

Damien Broussolle

Maître de Conférences en Sciences Economiques HDR,
Université de Strasbourg, Institut d'Etudes Politiques
L.A.R.G.E : Laboratoire de Recherche en Gestion et Economie,
Univ. L Pasteur & R. Schuman, Strasbourg

On Several Economic Consequences of the Full Market Opening in the Postal Service in the European Union

Introduction

The postal services are gradually opened to standard competition. A new directive published on February 2008 (2008/6/CE) brings about full market opening for January 2011 or, for new member states and Greece, in 2013. Until now, postal activity relied on a monopolistic activity and cross-subsidisation, but, with the entry of new competitors for standard mail, this long-standing arrangement will come to an end. Many consequences are expected: rationalisation, speed delivery enhancement; more value added services... and a major price evolution. The end of cross subsidisation could nevertheless cause adverse effects on prices and induce a destabilisation of historical operators. Worries that the quality of delivery could be reduced – especially in remote areas, while prices rise up for individual mail are strong.

One major aspect of this debate consists in questioning to which extent postal services achieve the status of natural monopoly. Indeed, overall efficiency could decrease when new competitors enter the market and prices. Another one is whether it could be necessary or not to protect historical operators to preserve some services. The paper intends to propose an appraisal about these problems, thus analysing what economic consequences full market opening may bring, with a special interest for France.

The paper first explores the industrial specificities of the postal service and prompts the main aspects of the European deregulation process. Several goals defined by the directives may seem difficult to achieve simultaneously, especially when competitors are skimming profitable clients. The paper then studies the consequences on separated prices and on the survival of the historical operator of market opening. It seems that after a first period of effective competition, with a change in the price structure, the market could reach a new steady equilibrium.

1. Industry's Characteristics Overview

Postal service is by many means a typical service industry.

As a service industry, postal services are not storable and it is not possible to establish ownership rights over the various services they provide but only on the producing system. Furthermore, postal activity is a labour industry, generating as an average for 20 European countries 63% of total costs (NERA 2004). Postal service is also a network industry. Properly speaking the postal network includes two parallel networks, one dedicated to the collection the mail (upstream network), and the other one being devoted to its delivery (downstream network). Between the collection and the ultimate delivery lie intermediary processes such as transport and sorting.

The major source of costs comes from delivery which, as an average of sixteen EU countries, amounts to approximately 50% of total costs (table n° 1). Let us nevertheless notice that this figure may be slightly underestimated since a fraction of overheads is related to delivery. For instance, Germany, that did not show overheads in its costs splitting, depicted in 1998 a 69% ratio for delivery costs (NERA 2004 p. 72).

Table n°1

Costs splits by activity in letter mail for Universal Service Providers

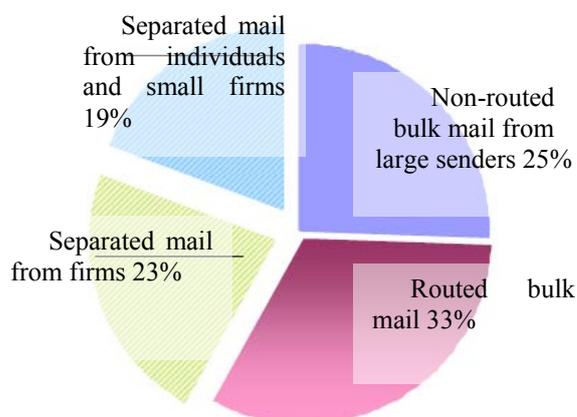
	Collection	Transport	Sorting	Delivery	Overheads	Total
France*	8	5	15	46	21	100
<i>16 EU countries unweighted average</i>	<i>12.0</i>	<i>7.3</i>	<i>15.8</i>	<i>49.6</i>	<i>14.9</i>	100

Source: NERA 2004 p. 72; (* plus other costs not elsewhere classified: 5 %)

Correspondence as a whole may be divided in bulk mail, generated by firms with advertisements, invoices, banking statements..., and separated (including individuals) mail. In France, bulk mail amounted in 2005 to a 58 % of overall correspondence, but firms as a whole generated more than 80 % of the traffic (Arcep 2007, see graph n°1)¹. More than two third of correspondence is send to individuals (Arcep 2007). Considering turnover, the weight of firms' mail is even more significant, since they engender more than 90 % of the mail income (Larcher 2003 p.23).

