structure of the postal service CTcon proposes to distinguish between postal districts, postal regions and postal areas. A postal district represents the delivery area covered by one postman. Several postal districts are summed up to a postal region. Each postal region contains a delivery base where the final sorting for the postman's walking takes place. A postal area comprises several postal regions. On the top level of the logistical network of the postal value chain each postal area is served by one sorting plant.[6]

Definition of the single stages in the postal value chain

As the single stages are not uniformly separated within the organisation of different postal operators in the Member States a clear and uniform definition of each of the identified stages has to be given. These definitions will then form a reliable basis for discussion on a European scale.

[6] This kind of geographical separation does not necessarily reflect the real existing network organisation of all 15 public postal operators in the Member States (e.g. in case of Luxembourg because of the surface covered) but can be adapted easily to every existing segmentation.

Clearance

Clearance comprises the process of collecting postal items and ends by injecting the items into the sorting plant. Collecting postal items takes place at different points. Single piece letters are cleared at post offices and / or street letter boxes. For bulk mail there is customer clearance by a postal vehicle, direct delivery to the sorting plant or customer's delivery to post offices for smaller volumes of bulk mail (small business clients). Intra-area transport (transportation of postal items within the boundaries of one postal area) to the sorting plant is included in the process of clearance.

Outward Sorting

Outward sorting describes the sorting of all postal items collected in one area by destination area (all other areas or even the same area if intra-area-post).

Transport

The transport process describes the transport action between areas / sorting plants (inter-area transport). Other transport action (intra-area transport) is included either in the clearance process or in the delivery process.

Inward sorting

Inward sorting describes the sorting of all postal items incoming from other postal areas to be delivered in the area of the sorting plant plus intra-area-post.

Delivery

The delivery process starts with the transport of mail items from the sorting plant to the delivery bases. Within the delivery process the postal items are then handed over to the recipients at different points of delivery: post office boxes (generally used by larger business recipients), the individual mail box (to-door delivery) or in some cases end-of-road delivery.

Having described the single stages in the postal value chain the interfaces can be clearly identified. Possible points of access for injecting postal items to further processing appear at the beginning of the following processes: sorting inward, transport, sorting outward and delivery. Whether all points of access are necessary for upstream liberalisation or not will be reflected within the discussion on operational issues of downstream access (chapter 4). Furthermore, access to the universal service provider's process of clearance is of no relevance to this study. On the one hand, private companies offering legally the (additional) service of collecting mail especially from business customers do already have access to the postal operator's processing. On the other hand, future potential competitors offering clearance service do not need to have access to the incumbent postal operator's clearance process.

The value chain model will systematically be used for the further examination of macro- and microeconomic analysis as well as the discussion of operational issues.

3.2 Validation of the argument about economies of scale and range as a basis of maintaining the monopoly for distribution only

Analytical reflections with regard to network businesses, as e.g. telecommunications, railway or energy supply, often discuss the existence of economies of scale and range. As the postal sector exhibits network characteristics, it seems to be appropriate to analyse, to what extent economies of scale and range might appear in the postal business. Nevertheless, it has to be noticed that the postal network is a daily built up one in comparison to the physically durable characterised telecommunications, railway or energetic supply one's. Furthermore, in relation to upstream liberalisation, economies of scale and range within the process of delivery are of particular interest.

3.2.1 Economies of scale and range in the different stages of the postal value chain

Economies of scale occur whenever the production of one additional unit of a good or service requires less input factors as the production of every single unit before which means that over the relevant range of production decreasing costs per unit output can be noticed. These decreasing costs per unit output emerge because of the fact that some input factors are independent of the amount of output and therefore lead to fixed costs. There are three possible reasons for such an independence (not mutually exclusive):

a) an input factor cannot be divided (e.g. one street letter box);

b) an input factor causes costs whether it is used in the production process or not (= sunk costs, e.g. capital cost for a telecommunication network, pension payments for former employees);

c) a production process or activity is needed for producing one or any amount of output units (e.g. the activity of clearing one street letter box).

Economies of range (economies of scope) come up whenever profitable vertical and/or horizontal integration of different products and/or services is possible. The economic effect is the same as described above: the production of one additional unit of a good or service requires less input factors as the production of every single unit before. Advantages from the degree of specialisation can weaken the argument of economies of range.

On account of the study's focus on addressed mail, the reflections are limited to only „one product", so that there is no need to reflect on economies of range with regard to horizontal integration. Furthermore, taking into account that the steps in the postal value chain (clearance, sorting, transport, and delivery) are

officially[7] considered as possibly separated markets, vertical integration is not discussed within the scope of this study.[8]

Clearance

Within the process of clearance there are several types of access, such as street letter boxes[9], post offices, customer's clearance, etc. Altogether, they build up a network with different points of access. Connecting these points on a (almost) daily basis, this type of network is marked by a large amount of fixed costs consisting mainly of costs for personnel. These are caused by linking a certain number of street letter boxes (points of access) to be emptied by one person without any regard to the amount of injected items (a lot of fixed activities, cf. reason c) above). Consequently, collecting postal items exhibits economies of scale.[10]

Sorting

The process of sorting, both sorting outward and sorting inward, can be done manually as well as in a highly automated manner. Considering manual sorting economies of scale cannot be argued for: labour force is almost perfectly dividable, there are no sunk costs, and the production activities are mostly proportional according to the number of items.

Using sorting machines, however, economies of scale can be realised because of the fact that the investment for sorting assets are sunk costs (besides the possibility to sort letters there is no other usage for this kind of machines, cf. reason b) above). But sunk costs are of minor relevance, because of the limited life cycle of sorting machines (about 10 years), after which an investment

7 Notice on the applicability of the competition rules on the postal sector and on the assessment of certain State measures relating to postal services (98/C 39/02), section 2.5.

8 Several empirical studies have identified economies of scope within the processing of postal items, e.g. Rogerson, C. M. and Takis, W. M. (1993): Economies of Scale and Scope and Competition in Postal Services; in: Crew, M. A. and Kleindorfer, P. R. (ed.): Regulation and the Nature of Postal and Delivery Services, p. 109 - 127; Boston and Dobbs, I. M. and Richards, P. (1991): Assessing the Welfare Effects of Entry into Letter Delivery, in: Crew, M. A. and Kleindorfer, P. R. (ed.): Competition and Innovation in Postal Services, p. 61 - 88; Boston. Nevertheless, economies of scope often depend on national particularities such as, for example, the combination of delivery and clearance when picking up mail to be posted during the distribution of mail; see Panzar, J. C. (1993): Competition, Efficiency, and the Vertical Structure of Postal Services; in: Crew, M. A. and Kleindorfer, P. R. (ed.): Regulation and the Nature of Postal and Delivery Services, p. 91 - 105; Boston.

9 The terms „street letter boxes„ and „post boxes„ are used synonymously, describing the access point where letters to be posted can be injected either by private or business customers.

10 Empirical studies differ with regard to the assumption of economies of scale within the process of clearance. Norsworthy, J. R. and Jang, S.-L. and Shi, W.-M. (1991): Productivity and Cost Measurement for the United States Postal Service: Variations Among Relations; in: Crew, M. A. and Kleindorfer, P. R. (ed.): Competition and Innovation in Postal Services, p. 141 - 172; Boston noticed a large amount of economies of scale within clearance whereas Panzar, J. C. (1993): loc cit., concludes constant returns to scale for clearance. Nevertheless, it has to be noticed that the separation of the process within several studies is not the same.

decision for new machines has to be made. The capacity of sorting machines is dividable because of the flexible size and/or number of machines. Thus the reason indivisibility (cf. reason a) from above) for fixed costs is not valid.

Altogether the argument of economies of scale within the process of sorting is rather of no importance.[11]

Transport

Many of the public postal operators do (still) manage their own transportation network. However, according to the criteria necessary to realise economies of scale, it has to be noticed that:

a) in modern and developed economies, transportation capacities can be supplied and adapted very easily by choosing different means of transport as well as by changing their size; this means that the input factor can be divided;

b) there are no sunk costs, because transport means for postal items can be used alternatively;

c) the activity of transportation refers to fixed relations between geographic points. This kind of activity is easily available from carriers offering transportation for any amount of output units. Generally carriers realise economies of scope so that economies of scale are then of minor interest).

Therefore, looking at large transport volumes, economies of scale within transport cannot be argued for.[12]

A special situation may occur, if transport of low volumes within tight time schedules is necessary. In this case, small and dedicated transport capacity (e.g. capacity of a specialised transport provider who may be able to combine several smaller traffics between geographic points) might not be available. Transport has to be done in own operation (dedicated vehicles) and transport capacity might therefore not be dividable at low volume levels.

Delivery

Focusing on the distribution of addressed mail, the process of delivery consists of a personalised (almost) daily built up distribution network on the postal districts' level. Sequencing a large number of mail recipients, this type of activity is fixed. Thus the distribution of an additional postal item within one postal district will not increase significantly the costs for delivery and therefore, important economies of scale can be realised.

[11] Dobbs, I. M. and Richards, P. (1991): loc cit., suppose a certain amount of economies of scale within the process of sorting whereas the results of Rogerson, C. M. and Takis, W. M. (1993): loc cit., leave the interpretation open to both results, the existence of economies of scale as well as their absence.

[12] Rogerson, C. M. and Takis, W. M. (1993): loc cit., separate long distance transportation from short distance transportation, finding increasing economies of scale for the latter ones whereas long distance transportation exhibits constant returns to scale.

Differences within the realisation of economies of scale depend a lot on the actual configuration of a postal district. In densely populated areas consisting of large buildings having only one centralised letter box system at the entrance door, economies of scale can easily be realised whereas the distribution of postal items in single house areas exhibits less economies of scale.[13]

Summary of economies of scale (e.o.s.)

As a first result when analysing each stage of the postal value chain separately, it can be noticed that economies of scale do appear as follows:

	e.o.s.	remarks
clearance:	+	high percentage of fixed routes, fixed collecting frequency
sorting:	+/-	automated sorting exhibits e.o.s. because of sunk costs, manual sorting without any e.o.s.
transport:	-/+	transport capacity is easily available from carriers, exception: very low volume
delivery:	++	fixed routes

Table 2: Economies of scale within the postal value chain

3.2.2 Economies of scale and the argument of natural monopoly in the postal business

Within the process of clearance and delivery of addressed mail economies of scale can be realised over the relevant range of production. This leads to the question whether one single operator can supply the market at lower costs than can two or more firms, which corresponds to the concept of subadditivity in the cost structure. Then the economically useful monopolistic situation is said to be a „natural monopoly". [14]

Supposing that the services of collecting and distributing addressed mail are offered without leaving „white spaces" (= areas

[13] A lot of empirical studies underline the existence of economies of scale within the process of delivery, e.g. Dobbs, I. M. and Richards, P. (1991): loc cit., Rogerson, C. M. and Takis, W. M. (1993): loc cit., Panzar, J. C. (1991): Is Postal Service a Natural Monopoly?; in: Crew, M. A. and Kleindorfer, P. R. (ed.): Competition and Innovation in Postal Services, p. 219 - 228; Boston and Panzar, J. C. (1993): loc cit.

[14] See e.g. Baumol, W. J. and Panzar, J. C. and Willig, R. D. (1982): Contestable Markets and the Theory of Industry Structure, p. 9.

not served), the additional building up of a competitor's network, independent of the size of area covered, would exhibit additional fixed costs without lowering the fixed network costs of the incumbent operator.

Only one case of several operators makes sense economically: a strict geographical separation with regard to the area served. However, this situation corresponds to regional serving monopolies and then shows no difference to the situation of only one operator.

3.2.3 Gains from natural monopoly versus gains from competition

Supposing the existence of natural monopoly within the processes of clearance and delivery, the question whether reservation may be useful or not has not been answered yet. On the one hand, the economically profitable monopolistic situation because of natural monopoly might not prevent competitors from entering the market. This would cause losses in economic welfare because of wasting resources. Consequently, the reservation of clearance and delivery seems to be economically useful.

On the other hand, monopolistic market structures tend to less innovation and furthermore, to less rationalisation than in a competitive market structure. Competition might force the new entrant as well as the incumbent operator to search for cheap input factors or efficient production processes, e.g. setting consumer incentives for using post office boxes or the building up of end-of-road-delivery or innovative alternatives.

The existence of different parallel networks, for instance, may create options of serving customers without significant additional fixed costs. Courier services, taxi drivers, buses, and other suppliers of logistical services build up a daily available network connecting different places at different times. The linkage of such networks might possibly be organised in a way to supplement or replace the postal network for clearance partially.

The cost reduction potential, set free by competition, may exceed the losses in economies of scale caused by the entry of one or more competitors.

3.2.4 Politically motivated reservation within the postal business

Population density and the spread of economic activity are heterogeneous not only on the European level but also on a national, regional, and to a certain degree even local level. Therefore, the process and costs of clearance and delivery differ largely according to the place where they are offered. Therefore, in a competitive environment price differentiation or „white spaces" are very likely to appear.

Both scenarios are politically not desired: additionally to economic aspects, postal services are subject to reflections on availability and non-discriminatory access for all customers at affordable prices. Consequently, universal service obligations and a single uniform tariff are set up to achieve these socially motivated aims.

As a result of the combination of universal service obligations and single uniform tariff, cross-subsidisation between profitable and loss making regions or customer-groups occurs automatically. Cross-subsidisation opens gateways for a competitor's „cream-skimming" (or „cherry-picking") strategy. It focuses on the profitable market segments solely, undercutting the incumbent postal operator or outperforming him with additional services at the same price per unit and leaving the costly segments to him. Keeping the universal service (provider) alive, requires a monopoly reserving at least some profitable segments at the given price or some form of (external) funding.

With regard to an easy funding in order to assure the universal service obligation, the reservation of delivery seems to be appropriate because of the existing economies of scale and the high fraction of total costs of all postal processes. Furthermore, during a period of transition, public postal operators developing from bureaucratic administrative organisations to market orientated (private) enterprises, it might be preferable from the point of view of employment effects to protect the delivery process where most of the staff is to be employed.