¹ As a matter of fact, taken alone (i.e. without SME's mail), correspondence between individual customers amounts only to 3% of the overall volume.

GRAPH N°1
Shares of volume correspondence in France
 (domestic and imports in 2005)



Source: Arcep 2006 p.11

Demand is highly concentrated as, for instance in France, 40 % of the letters turnover comes from only 80 companies (Hérisson 2007 p. 241). Finally, though individuals remain still essential to postal service while being receivers, as senders they no more are. It is especially true since in the postal industry senders pay the bills, not receivers.

Correspondence represents commonly the main share of operators' resources. For instance, mail services accounted in France for nearly 77% of the total delivery turnover (table n°2). Regarding data of 17 European countries available from Universal Postal Union, this latter figure, apart from Germany, is fairly typical, albeit decreasing in the last years.

The future prospects for postal services are however uncertain and raise worries. Postal activities are harmed by modern technological changes, as for example fax and e-mail. For instance in France since 1998, the growth rate of mail traffic was beneath the GNP growth rate, traffic went even down for several years.

Table n°2

La Poste's 2002 turnover split by type of delivery

	1 st split	2 nd split
Mail	59.15	76.93
Parcels	21.6	23.06
Financial services**	23.1	/
Total	100*	100

Source: Cour des Comptes 2002 p. 18, (* 17 332 Mio Euros; ** Financial services are gathered in a separated company since January 2006)

Postal service depicts many characteristics of a natural monopoly

One major issue about postal services consists in questioning to which extent they achieve the status of natural monopoly. The answer requires an analysis of the different costs and their type.

A natural monopoly typically undergoes high overall fixed costs and decreasing average costs, even null marginal costs. Its cost function should be subadditive, meaning that the cost of producing any level of output is less than the sum of the costs of producing it separately. The proof of subadditivity requires a description of the shape of the entire cost function, thus calling for data that may lie well beyond the range of recorded experience (Baumol 1977). Nonetheless fortunately scale economies are a sufficient proof of subadditivity, as well as, when a multiproduct industry is under scrutiny, complementarities in the production of the different outputs. These two requirements are easier to gauge and are proven commonly fulfilled by practical studies.

Economies drawn from production may be scrutinised through three dimensions: long term economies of scale, short-term economies of scale and economies of scope.

Long-term economies of scale appear when an increase in traffic induces a lesser proportionate increase in the network. Short-term economies of scale happen when unit costs decrease while traffic rise, given a fixed network. Economies of scope, stemming from complementarities, relates to returns derived from the jointed delivery of various types of mail. It may be, for instance, within correspondence depending on its speed of delivery, (D+1 D+3 D+7) and parcels that are partially served using correspondence network.

The paper will only take into consideration short-term economies of scale and scope, since most postal services are mature in Europe. Hence the reorganisation induced by recent changes does not require significant network extension; actual trends rather bring network downsizing.

Researches are focused on delivery since it produces the major part of postal services' costs. The global cost function of postal delivery depends on several factors: distance between post office to the beginning of the delivery, the length of the route, number of stops, final delivery... Economies of scale arise when costs bear the specificity to be mainly fixed. Properly speaking, among these different elements, stops and final delivery are variable costs. However due to the specification of routes, that the postal operator tends to saturate, standard expected variations of the traffic do not induce a significant deviation in stops and in actual deliveries (Cohen 1997). Thus the overall delivery costs may roughly be considered as fix