3.2.5 Conclusion

The main results have to be summed up as follows:

a) Concerning the processing of addressed mail economies of scale are mainly supposed to exist within clearance and delivery.

b) Assigning total costs to output, the existence of a natural monopoly within clearance and delivery of addressed mail is very likely.

c) Arguing for reserved monopolistic market structure in order to realise gains from a natural monopoly situation has to be seen in relative terms to the potential progress and cost savings from innovation and rationalisation being enforced by competition.

d) The combination of universal service obligation and single uniform tariff creates the need to protect the u.s.p. from „unfair competition".

e) Reserving delivery may be reasonable to raise (in the most efficient way) funds for the universal service obligation and single uniform tariff because of the existence of important economies of scale and the high fraction of costs in relation to the total costs for postal items' processing.

f) Reserving delivery may be reasonable as a means to postpone potentially harsh employment effects in the postal sector or to finance burdens from the former state-owned status (e.g. pensions for civil servants).

4. OPERATIONAL ISSUES AND TARIFF SYSTEM

Upstream liberalisation in combination with the reservation of the delivery process implies the need of access to the public (national) postal operator's production chain, at least to its delivery service. Aiming to maintain a standard quality of service in the postal business, the practical feasibility of downstream access is of major importance. Besides the identification of the interfaces within the processing of postal items, technical aspects as well as organisational and logistical issues (chapter 4.2) have to be taken into account when a partial liberalisation within the postal value chain is discussed. The tariff system (chapter 4.3) defining prices for partial postal services within the value chain is one of the major challenges. It sets the competitive arena for increasing competition and is closely linked to the question of funding of the universal service obligation.

4.1 Theoretical aspects of a potential introduction of upstream liberalisation and non-discriminatory downstream access

Downstream access describes the possibility of injecting postal items into the processes of sorting outward, transport, sorting inward or delivery of the universal service provider for all competitors in the postal business. Once the items injected, the universal service provider processes the item through the remaining part of the value chain to the addressee.[15]

Non-discriminatory downstream access then should guarantee to every single competitor (injector of mail) in the postal market to be treated equally by the universal service provider in terms of functional, geographical and timely opportunities for postal consignments. This includes transparency on the requested services as well as equal conditions of access published in a way that the information is easily available to the market participants.[16]

The definition of non-discriminatory downstream access reveals one major difference in comparison to upstream liberalisation: Downstream access describes the **obligation** of the universal service provider to accept postal items injected into his network at defined stages whereas the liberalisation of the upstream stages offers actual or future competitors in the postal

[15] Nevertheless, actual regulation envisages e.g. in Germany the access to single steps in the universal service providers value chain. According to current regulatory legislation in Germany, new competitors may ask that items injected e.g. into sorting are extracted from the universal service provider's processing again to be transported by the competitor. This obligation would enlarge the discussion of non-discriminatory downstream access especially in the field of pricing of processes offered to competitors.

[16] See Notice Nº 98/C 39/02 of the European Commission loc cit.

sector the **possibility** to process postal items within the stages clearance, sorting and/or transport.

According to the Directive 97/67/EC of the European Parliament and of the European Council, all Member States have to "ensure that users enjoy the right to a universal service involving the permanent provision of a postal service of specified quality at all points in their territory at affordable prices for all users" (Article 3, 1). Thus, downstream access must be discussed in a scenario of universal service obligation for one of the providers[17] (former monopolist). Furthermore, theoretical discussion must deal with the compatibility of downstream access and a single uniform tariff.

4.1.1 Limited size of the reserved distribution

It is a major assumption of the downstream access liberalisation scenario, that distribution remains a reserved area. Reserved distribution may therefore provide one means - among others - of financing upstream universal service provision.

At the same time the Commission and several Member States are following a clear liberalisation policy, so that the expansion of reserved areas above the actual level can be said non-realistic.

Thus, delivery can – on a European perspective – only be reserved for those products and services that are reserved in the Member States today. A uniform reserved distribution area can only comprise the minimum combination of nationally reserved areas. Not reservable on a European uniform level for example are: distribution of direct mail, cross border mail, local post services[18] (Spain), letters above 200 gr (Germany). In Sweden and Finland, reserving distribution would mean to re-vitalise monopolistic structures in a largely liberalised situation. Should the liberalisation of the postal markets along the price/weight or product dimension be continued, the remaining reservable distribution volume would diminish further.

Regulation concerning universal service provision and single uniform tariff should therefore be aware of the limited financing volume, which can reasonably be generated from a reserved distribution process. Consequently, regulators should minimise the costs for (upstream) universal service provision and/or consider universal service provider-financing from sources external to the postal business system.

4.1.2 Points of access to the universal service provider's postal value chain

Reserving the delivery service, additional competition can appear within the processes of clearance, sorting and transport. In order to complete the processing of postal items, competitors

[17] Theoretically the universal service obligation can be separately contracted to different operators in different regions. This arrangement would not change the general theoretical discussion.

[18] Local post is mail (possibly collected in separate letter boxes) remaining from clearance to sorting in the same area (e.g. one city) to be delivered in this area.

need to have access to - at least - the distribution process of the universal service provider.

Apart from this basic access point, several further points of downstream access might be operational and imaginable:

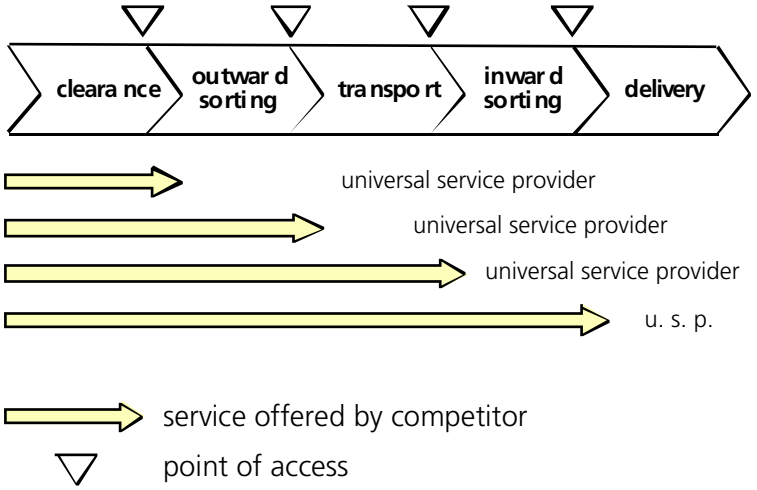

Figure 2: Possible points of access for competitors

Competitors offering only clearance, will need to have access to the sorting process of the universal service provider.[19] This kind of competitor is supposed to deliver the postal items directly into one of the sorting plants.

Additionally, competitors could offer outward sorting of the postal items collected. In this case access to the process of transport would be required.

Competitors offering clearance and transport, need access to the inward sorting process of the universal service provider.

A postal operator, offering the complete range of upstream services, would reveal the need for access

- to the sorting plants where sorting inward is completed or even
- to the delivery bases where the final sorting of postman's walk is done.

The first case would leave the final transport of the sorted postal items from the sorting plant to the delivery base (as defined process included within delivery) to the universal service provider. The second case involves injection of items directly into the delivery base[20].

Assuming that the distinct steps of the value chain are technically and organisationally inseparable, the above list points out

[19] The case of injecting postal items into the universal service provider's clearance process can be ignored here. Especially in urban or metropolitan areas this kind of "value added" service is already offered additionally to the postal operator's services and generates turnover on top of the postal tariffs. It is therefore of no particular interest to the focus of this study. Albeit, from a competitive perspective those "consolidators" should not be ignored.

[20] According to the definitions of the process steps this would mean that competitors execute transport activities that have per working definition been integrated into the distribution process.

the relevant points of access. The exact description of those access points has to be developed in detail considering practical and technical necessities that result especially from the universal service provider's operational systems. They would therefore have to be adapted to the individual situation in each Member State.

4.1.3 Access points and entry to the postal market

The total number of access points to the universal service provider's operational system determines largely the number and type of postal service providers that will be able to enter the market. The more access points exist, the easier small business companies can start postal operations and the more competitors will enter the market for postal services.

Number of access points along the value chain

The more access points exist along the universal service provider's operational system, the shorter is the "distance" within the value chain that has to be covered by the new entrant and the earlier the new entrant is able to generate turnover to finance further expansion. Should there be only access to the distribution phase, the new competitor has to cover clearance, sorting and (possibly nation-wide) transports towards the sorting centres of the universal service provider. In this case, only larger organisations experienced in postal business (e.g. parcel services or express services) would be able to immediately cover such larger parts of the value chain. If there is an access point to sorting, the new competitor can enter with low complexity, organising specialised clearance (e.g. from business clients).

Number of geographic access points

The more access points available on a geographic scale, the more opportunities can be created for small companies operating regionally limited postal services.

Thus, a too narrowly restricted number of access points reduces the expected (new) competitors to larger organisations that do already have postal operations (e.g. national universal service provider from other European Member States, private parcel organisations, express services etc.). Providing a large number of access points is likely to create competition with numerous smaller and regionally operating companies that may limit their activities to one or two steps in the value chain and possibly may add services on the "pre-clearance-side" (e.g. direct clearance at the business customers' door, in-house collection, clearance at higher frequencies, clearance at fixed hours, other additional post handling services).

With downstream access to the universal service provider's nation-wide and even international network, operators of local post services could link their activities using the universal service provider and offer the complete postal service.

4.1.4 Additional costs in a postal system allowing downstream access

The possibility of injecting postal items into the universal service provider's system, as described above, reveals the need for managerial, organisational and possibly technical adaptation to the services offered/exchanged, both from the universal service provider as well as from the competitor(s).

Additional costs can be expected in three types:

1. One-time installation costs due to the conditioning of the system for access (multi-provider-environment)
2. One-time set-up costs per injecting competitor
3. Day-to-day additional processing costs
4. Synchronisation costs in case of changes in the (technical) system
5. Transaction costs on the side of the regulator

One-time-installation costs occur due to basically required technical and organisational pre-adjustments to open access points for potential competitors to inject postal items (e.g. entrance doors for external injectors, data interfaces, standardised contracts of co-operation)

Set-up-costs per active competitor occur, whenever a concrete competitor for the first time demands access to one or several access points. They include costs for bargaining (on technical or legal details), information- and contracting-costs. Thus, these costs have the character of transaction costs.

Day-to-day additional processing costs occur while running the operational system integrating upstream competitors. Additional costs cover for example: additional acceptance handling, measuring of items, accounting and billing among competitors and within the different production steps and - last but not least - the management of the "joint" legal responsibility for each postal item towards the external customer.

Synchronisation costs appear whenever the universal service provider changes his organisational or technical system processing the items. For proper operations he is forced not only to manage change within his organisation, but also to inform and involve the competitors relying upon downstream stages of the system. These additional costs can partially be identified as transaction costs (information, bargaining, decision, contracting).

Additional transaction costs occur possibly on the regulators side: information, bargaining and decision in the course of licence issuing for upstream activities, additional control of standards and realisation of licence requirements etc.

The total additional costs in a postal system allowing downstream access can be minimised by constructing a standardised system to integrate and manage the multi-provider environment. Since the incumbent postal operator (universal service provider) is the one organisation involved in almost any transaction, the major part of this system investment and development effort will have to be effected by this organisation.

4.1.5 Universal service provision as a provision of capacity in the upstream stages?

The universal service provider has to guarantee that all postal items[21] are processed according to certain minimum quality standards. Quality criteria contain – among others – an average maximum delivery time per item. Non-discriminatory service must be rendered to anybody injecting postal items. Thus, universal service provision is basically a provision of postal processing capacity in a certain geographic region (Member State).

Assuming that a successful upstream liberalisation has led to considerable competition in clearance, sorting and transport. As a result, the universal service provider's upstream market share must have diminished. A company in a competitive market would be forced to adjust its capacity.

The universal service provider in the postal market, however, cannot generally reduce his upstream capacity to the level of his market share. In case of competitors' inability (instability) to process universal service items, he has to guarantee the minimum quality service himself.

Thus, the universal service provider must hold a certain degree of over-capacity in order to remain capable of buffering instabilities of other market players within very short periods (take over the volumes of a collapsed or withdrawing service provider within days). Therefore he suffers additional costs that may not be honoured by market prices.

The regulator has to weigh additional costs for extra-capacity against the degree of service availability desired by the regulator.

4.1.6 Upstream liberalisation and the single uniform tariff

The costs of clearance, sorting and transport show a large spread e.g. according to the type of customer. Clearance costs per item cleared from a hardly used street letter-box may be multiple to the clearance costs per item cleared directly from a large business customer. Major differences in processing costs occur also on the basis of geographic criteria (driving time as compared to effective clearing time).

The regulatory idea of a single uniform tariff (s.u.t.), which can be interpreted as "one uniform price for all letters of a uniform weight band and/or format for all customers in the complete State" generates massive problems for the universal service provider in a scenario of upstream liberalisation.

Competitors (universal service providers from other European Member States, parcel services, courier services, new small businesses etc.) will focus their market entry on those items and clients that are economically attractive: items, where costs for clearance (and sorting and transport) are lower than the part of the s.u.t. dedicated to these phases ("cream skimming" or "cherry picking") They will therefore concentrate on clearing large business customers and possibly clearance in metropolitan

[21] The weight limits to the universal service provision (2kg for letters and 20 kg for parcels) are not relevant to the current discussion.

areas. Due to this focused client structure, competitors are able to provide their service at lower costs than an efficiently working universal service provider.

The universal service provider will soon lose business clients, whose turnover he needs in order to partially cross-finance clearance in less attractive segments. If the universal service provider starts competing on the attractive segments, he himself must offer lower prices or additional "free" services, thus also losing his ability to finance the loss-making activities in the unattractive segments[22]. As a result, it shows pretty clearly that in case of upstream liberalisation with a single uniform tariff, extra-funding for the universal service provision (external or from a reserved area) is imperative.

Without a single uniform tariff, market forces will most probably develop price differentiation[23] according to regional aspects, customer groups and possibly other criteria. The number of different prices will be limited by factors such as administrative costs on the providers' side and customer acceptance. In this case the problem of cream skimming does not occur, even if universal service obligation is maintained.

As a conclusion, the concept of single uniform tariff is not compatible to the idea of upstream liberalisation.

Viewing the practical pricing policy (discounts) of European postal providers, the question may occur, whether a complete s.u.t. does practically exist. Large postal clients generally receive discounts (of different size), whereas private customers generally pay the „regular" price (s.u.t.). While postal operators argue that these discounts are based upon cost differences and preparatory work (e.g. large injectors substantially contribute to economies of scale and inject pre-sorted material thus inducing cost reduction on the operators' side), one might also recognise that the s.u.t practically applies to small customers (private consumers and small business customers) only. These small customers represent roughly 10 – 15% of volume of items of correspondence[24].

At the same time s.u.t. in the current situation seems to be practically stable on a geographical basis: Discounts are not subject to geographical criteria such as type of origin or destination (rural or urban items).

The observation that - even in a reserved situation - cost differences practically induce limited price differentiation (discounts

[22] Competition will either be executed in terms of (illegal?) discounts or in terms of "free" additional services for the customer. Both can be seen as a reduction of price below the single uniform tariff.

[23] In the case of upstream liberalisation the cost differences and the resulting potential for price differentiation are only based upon the upstream (clearance, sorting, transport) phases. The major part of costs (distribution) would remain reserved and would therefore not offer new opportunities or necessities for price differentiation.

[24] Rough estimate by CTcon (items of correspondence injected by private senders and small businesses), based upon a mail-stream analysis in the parallel study on "weight and price limits". Other injectors generally receive discounts either for pre-sorting, use of franking machine, bulk injection, injection at sorting plant, special price for direct mail etc.

on letter products) supports the above idea: A product based s.u.t. is incompatible with the idea of upstream liberalisation.

4.1.7 International timely co-ordination of upstream liberalisation and downstream access

In the relevant competitive scenarios it can be expected, that today's large national postal operators will be major international competitors in a more liberalised European postal market. Since these players do have the postal experience and organisation as well as extensive financial opportunities to perform large scale competitive action, it is very important to harmonise the time schedules of upstream liberalisation among Member States. Thereby it can be prevented that players, financed by a reserved "home market" effect large scale competitive action in a market that has already been liberalised to a higher extent. This would create an unfair situation that could be extremely harmful to the national operator (universal service provider) being attacked without the possibility to take any effective counter action. This aspect is of equal importance for other liberalisation strategies (e.g. liberalisation by products).

4.2 Logistical constraints and specifications necessary for the implementation of downstream access

4.2.1 Maintaining quality standards and logistical adaptation

Developing the postal sector, European policy focuses highly on a harmonisation of quality standards, such as delivery time or availability of services. In order to maintain (or ameliorate) the achieved service quality of the universal service provider, at least the following aspects have to be respected by the competitors, injecting into the universal service provider's processes at any access point:

Time Windows

Since the universal service provider has to co-ordinate the injection activities of possibly several competitors and his own processing activities while maintaining quality standards towards the customer, he must be responsible for organising scheduling of injection at any access point. Non-discriminatory downstream access comprises fair distribution of those time windows among the injecting competitors. The time windows must be arranged within or closely around the time window for universal service provider's own injections.

Standards to format, weight and packaging

The universal service provider's processes are built according to a certain band of item-formats and may depend upon uniform packaging equipment (bags, boxes, pallets, etc.). The universal service provider must be responsible for the definition of acceptable standards in these aspects as a requirement for injection. Non-discriminatory access does then include that standards are transparent and that potential injectors have access to this type of equipment at reasonable costs.

For technical reasons, the competitor must adapt his logistical

system to the standards set by the universal service provider. Any competitor-specific logistical adaptations of the universal service provider's system should be financed by the competitor.

Existing co-operation experience between u.s.p.s and private upstream service providers

In several Member States fruitful co-operation between private upstream service providers and the national u.s.p. can be observed. This type of co-operation appears namely in the sector of international mail (consolidators) and in direct mail (e.g. mailing houses). In the domestic letter market large business clients inject their pre-sorted items directly into the sorting plants and SME couriers cover limited clearance services.

These observations show that it is generally possible to organise a form of late (downstream) access to the national postal system. Nevertheless it should be noted that the observed cases do neither represent examples of general upstream liberalisation nor of compulsory downstream access. The co-operation does occur on the basis of (individual) contracts between the upstream service provider and the u.s.p. Negotiating these contracts, the u.s.p. is in a relatively strong position and can therefore define the technical conditions of co-operation, thus being able to guarantee stable quality of service for the complete postal process. Furthermore the u.s.p. can select those co-operation partners that provide further advantages (e.g. clearance services in remote areas) to him or who are willing to accept discounts that are inferior to the u.s.p.'s effective cost savings. All of these cases are more or less cases of „subcontracting" from the part of the u.s.p. rather than upstream liberalisation. The legal basis of these upstream services is either the liberalisation of products (e.g. international mail), the processing of injector's own mail (large customers injecting to sorting plant) or an explicit subcontracting case (clearance by courier service). The observable cases do neither imply systematic adaptation of the total operational system nor are they based upon a regulatory obligation for the u.s.p. to co-operate. Nevertheless they show that under certain circumstances (e.g. system sovereignty on the u.s.p.s side) the individual co-operation within the value chain can be positive for a private service provider and for the national u.s.p. and that quality standards can be maintained in spite of increased organisational complexity.

4.2.2 Practical aspects at the specific points of access

Access to outward sorting

The injection of collected postal items to the access point "outward sorting" can easily be realised, if the private competitor does not perform any sorting at all.

Geographically the access points to outward sorting must be at all of the universal service provider's sorting plants that perform outward sorting for the universal service provider himself. Additionally, the universal service provider may name specific sorting locations.

Access to transport (between sorting plants)

Private operators injecting outward sorted items need access to the universal service provider's transportation network. The sorting-result has to be compatible to the universal service provider's sorting-result (destination structure, possibly further pre-sorting by postal region or even district).

If the universal service provider is using high-technology sorting machines in the downstream phases, injecting competitors must be obliged to perform the same preparatory work, namely bar-coding. Otherwise additional work within the universal service provider's processing will be caused, additional costs will occur.

Access to inward sorting

Offering clearance, outward sorting and transport (to inward sorting plant), competitors must be allowed to access the universal service provider's process of inward sorting (sorting plants for inward sorting). Items injected must be in the same state of work (sorted, marked etc.) as items originating from the universal service provider's own upstream processes.

Access to delivery

With regard to the possibility to offer the complete range of services in relation to upstream liberalisation, the universal service provider will be obliged to give access to all points where the final sequencing for the postman's walk is done. Items to be injected must be separated by postal regions and districts. If the further (automatic) sequencing relies upon specific marks, competitors' items have to carry marks according to the universal service provider's system. If final sequencing is already integrated into the sorting inward process, injection after sorting inward is not possible any more. The universal service provider would in this case have to repeat the complete sequencing for all items in the process.

Consequently, upstream liberalisation seems to be practically feasible in case of a postal system depending on manual or low technology processes. The higher the degree of automation, the higher the level of technical requirements to be accepted by the injecting competitors. With the use of recently available machines for centrally integrated final sequencing, delivery into the distribution phase may even be impossible.

4.2.3 Practical aspects of invoicing between providers

The user of postal services will pay once for the processing of a posted item. Then, two possible scenarios can be taken into consideration:

(1) The user of postal services within the relevant volume for downstream access can only buy stamps from the universal service provider. In this case the competitors will have to be paid by the universal service provider according to the services executed.

(2) The competitors offering upstream services will be allowed

to cash in for the complete processing. In this case, the universal service provider will have to be paid for the downstream processes by the competitor.

In scenario (1) the competitors would be limited to the status of subcontractors to the u.s.p. They would not be able to establish full scale customer relations. Therefore market entry would be extremely unattractive under these conditions.

On the one hand, the scenario (2) makes it more attractive for competitors to enter the upstream part of the reserved postal market. They will cash in the money immediately (in advance?) without waiting to get paid by the universal service provider. The relation to the paying customer would pass over to the competitor, actually rendering (clearance) service.

On the other hand, when taking into account that competition may lead to frequent market entry and in case of lack of profitability to repeated bankruptcy, the universal service provider's financial stability might be threatened (late or missing payments for items processed in the downstream phases). For the good of the final customer, there is the obligation to the universal service provider to accept and process postal items. This obligation may even hold, if there is well founded doubt as to the injecting competitors' ability to pay for downstream services. One possible solution might be scenario (2) combined with a competitor's bank deposit or bank guarantee for the u.s.p., covering a fixed percentage of the average monthly access fees.

4.2.4 Legal responsibility, accounting systems and regulatory control

Legal responsibility

In case of loss or damage of postal items processed by different operators it is difficult to find out who shall be held responsible for it. However, several arguments underline, that legal responsibility may be of minor relevance in the discussion of downstream access:

- Damage of postal items within the relevant volume for downstream access happens to a negligible percentage.
- Loss of postal items in the relevant segment will rarely be of major importance, often not even detected (important items would have been sent by express or "registered").
- In today's monolithic systems non-registered letters can neither be traced nor can their existence be proved.

Regulation and accounting systems on the universal service provider's side

Since in the analysed segments market structures do not yet exist, regulators still massively refer to cost information in order to approve tariffs and prices. With adoption of the downstream access scenario the number of tariffs to be calculated, negotiated and approved, is massively extended. Apart from tariffs toward final customers, tariffs between postal operators must be developed (see chapter 4.3). Thus, the performance of the universal service provider's accounting system is of growing impor-

tance.

4.2.5 Empirical results

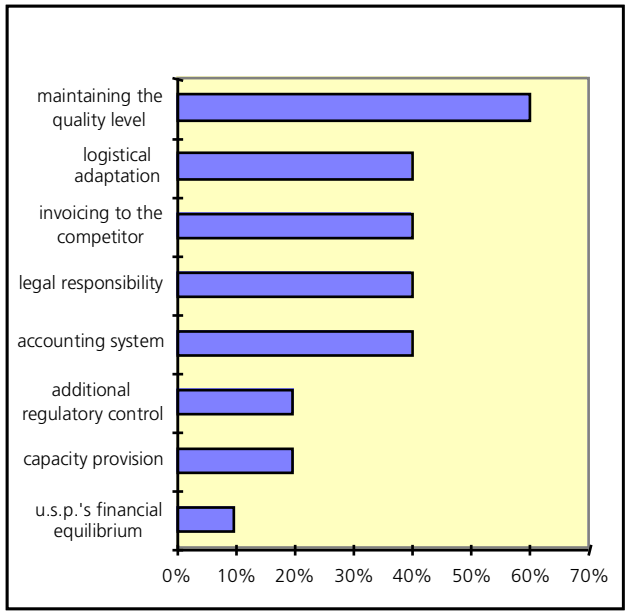

Figure 3: Frequency of statements related to possible constraints in the case of downstream access, from the view of public postal operators

Within the data collection process for this study, the universal service providers had the opportunity to point out critical aspects of downstream access from their point of view. Sixty percent of universal service providers mentioned the challenge of maintaining the quality standards in case of downstream access. Further critical aspects, that have been enumerated frequently, are shown in figure 3.

4.3 Tariff system best able to ensure the proper postal operations in Europe in a downstream access scenario

4.3.1 Relevant field of analysis

Today, postal tariffs which are subject to regulatory control, describe the interface between the postal customer and the (one) postal operator. Those tariffs will most probably be touched by an upstream liberalisation / downstream access scenario[25], but they are not the focus of the following discussion.

In addition to customer-faced tariffs, it is now necessary to design access-tariffs for postal competitors injecting postal items into the u.s.p.'s processing system (access-tariffs).

An access-tariff is to be developed for each well-described access point into the separated stages in the universal service provider's value chain. Since several access points are found to be

[25] Most probably, competition on the business mail sub-segment in the letter market will lead to a (cost and market driven) tariff split between business (bulk) items and private (single piece) items. Bulk letters, being injected by hundreds per day and customer, will most probably be subject to price reductions, whereas the price for single piece letters (today's s.u.t.) will at least be stable. Depending on the form of funding for the universal service obligation and on the intensity of competition in the business segment, prices for private (single piece) letters might even increase.

necessary (see chapter 4.1.2), a consistent bundle of tariffs has to be designed.

The scenario of "downstream access" could raise fundamental questions concerning basic conditions for tariff systems to be developed:

1. Is there a single uniform tariff for each product vis-à-vis the customer?
2. Should private companies (a) be allowed to sell the complete postal process to the final customer (e.g. issue stamps) and buy from the u.s.p. or (b) do the competitors have to "sell" upstream activities to the u.s.p.[26]?
3. For which "services" tariffs have to be set (e.g. clearance of one letter or clearance of one clearance per day)?

Applying the above findings (chapters 2 – 4.2) of the study, the analysis can be focused quite clearly.

1. If upstream stages of letter processing are liberalised, there can be no single uniform tariff for the total letter product (see chapter 4.1.6).
   - S.u.t. towards the customer for all market players would hinder competition and – at best – create cheating strategies.
   - S.u.t. towards the customer for the u.s.p. only, would hinder the u.s.p.'s potential for competitive action and would possibly force the u.s.p. to leave any (geographic) competitive market.

Consequently, if there is no s.u.t. per product, a tariff system of discounts based upon s.u.t. cannot exist.

2. In order to make entrance attractive for new competitors, it is imperative that every competitor can operate as full service provider, thus billing the price for the complete service and buying the necessary downstream services from the u.s.p. (see chapters 4.2.3).
3. The tariff system should be based on the idea of postal items processed (price per item or per number of items). Other ideas (e.g. price per clearance point cleared) would be relevant only if the u.s.p. would subcontract his operations, which he could do in any case.

Consequently, the following analysis can be limited to the idea that all competitors operate their specific billing system vis-à-vis the final customer and will have to pay the u.s.p. on a per item[27] basis for those downstream services that they use (delivery at least). Thus, a tariff system for sorting outward, transport and sorting inward and delivery is required (see figure 2 in chapter 4.1.2).