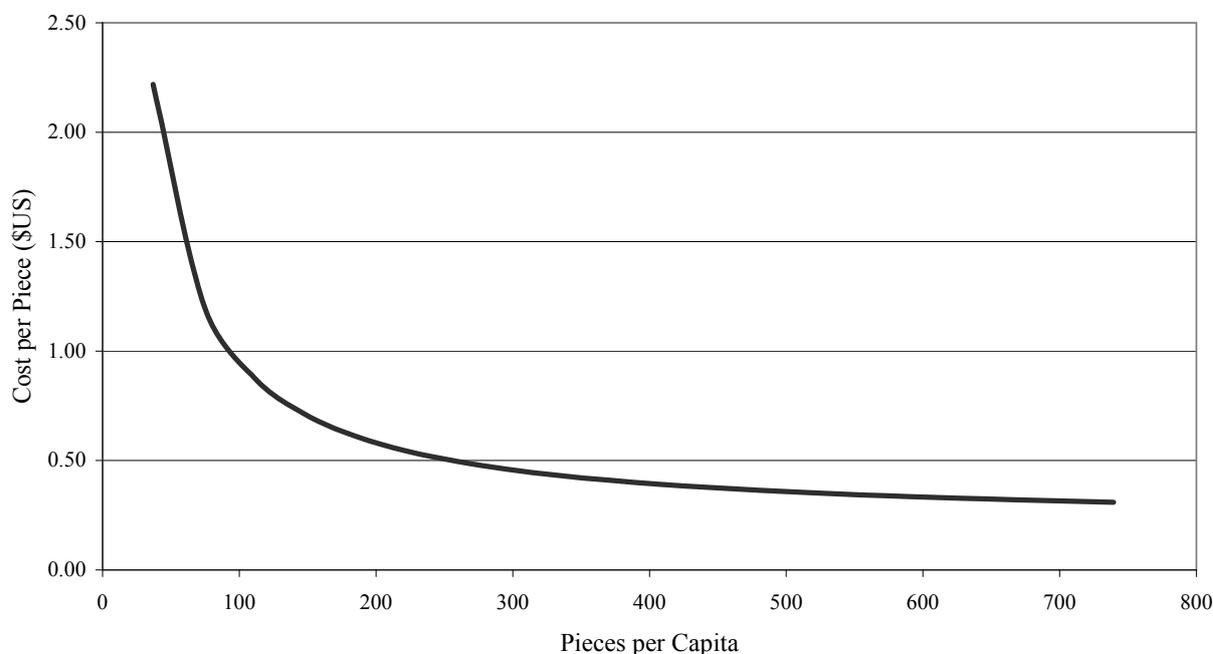
costs. This viewpoint especially holds for large markets where routes are more often saturated. In addition the volume delivered to each address has much effect on overall actual costs: the more mail delivered to an address, the lower unit delivery cost per item is. Hence the total emitted volume of mail per inhabitant is of much importance for delivery costs.

To summarise, there are good presumptions of economies of scale in postal delivery. Moreover the higher volume per address is, the greater they may be.

Given the previous comments, it is not surprising that John Panzar (1991) has characterised street delivery as a bottleneck function because a single firm can deliver to a recipient at a lower total cost than multiple firms delivering to the same customer. Many researches have since confirmed economies of scale in the postal distribution activity (see Cazals 2004 or Bradley Colvin Perkins 2006²). Indeed, as long as the maximum capacity of delivery has not been reached, average unit costs are decreasing while traffic increases. Cohen (2003) modelled a cost function for USPS depicting economies of scale connected with the volume served (Graph n°2). Interestingly enough economies of scale are not linearly increasing. Costs sharply drop off at the beginning of the curve, when mail per capita raises from 50 to 200, but after follows a rather slow pace.

Graph n°2

Model estimates of unit cost benchmarked by US costs and volume



Source Cohen (2003)

In addition to economies of scale, there are strong cost complementarities (economies of scope) between the different activities carried out by postal services (D+1, D+3, D+7; small parcels, registered mail...).