[26] In case (b) only the u.s.p. would issue stamps or operate billing systems towards the final customer; the competitor would be reimbursed for his services by the u.s.p.

[27] This may include compatible variants such as "per 100 items" (or any other number of items) or per "kilogram" etc.

4.3.2 Basic principles for tariff setting

Developing a tariff system one can basically start from two different points: firstly from the costs incurred in a firm or secondly from the markets viewpoint.

The two basic approaches for pricing then are:

1. **Cost-oriented** : Tariffs out of (actual) cost plus pricing (mark-up pricing, price cap, productivity development, dynamic „target zones")
2. **Market-oriented** : Tariffs in relation to actual and/or expected future substitutes or adjusted comparable services in competitive markets or auction/bids for restricted capacities available

In the case of pricing postal services market powers have not had the opportunity to emerge and market prices do not exist[28]. Therefore a regulator might have to establish competition- and welfare-oriented objectives, so that a third approach can be useful:

3. **Theoretically competitive long run prices** , e.g. long run perspective assuming future „perfect competition"; additional accounting for various (short-term) adjustments covering existing (inefficient) aspects, that still have to be eliminated until a stable competitive equilibrium emerges.

[28] Since letter processing is not internationally transferable / transportable and depends largely on local cost for personnel, prices from other national markets (such as Australia) are not applicable.

These three principles differ not only in the theoretical basis, but also in their scope of concern as regards dynamics, market participants and relevant economic level of interest.

4.3.3 Development of a system of access-tariffs to the u.s.p.'s postal system

Developing a system of access-tariffs, it has to be worked out per stage of the value chain, (a) whether it is at all necessary to identify and to set a regulatory access-tariff, and (b) which pricing principle is most appropriate at this stage.

Necessity for regulated tariffs per stage in the value chain

- For the process of **clearance** , a regulated access-tariff is not necessary. While customers inject into clearance, accepting the market oriented product tariffs of each competing provider, access to the u.s.p.'s system at this point is irrelevant for postal competitors.
- For the process(es) of **sorting** (inward & outward) regulated access-tariffs clearly have to be set, because sorting is the first of the downstream stages where mail can be injected by the competitors. Due to the investment volume and the time needed by competitors to build a functioning sorting system, the u.s.p. could otherwise exclude competitors from market participation by setting prohibitively high access-prices.
- For the process of **transport** a regulated access-tariff has to be set. Transport links sorting outward and sorting in-

ward within a tight schedule. Smaller competitors, such as regionally operating clearance and (manual) sorting providers, whose volumes do not yet allow access to efficient transport capacity, could be excluded from market participation by a prohibitively high access-tariff at this point.

- For the process of **delivery** a regulated access-tariff clearly has to be set, because delivery is assumed to be reserved.

Access-tariff for sorting

The costs of sorting do depend on the „quality of the item[29]" and may depend upon the format of the items to be sorted automatically. Standardised formats and machine written addresses can be sorted at lower costs than other items. Larger formats may have to be processed by specific machines or even manually. Since it is expected that relevant volumes of injected mail will come from business customers being served by new competitors, the quality of these items can be assumed to be at a uniform level. Therefore a uniform access-tariff per item (and/or per kilogram) for sorting (outward as well as inward), possibly differentiated by formats[30], seems appropriate.

Since market prices for postal sorting activities do not yet exist in Europe, access-tariffs to sorting necessarily have to be set on a cost basis.

The tariff should be based upon "efficient cost" of sorting plus a reasonable profit rate. There are two approaches to be applied by the national regulator: (a) Actual sorting costs of the u.s.p. are reduced for estimated inefficiencies of the u.s.p.[31]. (b) Zero base calculation of per item costs[32]. Both approaches have to be applied individually per Member State by the national regulators in co-operation with the national u.s.p.

In the short run, the regulator has to thoroughly monitor these cost based tariffs to prevent prohibitive pricing. As soon as competitors for clearance have established, the regulatory control can be reduced. Market mechanisms will force the u.s.p to charge prices based on efficient cost: A (too) high access-tariff to sorting would motivate competitors to build up own capacity; the u.s.p. would consequently lose substantial volume[33].

Access-tariff for transport

Market prices for transport services should be available for any competitor and for the regulator[34].

The access-tariff to transport process should either be based

29 E.g. automated readability of the address, standard format etc.

30 The necessity of format differentiation depends upon the specific technical facilities in place (range of formats that can be sorted automatically). In manual sorting, a format differentiation is irrelevant.

31 E.g. machine and/or personnel over-capacity, difference of concrete salaries as to market salaries

32 Cost and performance information on machines are available; market salaries to be applied etc.

33 Trade-off for the u.s.p.: cost undercoverage (tariff below actual sorting costs) vs. loss of volume.

34 Most of the European u.s.p.s do already subcontract (parts of) inter-region transport.

upon market prices paid by the u.s.p. for subcontracted transportation services or on the efficient costs[35] of the u.s.p.

Access-tariff for delivery

Despite the fact that the per item costs of **delivery** depend upon several factors[36] and might vary significantly, the access-tariff to delivery can be single and uniform.

As delivery is to be reserved, a single uniform access-tariff for this stage would be compatible to the postal competitive arena in the downstream access scenario. A single uniform tariff for delivery would bear the advantage of simplicity. It could be differentiated as to categories of weight and/or format.

If funding for certain aspects of the universal service obligation – including costs for providing viable access points for competitors - is to be generated within the postal system[37], this can only be done in the reserved delivery stage. In the upstream phases, which are subject to competition, these funding components could not be realised (prices are market driven).

The absolute access-tariff for delivery should be based on costs of the u.s.p.'s delivery process. There are two most adequate cost oriented approaches: (a) efficient cost plus reasonable profit plus mark ups and (b) actual cost with productivity development path plus mark ups.

The efficient cost approach is equivalent to the approach in the sorting and transport stages.

A productivity development path would start from actual processing costs and would fix stable and/or decreasing tariffs over time; the gradient[38] being developed e.g. according to the productivity development in the national economy.

Since efficient costs for delivery are specifically hard to identify[39], the latter approach appears to be practically more suitable to the postal business.

By using mark ups, the necessary funding of u.s.p. can then explicitly be worked into the uniform access tariff to delivery.

Rationales for possible cost mark ups to the delivery costs of the u.s.p. to set the uniform delivery tariff[40] can be:

- costs for installing and running access points at the downstream stages (see chapter 4.1.4)
- costs for funding deficits from a possible price cap for single

35 See access tariff for sorting.

36 E.g. number of items per delivery stop, spatial structure of the delivery region (number of delivery points, distances between points).

37 Alternative funding options would use sources external to the postal system

38 Percentage of tariff decrease per year.

39 Difficulty to identify efficient costs is driven by the numerous factors that determine per item cost of distribution: e.g. geographical aspects, service quality required, volume streams, structure / variety of items to be delivered in one district / by one postman.

40 Gabel, D., Weiman, D.F. (edt), Opening networks to competition: The regulation and pricing of access (1998).

piece items (see chapter 4.3.5)

- costs for capacity provision in letter processing due to universal service obligation (see chapter 4.1.5)
- costs for universal service provision for other postal products (e.g. direct mail or parcels)
- costs for „historical" cost inefficiencies due to former investments and production factor structure (civil servants) caused/invented by state ownership or national laws.

4.3.4 Criteria for the evaluation of tariff systems

The following criteria represent the various objectives of the customers and users, the regulator, the private competitors and the universal service provider concerning the design of a modern postal business system. They comprise – among others - creation of fair competition, reliable universal service and an efficiently working postal system.

Objectives (of different parties) may be contrary and therefore criteria will have to be weighted in order to help generate a comprehensive evaluation of the tariff systems.

The criteria for evaluation of tariff systems in a "downstream access" scenario can be listed as follows:

1. Efficient **monitoring** by any regulator
   - Low transaction costs as regards the information, adjustment and control efforts for the regulator
   - Technical and timely availability of the information required
   - Validity of the information required

   The above sub-criteria imply continuous market observation and analysis and/or regular reports from the u.s.p.s' accounting systems.
   - Stability of the tariff setting rules
   - Simplicity of the tariff system, e.g. a low complexity which can be handled within limited time and information
2. **Acceptance** throughout the market participants
   - Understandable and „fair" tariff setting principles
   - Simplicity of the tariff system
   - Consideration of one-time investments (conditioning of the system for access) and additional recurring processing costs
3. Efficiency on top economic level - increasing **welfare**
   - Incentives for the service providers (competitors and u.s.p.), to steadily improve efficiency and performance and to develop customer oriented new products at low prices.
   - Avoidance of economically inefficient market failure damaging one provider's financial basis (cross-subsidisation, predatory pricing etc.)

- Tariffs for well-defined services with regard to the optimal division of labour stages

4. **Operational stability**
   of the postal value chain in terms of timely, spatial and service related sustainability, especially the provision of the universal service
5. **Non-discriminatory tariffs**
   e.g. equal tariffs to all market participants for comparable services (considering cost savings based upon preparational work or contribution to economies of scale)

The above access-tariffs for the different stages are all constructed following the same methodological idea: efficient cost. This method can be stable over time. The degree of tariff-differentiation within each stage is minimised in order to simplify the system for the competitors (acceptance) as well as for the u.s.p. and for the regulator (monitoring). Once agreed upon the definition of concrete elements of efficient costs, monitoring can be done based upon regular reports from the u.s.p. cost accounting system.

The orientation to efficient cost provides clear incentives to the u.s.p. to rationalise and to innovate in order to reach the efficient cost level. Investment by competitors, replacing the utilisation of the u.s.p.'s system (e.g. in sorting) is only induced if he can reach a new level of efficiency e.g. by using innovative technology or organisation. Market players are increasing welfare; market failure is avoided.

The stability of the postal system is supported by this tariff system in several ways: Efficient pricing in the competitive stage prevents extreme volume losses to the universal service provider. At the same time, special burdens (universal service, historical cost inefficiencies) to be (temporarily) carried by the u.s.p. are refunded by application of (temporary) mark ups in the reserved distribution phase.

4.3.5 Potential implications of the tariff system for the postal customers

Opportunity to inject directly into downstream stages of the u.s.p. at the same tariff as postal operators

Since postal tariffs should generally be non-discriminatory, (large) business customers could make use of the tariff for downstream access and inject directly into the distribution stage. Alternatively injection to any higher stage should be possible.

This way, generally all customers might directly profit from different "letter tariffs" according to different injection points. For practical (handling) reasons, it might be useful to limit this direct access to a reasonable minimum volume per injection event.

The opportunity to benefit from a pure distribution tariff (injection directly into the distribution phase) will be practically limited to larger business customers since the items will have to be pre-processed in a form that will most probably require machine investment and operation (see chapter 4.2.1).

Different product-pricing-systems from different postal providers

In case of competition the customer might be contacted by different postal service providers, offering letter processing at different prices (provider-specific pricing systems). It might happen that postal prices are differentiated by region or other new criteria. Customers who require services that induce particularly higher clearance costs might be subject to higher prices ("e.g. business letter of rural origin").

4.3.6 *Price cap for single piece items as part of the universal service obligation*

Due to the upstream competition in the business segment, the potential of the u.s.p. for cross-subsidisation between bulk and single piece items will be reduced. The u.s.p might be forced to split upstream prices. For bulk volumes decreasing prices can be expected, whereas for single piece items increasing prices are most probable.

Price increases nevertheless are limited by competition. Unreasonably high prices would induce competitors to offer the same service at a reasonable lower price.

The possible increase of prices for single piece items in certain regions might contradict the regulators social aims of availability and affordability of postal service. The regulator could in this case fix a "maximum tariff"[41] for single piece items. The provider may offer this service at a lower, but not at a higher price. This "maximum tariff" will most probably be higher than today's s.u.t., since the effect of cross-subsidisation (see above) cannot be expected any more. The obligation to this maximum tariff can be part of the universal service obligation.

Introducing this "maximum tariff" the regulator creates a funding problem, since this special tariff will only be applied where higher processing costs effectively occur. In these cases, the u.s.p. would be forced to run systematic deficits. The funding necessary due to the "maximum tariff" will have to be generated within the reserved area (distribution) or from external sources (e.g. fonds, taxes etc.) and therefore has to be discussed in the same context as other costs for other components of the universal service obligation (mark ups).

In fact, the "maximum tariff for single piece items" is a regulatory means that contradicts the idea of total liberalisation. CTcon is not convinced of a substantial redistribution effect between private households based upon a regulation of postal prices. Postal fees represent only a very small percentage of private expenditure. Consequently, neither s.u.t. nor "maximum tariff" should be installed. However, if regulatory authorities are convinced that a desired redistribution effect overcompensates

[41] A price cap rule generally sets a "maximum tariff" and a limited price increase rate. for a group of products or services. Since here we are talking about just one product, we call it "maximum tariff" instead of price cap.

the costs of regulation for the state and for the regulated companies, the "maximum tariff" is more flexible than the former s.u.t. and may therefore be an adequate compromise between liberalisation and politically desired social customer welfare.

5. ANALYSIS OF THE FINANCIAL ISSUES OF UPSTREAM LIBERALISATION

5.1 Spotlight on quantitative financial data which have already been published

There is extensive material available on the financial performance of the postal operators in Europe. All of the European postal organisations publish comprehensive financial statements and annual reports. Some of the organisations do publish additional information e.g. via internet.

In addition to these official sources there are a number of more or less professional data providers who offer quantitative reports on postal organisations and markets. Since the quality of such data cannot be verified in detail, CTcon ignores this type of material. The data used in this study are – if not marked otherwise – data originating directly from the postal organisations. Data generated by interviews and questionnaires are treated as secret and dedicated only for the Commission's internal use.

Further sources of financial information are the price lists and in some cases product description material provided by the postal operators.

Financial Statements

1996	Turnover m ECU (4)	EBIT m ECU (5)	Profit before taxes m ECU (6)	Turnover / employee ECU (7)	Return on sales % (8)=(6)/(4)	Remarks
Austria*	2.745,7	288,1	102,8	71.517	3,7	Incl. telecom operations and Postauto
Belgium	1.685,7	n.a.	-19,0	35.916	-1,1	Incl. giro
Denmark	1.272,3	98,5	76,8	49.937	6,0	Incl. giro
Finland	894,2	n.a.	56,8	36.387	6,3	Incl. complete banking*** as a commissioned partner
France	12.916,8	318,2	-102,2	45.718	-0,8	Incl. complete banking***
Germany	13.980,1	n.a.	301,7	49.072	2,2	
Great Britain	6.196,3	n.a.	639,5	37.259	10,3	Balance 1996/97 Royal Mail only (not Parcelforce, Post Offices)
Greece	257,1	n.a.	-45,7	22.316	-17,8	No English complete annual report available
Ireland	405,4	n.a.	15,0	49.984	3,7	Incl. complete banking***
Italy	6.010,0	-304,9	-455,8	32.175	-7,6	Incl. complete banking*** and telegraph
Luxembourg	332,6	65,5	65,0	127.918	19,6	Incl. telecom operations (73% of turnover) and gir
Netherlands	3.135,5	n.a.	440,7	85.794	14,1	Return on capital as in statement PTT Post BV
Portugal	438,7	14,6	13,9	27.346	3,2	Incl. complete banking***
Spain	917,5	n.a.	-225,6	14.138	-24,6	Only budgetary balance; no profit & loss stateme incl. giro and telegraph
Sweden**	2.214,3	110,8	52,9	49.058	2,4	Incl. complete banking***

* balance of short financial year 01.05-31.12.1996; value (7) adjusted (yearly base)
** turnover incl. mail revenue, banking assignments and transaction fees
*** incl. postal money orders, giro and at least one of the following activities: (housing) loans, saving bonds, investment products and insurance

Table 3: Overview on financial indicators on the national postal service providers

Based on the annual reports 1996 CTcon has generated an overview on general (financial) performance indicators. These include turnover, earnings before interest and taxes (where available), profit before tax, return on sales (as profit before taxes / turnover), turnover per employee. In order to simplify

comparison all values are expressed in ECU (exchange rates 1996). The performance indicators are exclusively based upon the providers' annual reports.

Financial results can further be expressed by indicators such as return on assets and return on equity.

1996	Total assets m ECU (9)	Total equity m ECU (10)	Return on assets before tax % (11)=(5)/(9)	Return on equity before tax % (12)=(6)/(10)	Remarks
Austria*	9.611	3.017	4,5%	5,1%	Incl. telecom operations and Postauto
Belgium	1.257	479	n.a.	-4,0%	Incl. giro
Denmark	982	420	10,0%	18,3%	Incl. giro
Finland	412	174	n.a.	32,7%	Incl. complete banking** as a commissioned partner
France	10.853	988	2,9%	-10,3%	Incl. complete banking**
Germany	10.141	2.720	n.a.	11,1%	
Great Britain	3.812	2.127	n.a.	30,1%	Balance 1996/97 Royal Mail only (not Parcelforce, Post Offices)
Greece	347	132	n.a.	-34,7%	No English complete annual report available
Ireland	184	69	n.a.	21,8%	Incl. complete banking**
Italy	187.429	1.533	-0,2%	-29,7%	Incl. complete banking** and telegraph
Luxembourg	850	744	n.a.	8,7%	Incl. telecom operations (73% of turnover) and giro
Netherlands	3.700	n.a.	11,9%	n.a.	Return on capital as in statement PTT Post BV
Portugal	663	173	2,2%	8,0%	Incl. complete banking**
Spain	995	623	n.a.	-36,2%	Only budgetary balance; no profit & loss statement; incl. giro and telegraph
Sweden	7.914	387	1,4%	13,7%	Incl. complete banking**

* balance of short financial year 01.05-31.12.1996; values (11) and (12) adjusted (yearly base)

** incl. postal money orders, giro and at least one of the following activities: (housing) loans, saving bonds, investment products and insurance

Table 4: Return on assets and return on equity of the national postal service providers

It appears that the postal operators do show a very heterogeneous financial performance. Turnover per employee varies from 14.100 ECU per year in Spain to 85.800 ECU per year in the Netherlands. There are several postal operators generating significant losses, while others show attractive profitability. Return on sales reaches from –24.6% in Spain and -17.8% in Greece to +14.1% in the Netherlands. Key indicators as return on assets or return on equity show a large spread between the different companies.

A detailed comparison of financial performance of postal operations with data only from the 1996 annual reports is not possible. Each of the organisations comprises a specific set of postal and non-postal businesses, such as banking or telecommunications. The relative volume of these activities differs from Member State to Member State (e.g. about two thirds of the turnover of P&T Luxembourg originate from telecom services). Operations (and turnover figures) are separated, but in their 1996 annual reports postal operators neither present separate profit & loss statements nor separate asset and liability statements for their different types of business.

Prices of the basic letter product (first class)

As a basis for comparison, the product prices can be used more easily. The basic product to be analysed is the standard letter in the lowest weight band. In most Member States the lowest weight band covers the range up to 20 g; in Finland the lowest band covers 0 – 50 g and in Great Britain 0 – 60 g.

Comparing absolute prices in ECU (excluding VAT) directly Germany, Austria, Denmark and France do have the highest ab-

solute price level for the standard letter. The lowest absolute prices can be found in Spain, Portugal and Greece.

Member State	Austria	Belgium	Denmark	Finland	France	Germany	Great Britain	Greece
Postal Organisation	Post & Telekom	La Poste	Post Denmark	Finland Post	La Poste	Deutsche Pos AG	Royal Mail *1	ELTA
Net product prices in ECU								
< 20g	0,50	0,42	0,50		0,50	0,56		0,29
< 50g	0,58	0,78	0,66	0,38	0,68	1,11	0,40	0,00
Basic product (ECU)	0,50	0,42	0,50	0,38	0,50	0,56	0,40	0,29

Member State	Ireland	Italy	Luxembourg	Netherlands	Portugal	Spain	Sweden
Postal Organisation	AN POST *2	Poste Italiane	Postes et Télé-communcation	PTT Post	CTT - Correios	Correos y Telégrafos	Sweden Post
Net product prices in ECU							
< 20g	0,38	0,41	0,39	0,36	0,25	0,21	0,47
< 50g	0,45	0,92	0,49	0,72		0,27	
Basic product (ECU)	0,38	0,41	0,39	0,36	0,25	0,21	0,47

Average price for the basic product (ECU):	0,40

Exchange Rates of 22 April 1998 *1: Standard Letter < 60g *2: Standard Letter < 25g

Table 5: Net prices (excl. VAT)[42] in the lowest weight band (standard letter, first class)

An adjustment of postal basic prices with regard to the costs per working hour in each Member State, changes the ranking dramatically. While Spain still shows a very low index-price level on the adjusted scale, Greece and Portugal have the highest adjusted postal index-prices. In these Member States the "spread" between cost of personnel and price of postal products is relatively high. Adjusted index-prices in Denmark, Sweden and Germany are closely below the European average, while Austria, Great Britain and Italy are slightly above average on the adjusted scale. In Belgium, Finland, Luxembourg, the Netherlands and Spain the adjusted prices for the basic letter product are significantly below the European average.

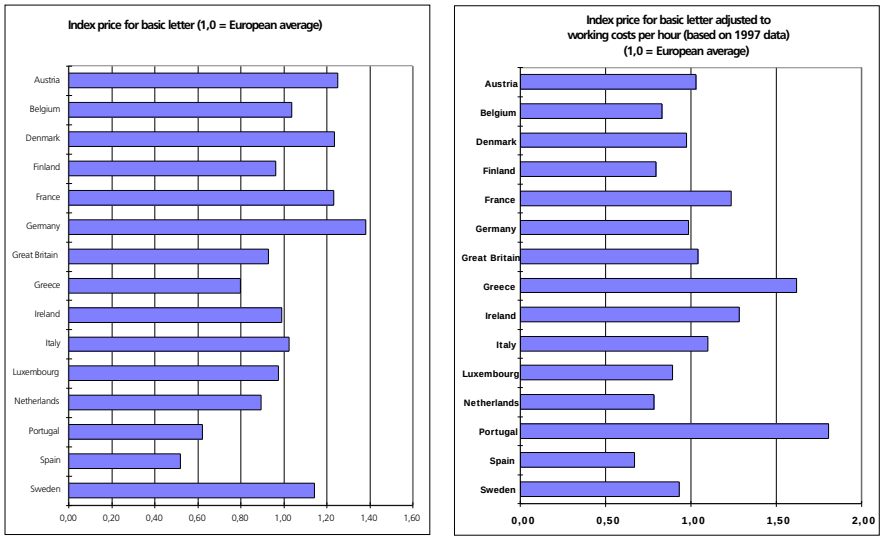

Figure 4: Index-price for the basic letter (absolute) and index-price basic letters adjusted by cost per working hour[43]

The data publicly available may be useful in terms of general financial analysis, but standing alone they are of little help concerning the analysis of downstream access and the impact

[42] In further analysis, prices are analysed from the perspective of a potential competitor. Therefore the use of net prices, excluding VAT, is necessary and appropriate. Also from a business customer perspective, net prices are relevant. For the end user perspective, VAT should be added on the Finnish (22%) and Swedish (25%) prices.

[43] An adjusted index has been designed on the basis of the 1997 average cost per working hour in the industrial sector (Institut der deutschen Wirtschaft Köln nach nationalen Angaben, Tabelle: Arbeitskosten in der Verarbeitenden Industrie 1997).

thereof. Besides the fact that publicly available financial figures mix very heterogeneous businesses (e.g. telecom, giro, full size banking operations)[44], these documents contain very little information that help differentiate the stages of the postal value chain in terms of costs and volumes. For this reason, the focus of the current study has to be on collection and analysis of additional data on the specific matter. This data can be put into the context of the general public information later on.

Quality of Service (d+1)

Member State	Austria	Belgium	Denmark	Finland	France	Germany	Great Britain	Greece
1997, Royal Mail Consulting 3/98	n.a.	95%	94,20%	n.a.	77,20%	92,90%	91,20%	n.a.
Annual Report 1996, (97) or interview	84%	80%	94,00%	93%	n.a.	91,00%	85,90%	70,70%
Quality of service (d+1 rate) 1996 (or 1997)	84,00%	80,00%	94,00%	92,50%	77,20%	91,00%	85,90%	70,70%

Member State	Ireland	Italy	Luxembourg	Netherlands	Portugal	Spain	Sweden
Quality absolute (d+1 rate) 1997, Royal Mail Consulting 3/98	92%	n.a.	n.a.	96%	96,70%	66%	97%
Annual Report 1996, (97) or interview	92%	79,89%	96,10%	n.a.	96,70%	55%	96%
Quality of service (d+1 rate) 1996 (or 1997)	92,00%	79,89%	96,10%	96,00%	96,70%	55,10%	96,00%

Table 6: Quality of Service (d+1) of the national postal operators[45]

Most of the national postal service providers measure the quality of their service and report it in their annual statements. Analysing the annual report (1996 and 1997, where available), CTcon can present a comparative table on that matter. CTcon focuses on the d+1 quality (rate of letters that are delivered at the day after injection to the postal system). It has to be considered that the measurement of the d+1 quality indicator differs in the Member States. The measurement is generally done by the postal operator himself, sometimes it is subcontracted to a consulting company.

5.2 Quantitative status quo of the value chain of the postal universal service providers

In the following CTcon presents several highlights from the data collection and analysis[46], that may be helpful to the general discussion of the downstream access scenario. All data are presented in a way so that communication of confidential data is prevented. The complete results of this specific data collection are

[44] Many of the postal organisations are in the process of separating these businesses in legal structure and in their financial reporting, so that in near future, annual reports might contain superior data on the postal business.

[45] The source of first choice for the d+1 rates are the annual reports (1996 and/or 1997) of the national postal operators. If these do not contain the information, CTcon quotes "Domestic Quality of Service within different Countries", report by Royal Mail Consulting, March 1998. The d+1 quality for Austria is based upon an telephone interview with PTA AG in July 1998. Since for Greece no data are available and Greece has the least degree of automation, CTcon applies the average of the three lowest values explicitly observed.

[46] Data have been collected by distributing a comprehensive questionnaire to all 15 national postal operators. The questionnaire was supported by personal interviews during which general information on the study and on national particularities for the postal operator could be exchanged. After the return of questionnaires, data were revised by CTcon. In many cases they were discussed with representatives from the national operators. Where necessary and possible, data were adapted to the results of these discussions, leading to "consolidated results of data collection". All further quantitative analysis is based either upon annually reported public information or on consolidated results from the specific CTcon data collection.

documented in the Annexes I (comparative overview on the national postal operators and markets) and III (consolidated results from specific data collection), which is secret, since they contain confidential data on individual postal operators.

Based on the quantitative data collected, interesting findings about volume structure, cost and working productivity in the upstream stages have been generated and can be discussed on a European level.

5.2.1 General view on the upstream stages: clearance, sorting and transport

Clearance

		EU average
(1)	Volume cleared at letter boxes	17 %
(2)	Volume cleared at post offices and agencies	36 %
(3)	Volume cleared at customers directly	31 %
(4)	Volume cleared by customers directly in the sorting plant	17 %

Table 7: Structure of the postal volume as to the type of clearance point

Within the process of data collection, CTcon asked for the volume cleared at different clearance points. The following figures represent an European average based on the answers from seven postal operators:

This structure can be used to generate information on the quantitative mail streams from the different customer groups. The volume cleared at letter boxes (1) almost exclusively originates from private customers and small business customers. Volume categories (3) and (4) originate from (larger) business customers. Assuming that generally one third of the volume cleared at post offices and agencies is sent by private (and small business) customers and two thirds by business customers, it can be supposed that 25 to 30 % of the mail flows in Europe originate from private customers, whereas 70 to 75 % of the mail volume is injected by business senders. Therefore it is most probable that about 70 to 75 % of the mail volume is injected as bulk volume (definition see chapter 2).

Sorting

The technology used within the process of sorting still differs largely throughout the 15 public postal operators. The degree of automation within the process of outward sorting varies from 18 % to (nearly) 100 % leading to an average of 63 % of automated outward sorted mail[47]. Within the process of inward sorting the degree of automation is less developed. Based on the results from 7 questionnaires, the European average counts for 53 % of automated inward sorting.

[47] Result based on answers from 11 operators

Transport

Most national postal operators do still operate their own transportation network so that the European average of transport done in own operation accounts for 82 %[48].

5.2.2 Cost structure within the universal service providers' value chain

		EU average	lowest	highest
(1)	Costs for clearance	12 %	6 %	20%
(2)	Costs for sorting (outward and inward)	24 %	14%	37%
(3)	Costs for transport	9 %	3%	14%
(4)	Costs for delivery	55 %	43%	69%

Table 8: Cost per stage of the value chain as percentage of total operational costs[49] (items up to 1000 gram)

When taking into account the possibility of liberalising stages of the postal value chain, its cost structure is of high interest. The following results are based on the answers from 10 national postal operators and focus on the operational parts of the value chain.

On average, more than half of the operational costs result from the distribution stage, which is supposed to be kept reserved in the currently analyzed scenario. Nearly one quarter of the costs are related to the process of sorting (both, outward and inward sorting). On average costs for transport account for less than one tenth of all operational costs and represent the smallest amount of costs compared to all other processes in the value chain (except for two postal operators).

When taking into account management costs and costs for internal services, it can be noticed that on average about 25 % of the total costs are dedicated to these "non-operational" processes.

Furthermore, it can be noticed that the average costs for personnel represent 73 % of the total costs whereas costs for material account for 23 % and capital costs for 4 % on average. These figures are based on the answers from 7 public national operators and do thoroughly underline the fact that the postal business is a very labor intensive business.

[48] Result based on answers from eight operators
[49] Costs excluding cost for management and internal services

5.2.3 Productivity of personnel in the upstream stages and in distribution

Productivity of personnel		EU average	lowest	highest
(1)	Clearance	0,58	0,18	1,85
(2)	Sorting	0,51	0,32	1,05
(3)	Upstream (Clear. + Sorting)[50]	0,23	0,15	0,30
(4)	Delivery	0,23	0,09	0,34

Table 9: Productivity of personnel in the stages of the postal value chain in millions of items per year and per full-time employee[51]

Based on answers formulated in the questionnaires, CTcon has calculated the working productivity[52] of personnel for each of the upstream stages as well as for delivery. Productivity within each of the upstream stages varies largely from one national operator to the other.

Results concerning the upstream stages may need further explanation, taking into consideration geographical aspects (e.g. size of the country, population density, mail volume per inhabitant) or differences of the universal service obligations as mentioned above.

The facts and findings on the national universal service providers are a basis for further country-specific analysis on the development of competition in later chapters (5.4 ff)

5.3 Theoretical model describing the financial impact of upstream liberalisation on the u.s.p.

An estimation of the potential impact of upstream liberalisation on the national postal operators has to consider several important factors:

- Relative to the **competitive environment** (competitors and potential activity in the market) the **volume lost** to the u.s.p. has to be estimated.
- Apart from volume impact there might be a **price impact** on revenues, resulting from competitive action.
- Given the revenue impact, the profit impact depends upon the u.s.p.'s **ability to adapt costs** to the new competitive situation.
- Volume growth based upon competitive action and potentially declining prices towards the (business) customers is not explicitly estimated in this study. On the one hand, elasticity of demand is assumed to be low in the letter

[50] Calculated as: Postal items processed divided by total number of fulltime employees in clearance and in sorting.

[51] Analysing the variance of productivity, it appears that some operators may have had difficulties in their information systems to allocate personnel onto the stages as defined by CTcon.

[52] Number of items processed divided by number of full-time employees in the stage

segment[53]. On the other hand, substitution (by fax or e-mail) will not be reversible. Thus, volume growth based on potentially decreasing letter prices is of minor relevance to the current study.

The total profit impact of upstream liberalisation on the incumbent national postal provider can be calculated as:

$$Vu_{lost} * Pu_{(today)} + Vu_{left} * (Pu_{(today)} - Pu_{compet}) = \text{Revenue impact}^{54}$$

and

$$\text{Revenue Impact} - \text{Cost Reduction} = \text{Profit Impact}$$

The Revenue impact is composed of the volume impact and the price impact of liberalisation. Volume Impact on revenues can be measured as the upstream volume lost multiplied by the price received today for upstream services per unit (percentage of the s.u.t.). The volume effect is to be analysed in chapter 5.4. Knowing the volume effect, the cost reduction can be estimated (chapter 5.5).

The price impact can be calculated as the reduction in upstream price per unit multiplied with the upstream volume still produced by the national postal operator. Chapter 5.6 will outline the price effect.

Revenue impact (in ECU) minus the volume driven upstream cost reduction by the national postal operator give the total profit impact of upstream liberalisation. Chapter 5.7 describes the possible scenarios.

5.4 Analysis of volume impact of upstream liberalisation in the national markets

The following ideas and assumptions on the expected competitive situation after upstream liberalisation and introduction of downstream access are based upon several sources:

- Answers and statements by the national service providers
- Discussions and statements by representatives of private postal operators (EEO – European Express Organisation and AEEC – Association of European Express Carries)
- Discussions and statements by representatives of direct mailing companies
- CTcon arguments and expectations

The analysis of competitive expectations concentrates on the processes of clearance and sorting. The transport process is of minor relevance since (a) the cost for transport are very low as compared to the other stages and (b) transport is often subcontracted to specialised companies, so that upstream liberalisation does not lead to substantially new competitive aspects in this stage.

[53] In the direct mail segment, elasticity of demand may be substantially higher.

[54] Vu_{lost}: upstream Volume lost to competitors; $Pu_{(today)}$: Today's price (price percentage) for the upstream part of the service; Vu_{left}: upstream Volume still produced by the u.s.p. in the competitive situation; Pu_{compet}: Price for upstream services in the competitive market

5.4.1 (New) Competitor and entry logic in an upstream liberalisation scenario

The expected competitors for upstream postal services can be grouped in five categories: (1) multinational express services, (2) national post offices from neighbouring Member States, (3) Bulk Mailers and Direct Marketers, (4) (International) Consolidators and (5) start-up small businesses

(1) (Multi-) national express and/or parcel services are already operating a national (express)network and holding nation-wide client relations. These companies could expand their business to the attractive parts of the newly liberalised area. Since they work within established (business) customer relations, they can gain clearance volume very rapidly. As soon as they recognise the attractiveness (tariffs and volume) of establishing own sorting operations, they have got the financing power to do so within short periods of time.

However, discussions with major representatives show that probably not all of the large express and parcel services will enter the newly liberalised market immediately. Some major companies argue that upstream standard postal operations are not an attractive market for them, since upstream postal operations

- require completely different processes (e.g. sorting plants, mass production) that show no operational synergies to express business,
- are a low-quality / low price segment and could endanger the high quality (e.g. track and trace every item) image of the core business (express),
- require extreme competitiveness on the cost-dimension, which is not the current focus of express services (today they are focussing on service and quality).

The limitation to upstream services might further reduce the attractiveness of (large scale) entry, since from the point of large express services,

- quality cannot be guarantied towards the customer, if the service provider has no management insight/influence on about 50% of the process (distribution),
- there is doubt about the operational fairness in day-to-day processing at the access points ("competitors' cars will unfortunately always be in the longest and slowest queue...",
- the u.s.p. – due to his 100% downstream activities – has all the information as to which competitor successfully collects large volumes in which area (even from which business customer). The u.s.p. can easily concentrate his marketing/sales activities on that area and make it extremely hard for a competitor to survive in this business.

Following these arguments, large scale entrance of express services may be limited to those companies that merge (or have merged) with standard postal operators.

(2) National operators most probably will occur as international competitors, seeking expansion of their core operations internationally. The industrial logic of international operations for

those organisations may be that they start internationally with handling the international mail bound into their home country. Having built a base that way, they could use established customer relations in order to expand business into domestic processing activity.[55] Rapid market action is to be expected, where national operators can service neighbouring areas along the borders using their existing clearance[56] and/or sorting capacities, thus generating extra revenues with no or little additional investment.

(3) Bulk mailers and direct mailers (banks, advertising companies, direct mailers etc.) do already operate computer systems and sorting machines in order to gain present discounts for presorting of their items. These companies could externalise those activities to majority-owned subsidiary companies and start offering letter processing service to others, thereby making productive use of spare capacity on their machines.

But, representatives of direct marketing associations claim, that direct entry into postal letter processing will rather be an exceptional case. The probability of such a case depends largely on the products and prices of the focused postal operators. For bulk mailers and direct marketers, postal operations are not their core business. In case of liberalisation, they generally aim to use an efficient external partner (e.g. attacking international postal operator) and buy the service there.

(4) In some Member States (e.g. Great Britain) consolidators perform upstream activities for outbound international mail. Using those established customer relations and the customer desire to "one stop shopping", they could set up domestic upstream operations.

(5) (Start-up) Small and medium companies could systematically collect and (manually) sort items from smaller cities, from regional business agglomerations etc. They can compete on price due to their possibly very low overhead cost. Some national postal operators fear that smaller postal providers might install specialised facilities and will be able to offer more individualised (more attractive) service to the customer than a universal service provider. Postal services also may be offered as a logical extension to existing services (e.g. copy/print shops, city courier). As can be observed in the German case 1997/98 a number of small businesses apply for postal licences immediately after the date of liberalisation. In terms of volumes, this group of operators will need several years to reach substantial market shares.

[55] Apart from competing on direct postal services, today's national postal operators will act in the arena of mergers and acquisitions, once larger percentages of the postal providers are being privatised and quoted at the stock exchange. This aspect is not discussed here, since it is not relevant for the question of upstream liberalisation and downstream access.

[56] Especially existing vehicles and / or personnel for (bulk) clearance at large business customers.

Type of Competitor / Competitive Characteristics		Multinational Express and Pacel Services		U.s.p. from other Member State and Intl. consolidators		Direct Marketers / Bulk Mailers		(Start-up) Small Businesses
		remark		remark		remark		remark
Postal Products primarily offered								
Individual Business Letters (bulk)	(x)	Use existing client relations from express ("one stop")	x	Use client relations from intl. mail etc.	(x)	May extend internal direct mail operation to letter processing	x	Act regionally and based on flexibility and low overhead cost
Individual Private / Small Bus. Letters							x	Act regionally and based on flexibility and low overhead cost
Services primarily offered								
Clearance	(x)	Immediately (business clients)	x	Large scale entry possible	((x))	Primarily direct mail	x	Concentrate on clearance
Sorting	(x)	Sorting only after gaining volume in clearance	x	Sorting in existing facilities (boarders)	((x))	Sorting before printing	(x)	Only low investment, (manual) sorting
Speed of setup for postal operations[1]								
Within first year of liberalisation	(x)	Clearance from current clients immediately possible						
Two to three years			x	Build up customer base around existing relations	x	Some start early, part of industry may follow		
More than three years							x	Some appear early; if successful, number increases

[1] Time until a stable market share can be realised (end of setup-phase)

Table 10: Expected competitive behavior of potential future market players

In short: The major new entrants in the national upstream markets will be the *neighbouring national providers* and possibly a number of *specialised small businesses*. Some express services might also start postal operations.

All of the new entrants have a clear incentive to selectively attract large and medium size business, thus seeking maximum difference between processing cost and the (potentially uniform) processing price.

5.4.2 Comprehensive attractiveness of the national markets for potential competitors

Size and timing of the volume impact in any Member State depends upon several factors:

Attractiveness of the market with regard to price and volume

The attractiveness of market entry is clearly driven by the question, whether the competitors' revenues can exceed processing costs in the market segments of interest. Obviously, the more attractive a market seems to be, the more (and larger) competitors can be expected to enter it.

If the tariff system towards the customer defines a relatively high price for the whole process (e.g. Germany, Sweden, France etc.) – at first sight - entry seems to be more attractive than in a low-price-environment (e.g. Spain)[57] But, since competitors are only entering the market, if they can hope to generate profits out of this business venture, they might even better seek orientation from an **index-price adjusted by the cost per working hour** in the Member state. Since postal operations use manual work rather than capital/machines, the price adjusted by the cost per

[57] Refer to quantitative data in chapter 5.2

working hour indicates the size of the potential profit assuming equal productivities of work in the European markets.

Additionally, if the mail volume per capita in a Member State is high, if seems to be easier to reach break even volumes in a competitive (multi-provider) environment.

Following this idea, the most attractive markets show volumes and adjusted prices above the European average. To a certain extent, excellent performance in one dimension (e.g. extraordinary price) can compensate for deficits on the other dimension (volume slightly below average). Clusters for "high market attractiveness", "moderate m.a." and "low m.a." are built according to the relative position of each individual market to the European average[58].

Applying the idea of market attractiveness to the market for upstream postal services in the 15 European Member States, it would be most appropriate to identify (adjusted) prices for the upstream service only. Due to the fact that postal service in Europe is today operated in an integrated way, those upstream prices cannot be observed or measured. As an indicator for the potential upstream prices CTcon uses (adjusted) prices for the complete standard letter.

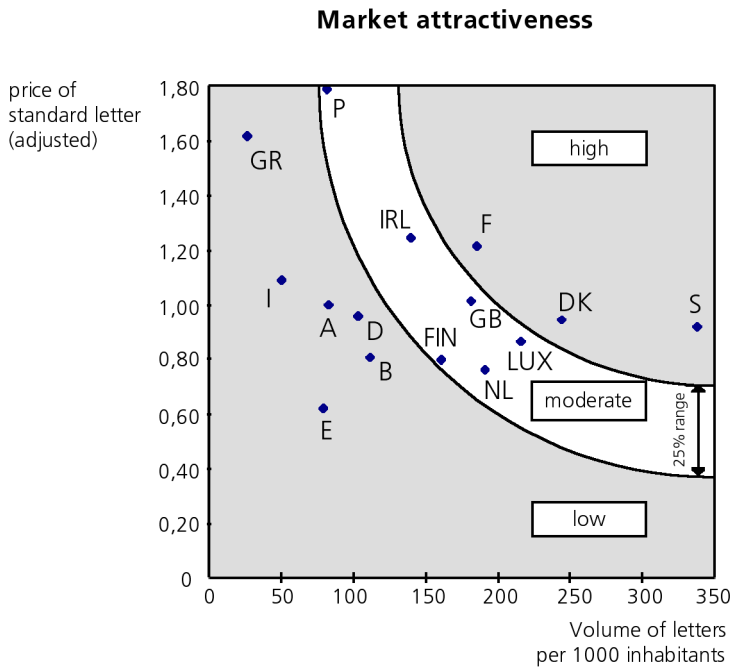

Figure 5: Attractiveness of the domestic European postal markets as a function of letter[59] volume per inhabitant and the index of adjusted price of the standard letter[60]

[58] "high": product of relative price and volume per capita amounts to more than 112,5% of the EU-average to this figure.
"low": product of relative price and volume per capita amounts to less than 87,5% of the EU-average to this figure.
"moderate": 25%-range around the European average

[59] "Letter" includes all individual items of addressed correspondance (single piece and bulk) from private or business customers up to 1000 g. Not included are: unaddressed items, press items, small packages, direct mail.

[60] The price for the standard letter is the first class rate for an addressed single piece individual item of correspondence in the lowest weight band (generally up to 20 g) without any discounts, net of VAT.

The attractiveness of a market – resulting from price and volume levels – is a driving force for entry. As presented above, Sweden, Denmark and France appear to be attractive markets, whereas Spain, Italy and Greece can be said to be less attractive compared to the European average.

Upstream competitive Strength of the u.s.p.

The better the u.s.p.'s service, the harder it is for new entrants to attract customers. The more efficiently the u.s.p. works, the smaller can be the attackers cost advantage, which he partially has to transform into price-advantages for the customer. Even if the actual price level should be high, an efficient u.s.p. could – in a competitive scenario - be able to grant high discounts or to add further service improvements.

Since these aspects would be of high interest to potential new competitors, data collected from the postal operators are used to quantify these aspects in a second portfolio.: Competitive strength of the incumbent postal operator, given by the dimensions "Quality of Service" and "Productivity of upstream operative work".

As indicator for the quality of service, CTcon uses the proportion of first class item achieving next day delivery (see chapter 5.1).

The productivity measure (millions of letters produced in clearance and sorting per man-year) has been directly calculated from data communicated by nine postal operators. For six others CTcon has deduced work productivity by combining the given individual cost structure per stage of the value chain (each of six) and the average distribution of personnel within the group of nine countries[61].

There are four operators, who are obviously stronger than the rest. They show high values with regard to service and operational efficiency. Five operators can be said "weak" (open to competitive attack) based upon poor performance in service and operational productivity. Six national operators are somewhere between the poles. Five of those are weak on productivity, one lacks the appropriate quality of service[62].

Competitive attractiveness of the upstream postal markets

Combining the views of "Attractiveness of the market" and "Upstream competitive strength of the u.s.p." produces the "Competitive attractiveness of the upstream postal markets".

Graphical representation of the "Competitive attractiveness"

[61] One out of 15 national operators did not report the data necessary to calculate productivity of upstream work. Based upon the analysis of price level and profitability, the productivity was estimated by analogy to one of the remaining 14 operators.

[62] Since data on upstream productivity of the postal organisations has been generated from secret data (only to be communicated to the European Commission), the results are presented as part of the secret Annex I (Comparative overview on the national postal operators and markets).

shows that none of the markets is highly attractive to a potential entrant. Attractive markets regularly are served by "strong" u.s.p., "weak" u.s.p.s are homed in relatively unattractive markets. Nevertheless, plotting competitive attractiveness of the European upstream markets gives some insight into the expected intensity of competition in the Member States, in the case that the upstream stages of the European postal markets are liberalised[63].

Potential competitive reactions of the u.s.p. on the competitive attack

The impact of new competitors on the volume processed by the incumbent postal operator does obviously depend upon the competitive activities of the incumbent operator himself. These dynamics of competition cannot be integrated explicitly into the scenarios. But, these aspects should be outlined in short, so that they can be considered with regard to recommendation for the European and national regulators.

The incumbent postal operator can potentially act, before new entrants appear or may appear (anticipative action) and can thus potentially prevent entrance this way (e.g. dramatic reduction of upstream prices for business clients). Other incumbent postal operators might primarily react to the measures taken by (new) upstream competitors.

The potential action of the u.s.p. includes the complete marketing toolbox, e.g. change of prices, product/service definition and quality, type and intensity of promotion, efficiency and activity of sales structures. The more market oriented the incumbent postal operator acts, the less options remain for a new entrant to positively differentiate his service vis-à-vis the customer.

A further dimension to describe the reactive potential of the incumbent national operator may be the financing potential (equity, current profits or cash flow, direct or indirect funding by other sources[64]), allowing to invest in market oriented programs to prevent the loss of volume to competitors. Viewing the financial key figures in chapter 5.1, some operators are well prepared to compete (e.g. PTT Post, Royal Mail) whereas others obviously lack the means to face competition and potentially change.

Last but not least, the national regulatory context may potentially hinder the u.s.p.'s ability to act successfully in competition. The u.s.p.'s obligation, for example, to have prices (and discounts) authorised by the national regulator before offering them to the (business) customer, may give the private competitor an advantage regarding customer oriented action.

5.4.3 Scenarios on potential volume impacts

The concrete volumes that in a future competitive situation will be handled by competitors of the u.s.p. cannot be absolutely

[63] The portfolio "Competitive attractiveness of the national markets" is included in Annex I to this report (classified "secret" and only to be communicated to the Commission).

[64] Sources might include other businesses or even subsidies from public sources.

quantified, but – following the above arguments, four relevant quantitative volume-scenarios can be developed.

It is quite sure that almost all items sent by private customers and small businesses (single piece) remain to be served by the universal service provider, whereas business mail (bulk) will most probably be subject to competitive activities (see chapter 5.4.1).

Based upon this basic assumption, CTcon presents four scenarios on volume changes (V-Scenarios) within a reasonable range:

"V-Scenario Zero" This scenario describes the situation where hardly any competition takes place. It may be highly relevant for Member States where competitive attractiveness is low or even moderate. In such markets only limited upstream competition by regionally operating small business companies will evolve. Due to lack of competitive attractiveness, larger players will be reluctant to start upstream operations in these markets. The volume lost for the u.s.p. through upstream liberalisation is negligible (next to 0%).

"V-Scenario Min" (Minimal Scenario, if upstream competition occurs at all) Markets with low or moderate competitive attractiveness may very likely see a low level of competitive activity. Small businesses may start on a regional basis and some large players (express services and/or national post offices from neighbouring Member States) may enter selectively. They may limit their activities to certain products (e.g. letters above a certain weight/price band or to certain regions). Large scale entry on a national scale may not take place. Thus, about **10%** of the business (bulk) letter volume will be served by (new) competitors in the upstream phases.

"V-Scenario Mod " The moderate volume scenario can be relevant for markets with moderate to high competitive attractiveness. It represents a gradual mix between the maximum and the minimum scenario. Small businesses may develop. One or more large competitors may enter the market, but may focus on selected (metropolitan) regions only. Some of them may even withdraw after fierce competition.

As a result, about **25%** of business (bulk) letter volume is processed by

competitors.

"V-Scenario Max" (Maximum Volume Impact) Markets with moderate or high competitive attractiveness may potentially show substantial competition by new competitors in the upstream phases. Small businesses, offering upstream postal services, may develop in many regions and might probably process substantial upstream volumes; one or more large competitors may successfully achieve large scale entry (highly visible market entry for business clients) on a national scale. Due to the fact that distribution remains a reserved area and new competitors can only offer a part of the value chain, even in this maximum scenario, the universal service provider will most probably stay the largest player in the (business) market. The new entrants' potential to differentiate their services from to the u.s.p.'s service in the eye of the customer is limited[65]. Furthermore the u.s.p. runs a stable and established business and will participate in any competitive action. Altogether, this maximum is not very likely to be observable in any of the European Member States[66]. Analysis of this scenario marks the absolute maximum risk of upstream liberalisation for the incumbent national operators.

Thus, the maximum volume effect will most probably not raise to above **50** % **of the business (bulk) letter volume** being processed by new competitors in the upstream stages.

In chapter 5.7 the profit impact of these scenarios will be worked out in quantitative detail.

5.5 U.s.p.'s potential to adapt their costs to the new (reduced) volume

Viewing potentially decreasing market shares and decreasing volumes produced by the u.s.p., revenues will decrease. The profit impact of this decrease in revenues depends largely upon the u.s.p.s ability to reduce cost at the same time.

[65] Price advantages to the customer can only be generated from the differences in upstream efficiency, not for the complete chain; service quality is still to a high extent influenced by the downstream processing within the u.s.p.'s system etc.

[66] In Sweden, where letter processing is liberalised completely (including delivery) since 1993, the volume handled by all (about 100) private competitors is below 10%.

The analysis of potential cost reductions describes the cost that the u.s.p. would have after the production system has stabilised at a new level. The analysis is most appropriate in case of volume reductions above 5 %. In case of volume reductions between 0 % and 5 % it is most likely that hardly any volume-driven cost reduction occurs.

The analysis comparative-static does not deal with the speed of cost reduction. The concrete path for reducing production factors such as personnel is ignored in order to reduce the complexity of the analysis[67].

Potential cost reductions based upon rationalisation or new technology are beyond the scope of this study and explicitly excluded from the following analysis. If the u.s.p., facing entrance of new competitors into the formerly reserved market, realises additional rationalisation, the (negative) profit impact of competitive entrance may be reduced.

Potential volume-driven cost reactions in clearance

It seems to be quite clear that all competitors in the clearance process will focus on business customers (bulk mail). Single letters from letter boxes or from agencies will most probably not be attractive to the competitors (high level of fixed costs, low volume per clearance effort). Some exceptions to this might be observable in metropolitan regions.

Loss of business volume to a certain degree gives the u.s.p. the opportunity to reduce clearance capacity: employees and vehicles engaged in clearance at the customer's door. Nevertheless, the percentage of cost for clearance at the customer's door is very small if compared to the cost for maintaining the regular network of letter boxes, agencies and offices.

The quantitative deduction can be done based on following steps:

- It can be roughly assumed, that clearance cost (driving time, direct clearance time) are about equal for each clearance point in a network (letter boxes, agencies, customer's door etc). Costs per item, however, vary largely according to the number of items per clearance point.
- The maximum cost reduction is proportional to the number of clearance points, which are not served any longer.
- Data collection shows that – where data were made available – the number of clearance points at customers directly is between 8 % and 35 % of all clearance points. The most frequent values are around 25 %. Some operators (e.g. PTA, DPAG), do not collect directly, thus having 0% clearance points with the customer.

Thus, if volumes of business letters are lost to competitors, cost

[67] Short term profit impact (during a transition phase necessary to effectively reduce over-capacity) the profit impact may temporarily exceed the level indicated by the CTcon analysis. This effect is reduced by the fact that volume losses do not happen imediately, but build up over time (setup time per new competitor).

reductions can only be achieved on 8 % to 35 % of the clearance costs. 65 % to 92 % of the clearance points in the network stay completely untouched. These remaining points include all agencies and offices, which are the most expensive clearance points[68].

If 25 % of the clearance points in the network are business customers cleared directly and if business volume is reduced by 10 %, the total number of clearance points can be reduced by 2.5 %. Assuming 100 % potential cost impact per clearance point, costs for clearance can be reduced by 2,5 %.

Some national operators, who do not yet offer business clearance at the customers' door cannot reduce any clearance costs as a reaction of business volume lost[69].

The volume cleared at postal agencies and post offices in own operation may be reduced, as medium size business companies accept clearance by competitors as opposed to a clearance via post office. For this part of the volume, clearance revenues are reduced, while costs for the u.s.p.'s network stay at the same level.

Potential volume-driven cost reactions in sorting

Cost for sorting can be adapted to the volume lost. Nevertheless the adaptability of costs depends largely on the degree of automation in the sorting process:

- In case of manual sorting, sorting cost can be assumed to be reduced proportionally to the change of sorting volume. 10% volume reduction can lead to a 10 % decrease of sorting cost (100 % potential cost-impact per unit of volume lost).
- In a highly automated system, capital cost for the machines in place stay unchanged for the remaining period of use. Personnel can be reduced according to volume reduction. It can be argued that a 10 % volume reduction may lead to about 5 % of cost reduction (50 % potential cost-impact per unit of volume lost).

Potential volume-driven cost reactions in transport

At a generally high level of total volume transported, transport cost can proportionally be reduced according to volume losses, if volume losses are not marginal. Number of vehicles between each pair of origin and destination can be reduced; volume/weight-allotments bought from specialised transport companies can be proportionally reduced without price effects. Thus, at the relevant volume levels between sorting plants, the potential cost-impact is next to 100 %.

68 Offices and agencies carry cost for personnel during opening hours and not only for the clearance process itself.

69 Some business customers deliver the items to a sorting plant and receive discounts for the preparatory work. The specific bulk handling work at the sorting plant is assumed to be negligible.

5.6 Scenarios on price effects of upstream liberalisation

Discussing potential price, it should be kept in mind that the distribution phase would still be reserved. CTcon assumes that there will be uniform access-tariff for delivery (uniform for all competitors, most probably even open to business clients for direct injection). Thus, all movements in price can only be based upon the differences in productivity between competitors in the upstream chain. In the following passages, price effects are expressed as a percentage of the price for the total postal service. Furthermore, CTcon assumes that in each Member State movements in price start at the "pre-liberalisation-point", which can be described as the single uniform tariff net of regular discounts for business (bulk) items.

"P-Scenario Zero " In markets of low competitive attractiveness competitive pressure will not be sufficient to enforce price reduction. Small businesses offering services at lower prices on a regional basis will not initiate a national reduction of postal prices.

In markets that are sufficiently attractive to generate new competition in the newly liberalised area, u.s.p.'s price reductions probably occur in order to prevent potential entry of competitors or as a reaction to competitors' lower prices.

Since competition will overwhelmingly focus on business customers, it is most probable that a tariff differentiation between business (bulk) items and private item (single piece) will occur.

"P-Scenario Min " In markets of medium or high competitive attractiveness price reductions may amount to 5 % of the current price levels[70]. Price reduction will most probably be limited to business letters, leaving prices for single piece items unchanged[71].

"P-Scenario Mod" The moderate price effect may amount to a 10 % price reduction on the business letter (equalling a 20 % price effect in the upstream stages. Here again, CTcon assumes that price effects are limited to the business volumes.

"P-Scenario Max" The maximum price can be limited to 20 % of the total price (equalling a 40 % reduction of revenues in clearance) for business (bulk) items. This reduction can only be realised by sub-

[70] 5 % price reduction on the total price for the postal product equals about 10 % price reduction on the upstream activities.

[71] Depending on the form of financing the universal service obligation and depending on the ability to finance universal service obligation (u.s.o.) at today's tariffs for single piece items from the reduced reserved area only, there might even be an increase in prices for single piece items. Since financing of u.s.o. is subject to a parallel study, CTcon assumes in all scenarios that tariffs for single piece items will not increase as a reaction of competition in the business segment of the letter market.

stantial price reductions in the (large) business segment.

The calculation of price effects has to account for the (nationally individual) volume and price structure above the basic weight/price band. If there are substantial volumes in the weight/price bands above the basic band and if higher bands are priced substantially higher, today's average prices might be higher than the tariff for the lowest band. Where possible, CTcon bases the analysis on the effectively generated revenues and prices for letter products (figures included in the CTcon questionnaire).

5.7 Quantitative scenarios on the profit-impact of upstream liberalisation on the u.s.p.

The scenarios for profit impact follow the method described in chapter 5.3 and combine the assumptions and scenario definitions from chapters 5.4 to 5.6 (volume effect, cost effect, price effect).

Based upon the data communicated by the national postal operators and based upon the data from the annual reports, CTcon generates quantitative profit impact scenarios per Member State (see Annex I: Comparative overview on the national postal operators and markets and Annex II Quantitative status-quo-report per Member State). Since the data were communicated as "confidential", these individual results cannot be included in this published part of the report. Nevertheless, the generalised results on the basis of a European average can openly be communicated.

The profit impact of upstream liberalisation on the incumbent postal operators is analysed in four scenarios:

		Volume impact in % of business volume	Price impact on remaining business volume in % of current average total price
(1)	Zero Scenario	no volume lost	no price effect
(2)	Minimum Scenario	- 10 %	-5 %
(3)	Moderate Scenario	- 25 %	-10 %
(4)	Maximum Scenario	-50 %	-20 %

Table 11: Profit impact scenarios

Regarding the analysis of market attractiveness and competitive strength and viewing the case of total liberalisation of the Swedish letter market, it appears to be probable that – in case of upstream liberalisation - several European postal markets would not see any competition (zero scenario). For reasons already discussed above, the scenario of minimum competition appears to be the most probable prognosis for the moderately and highly attractive markets. The maximum scenario may not be relevant to any of the 15 markets, but it may serve as an estimate of maximum risk of upstream liberalisation in the European postal markets.

The results show that upstream liberalisation does only include moderate risk for the financial stability of the national postal operators.

Impact on profit on letter sales (%-points of return o. letter sales)		EU average	lowest impact	highest impact
(1)	Zero Scenario	0	0	0
(2)	Minimum Scenario	-3,59	-1,93	-5,79
(3)	Moderate Scenario	-7,24	-3,11	-12,37
(4)	Maximum Scenario	-12,62	-3,89	-23,19

Table 12: Profit impact of upstream liberalisation (%-points of return on letter sales)

The most probable scenario shows that the national postal operators would – in case of upstream liberalisation – possibly lose about 3,6 %-points of their returns on letter sales. Effective actual returns on letter sales are currently substantially above 3,6 % at the overwhelming majority of the national providers, letter business would still generate a comfortably positive return[72]. Scenario calculations show that even in the worst case situation several postal operators are still generating positive returns on letter sales.

[72] Further studies will have to analyse, whether the remaining returns on letter turnover are sufficient to cover the costs for universal service provision, especially with regard to other postal products (e.g. parcels).

6. GENERAL CONCLUSIONS AND RECOMMENDATIONS TO THE REGULATOR

„**Upstream liberalisation** " describes the concept of liberalising the „upper part" of the postal process. This upper part includes all activities of clearance, of sorting and of mail transport between sorting sites. „Liberalisation" means that the provision of these services is no longer reserved to one single institution (incumbent national postal operator), but that these upstream activities can be provided by any organisation fulfilling some basic conditions (e.g. being registered as postal provider or holding a certain national licence). At the same time the scenario analysed in this study assumes that the downstream activities (delivery activities), which are reserved today, stay reserved to a national universal service provider. Consequently, at least one access point to the reserved distribution must be opened in a way that guarantees non-discriminatory access to the distribution system for postal operators offering upstream postal services („**downstream access** ").

6.1 Compatibility of universal service obligation and single uniform tariff with upstream liberalisation and downstream access

Universal service can well be defined and enforced in an upstream liberalised postal system. Nevertheless, a universal service obligation to one of the large providers – most probably to the current monopolist – requires a form of additional funding. The necessary funds can be raised within the reserved delivery stage and/or from other sources which may even be external to the postal system.

Single uniform tariff for postal products is incompatible with an upstream liberalised scenario. Prices towards the final customer – especially towards the business customer – must be subject to free competition. Otherwise fair competition among new and existing postal providers cannot develop (see chapters 4.1.6.).

A single uniform access-tariff for (reserved) distribution would be compatible with upstream liberalisation.

Affordability of postal service for private injectors and small business might not be as relevant as to regulate access tariffs. However, a redistribution of very small financial volumes between private households could be guaranteed by a maximum tariff for single piece items. This price cap obligation could be integrated in the universal service obligation and should be subject to additional (external) funding (see chapter 4.3.6).

6.2 Aspects to be settled in order to make downstream access operationally feasible

Definition of access points and rules for access procedures

A minimum number of access points has to be defined with regard to the stages of access and with regard to geographic criteria.

Rules and procedures of access have to be established that guarantee the operational stability of the postal system in total with specific regard to the quality of postal service to the customer. For logistical and technical reasons, the universal service provider must be accorded sovereignty over the technical and organisational aspects of the operational system (codes, counting, time windows, packaging etc). The design of this system must not discriminate against injecting competitors. (see chapters 4.2.1 and 4.2.2.)

Definition of access tariffs

Universal service providers have to define access tariffs at each of the defined stages of the value chain. At minimum there must be an access tariff to the distribution stage (see chapter 4.3).

Development, implementation and provision of an operational system at the u.s.p.'s side that is capable of supporting a multi-provider environment

Before accepting any mail collected and/or sorted, the universal service provider must develop and implement an operational system that is capable of handling injection by customers and by postal competitors at all defined access points.

Tasks to be fulfilled by this system cover e.g. acceptance and counting (registering?) of items per injector and invoicing according to the defined access tariffs.

The setup may not be limited to technical provisions, but may also involve the development of concrete co-operation contracts between the u.s.p. and the competitors (e.g. definition of individual time windows, quality of items injected).

Definition of the content of (upstream) universal service obligation within the specific scenario

The universal service obligation has to be defined in particular for the upstream liberalised situation. Relevant aspects include the question of capacity provision (see chapter 4.1.5), provision of a technical and organisational system that allows efficient and non-discriminatory downstream access at defined stages and potentially a maximum tariff for single piece items (see chapter 4.3.6).

Definition of legal responsibilities vis-à-vis the customer

Even if the question of legal responsibility of non-registered letters is of minor importance to the upstream liberalisation as a concept, legal provisions have to be taken describing cases such as items lost or items damaged in a multi-provider system.

6.3 Financial impact of upstream liberalisation / downstream access on the national universal service providers

The financial impact of upstream liberalisation on the current u.s.p.s in their home markets most probably is negative. Revenues and profit on domestic letter sales could be reduced.

The particularities of the upstream liberalisation scenario may limit the size of the negative impact to a moderate level:

- Distribution activities are supposed to be reserved
- Entry into the upstream letter market might be of limited attractiveness to large express and parcel carriers

Regarding the profit impact scenarios developed by CTcon on the basis of data communicated by the national operators, the "Minimum Scenario" is the most probable one to happen in case of upstream liberalisation. In this scenario CTcon assumes a loss of 10% of business volume and a 5% reduction of letter price on the remaining business volumes.

In this scenario profit, measured as return on letter sales, is reduced by 3.6%-points (EU-average). Individual calculations indicate a maximum of 5.8%-points decline in return on letter sales for one national operator. Almost all providers actually operate at much higher rates of return on letter sales. Therefore, letter processing will most probably still be profitable for those postal providers who are in this business today (see chapter 5.7).

Nevertheless, other studies have to analyse, if the most probably remaining profitability of letter processing is sufficient to cover the costs of universal service provision (including letter and other products, such as parcels).

The profit impact of upstream liberalisation on the current universal service providers can be qualified as moderately negative. Should the upstream liberalisation / downstream access concept be realised, financial stability of the national universal service providers most probably is not endangered.

6.4 Attractiveness of the upstream liberalisation / downstream access concept to the major market players

Upstream liberalisation / downstream access is unattractive for the universal service provider

Despite the moderate profit impact, upstream liberalisation / downstream access is an unattractive way of liberalisation for all incumbent postal operators (universal service providers). Particularly unattractive elements of this liberalisation scenario are:

- The incumbent postal operator risks to lose sovereignty of his operational system. Consequently the u.s.p.'s options to

redesign the system, to optimise processes and to ameliorate efficiency might be limited.

- Additional investment and costs for installing a multi-provider environment would have to be accepted, whereas refunding of these costs might be subject to negotiations with regulators and/or competitors.
- It is likely that additional legal proceedings will be initiated, that will discuss and potentially influence the design of the u.s.p.'s operational system, access points and access tariffs.
- Compulsory (from the point of the u.s.p.) integration of the operational systems between competitors limits the options of the u.s.p. to differentiate his products and services on a marketing scale.

Upstream liberalisation / downstream access might not be attractive for potential large postal competitors

- Competitive activity is limited to upstream activities since distribution would remain reserved. The resulting potential differentiation of products and prices may not be sufficient to motivate large customers (paying senders) to change their postal provider.
- The competitor cannot be master of the complete postal chain. Services and price he can offer, largely depend on the efficiency and quality of the u.s.p.'s downstream operations.
- Compulsory injection into the u.s.p.'s downstream system may open numerous options to the u.s.p. for covert discrimination within the operational processes (e.g. change of coding system, change of packaging standards.)

6.5 Specific attractiveness of the upstream liberalisation / downstream access scenario to the national regulator

Reserving delivery provides the opportunity to efficiently generate funding for the universal service obligation within the postal system

Reserving the distribution phase of the postal process can economically be accepted as a means (among others) to raise funds e.g. for the universal service obligation in the postal system. In distribution, economies of scale are higher than in all other parts of the postal value chain. Should reservation be needed for funding reasons, delivery would therefore be the best of choices. Gains from a monopolistic market structure, even in distribution, have always to be weighed against potential progress through rationalisation and innovation, as enforced by competition (see chapter 3.2.)

Limited market effects of upstream liberalisation in the postal market

The expected level of new competition is low, due to lack of attractiveness of the solution to potential (large) new players. Since most probably there will be numerous small business companies offering clearance and (pre-) sorting services on a local basis, there might be a high number of new competitors to the

u.s.p. But at the same time the volume handled by these competitors will be low. Substantial competitive impact can only be realised if larger players such as u.s.p.s from neighbouring Member States or large express organisations enter the upstream letter market.

Reserving delivery for letters and direct mail is practically infeasible in several Member States and might retain an unfair situation on the international scale

Several European Member States (e.g. Finland and Sweden) have already liberalised their letter market including the delivery phase. Other Member States have reduced the price/weight limits of the reserved area below the level formulated in the European Directive (350g). Distribution of direct mail and other items is already partially or fully liberalised in several Member States.

The concept of upstream liberalisation and downstream access might therefore not be uniformly applicable in all European Member States. Accepting the reservation of delivery in several countries would retain an internationally unfair situation towards postal operators in those Member States who have largely or even completely liberalised markets for letters and direct mail already.

A uniform solution for all Member States should be found in order to provide equal conditions for the postal operators on the way towards a fully liberalised common European postal market.

Regulatory activity for setting up and monitoring of the downstream access scenario can be complex as compared to the current situation

The downstream access scenario requires significantly more regulatory attention than currently observable situations. Major regulatory activities will be necessary to develop fair and cost-based access-tariffs for all access points. Thus, tariff setting would be multiplied in this segment.

The specific data, especially information on actual cost structures necessary to define fair and stable tariffs have to be generated on the basis of some insight into the universal service provider's cost information system. The regulation of first setup and ongoing changes of tariffs will therefore involve substantial managerial capacity on the regulator's side.

Enforcing direct operative co-operation of competitors with the u.s.p. may induce numerous cases of actual or supposed discrimination. These will most probably result in a dramatic increase of complaints and legal discussions to be managed by the regulator.

6.6 Final conclusion and recommendation

Following the above arguments, upstream liberalisation / downstream access is not attractive as a durable scenario for the European postal markets.

The potential positive effects of this concept, such as:

- Potential to develop a (upstream) private postal industry at a very low risk for the postal system in total
- Prepare the universal service providers for complete competition by gradually increasing their competitive exposure
- Set an arena, where all postal products at least partially (upstream) are subject to competition

are overcompensated by the expected negative aspects, that are very specific to the approach of liberalising a few stages within the postal value chain:

- Additional investment and costs for the provision of a multi-provider system
- Low competitive impact due to lack of attractiveness to potential large competitors
- High complexity and costs for regulation
- Potential unfair regulatory situation on the international scale

Conclusively, on the way towards totally liberalised postal markets, the European Commission should prefer using other concepts of liberalisation, such as liberalisation of postal products or the further reduction of price and weight limits of the reserved area.

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