A very simple calculation, based on ARCEP (2008) incremental cost method, may provide an estimate of the economies of scope drawn from multi-speed activities. If different companies were serving D+1 (6 delivering days a week), D+3 (2 delivering days) and D+7 (1 delivering day) correspondences, there would be a total of 10 served days. If one company serves all the market only 6 delivering days are operated, thus economies of scope represents a 4 to 10 ratio (i.e. amount to 40%). In a duopoly context, where the first company would address D+1 and the second one D+3 and D+7 simultaneously, the same method would give an economy of scope amounting to 25%.

As a consequence of the last remarks, delivery, which as it was stated accounts for the major part of postal services costs, shows most characteristics of a natural monopoly (see also Kenny 2006). Moreover, there are solid hints that collection through letter boxes may also possess the characteristics of natural monopoly. Altogether nearly 70% of postal costs may be deemed as achieving natural monopoly attributes.

However, differing from typical natural monopoly, postal market, at least on specific segments, is easily contestable (Toledano 2004 p. 234), especially when the amount of traffic per address is high (de Bijl & alii 2006 cf. p.15).

This situation stems from two sources. First it derives from the fact that most fixed costs are neither technical nor physical, but labour costs. As a consequence, contrary to the classic natural monopoly case, network costs need to be paid recurrently (every month) and not once for all. Therefore a great fraction of fixed costs are operational costs, not irretrievable ones. Entering the market does not require long-term investment charges to set up a network, but mostly the regular expenses that are required to operate the activity. Hence, sunk costs are quite light and entry is fairly easy. It is especially true if the new competitor specialises in delivering sorted bulk mail. Second, the scale and the scope of the network are easily adaptable; addressing the whole national market or conveying all sorts of mail are not the only options. Profitable niches can be created by reducing the frequency and the geographical extent of the delivery: not all the mail needs to be delivered as quickly as possible, every working day and everywhere on a given territory. For instance in Sweden, CityMail only serves D+3 mail, twice a week in urban areas.

² « In sum, the empirical studies in general have found output elasticities well less than 100 percent, implying substantial scale economies in delivery ».

Deregulation process and Universal Service Obligations (USO)

Deregulation in the postal services has been launched by the European Commission in 1997 (box n°1). The process progressively reduces the share of postal activities that is covered by the monopoly. The most recent step in January 2006 dropped the reserved area to correspondence up to 50 g. However, several parts of postal activity were already totally opened to competition in many European countries, with operators such as concentrators, sorters or routers. As a matter of fact even if several countries since Finland and Sweden in the early 1990's have anticipated the FMO (namely United Kingdom, Germany and Netherlands), for the moment most historical operators in EU are still benefiting from a partial monopoly. Letter delivery, which includes most of the charges, has hence only encountered little competition. For instance, in France the reserved area still concerns 83.5% of the volume of mail (graph I in annex). The impact of deregulation on income is a little more significant as reserved traffic amounts to only a 73.5 % (Arcep 2007)³. Eurostat data confirms that in countries where opening has not yet been implemented reserved area still covers the major part of the correspondence market (see table n° 4).

Box n°1: a brief history of the market opening

- 1989 Postal and telecommunication council invites the European Commission to prepare measures to develop postal services. Deregulation policy for speed delivery postal services was already opened.
- 1992 Green Paper single market for postal services (COM/91/476).
- 1997 1st Postal Directive ([97/67/EC](#)) launches the deregulation process, market opening for mail above 350 g scheduled for 1999.
- 2002 2nd Postal Directive ([2002/39/EC](#)).
- 2003 2nd reduction of the "reserved area" (100 g.).
- 2006 3rd reduction of the "reserved area" (50 g.).
- 2006 Commission proposes the 3rd directive Com (2006) 594 with Full Market Opening (FMO) for 2009.
- 2007 (07/11) European Parliament votes to postpone the FMO to 2011.
- 2008 (02/10) Final agreement sets FMO to January 2011 for EU 14 and 2013 for New Member States and Greece (2008/6/EC).

³ However, considering overall postal traffic the market share opened to competition is estimated to 46 % (according to La Poste 2007 activity report).

Universal Service

The expected evolution alters the traditional postal service organisational scheme. Postal operators traditionally provided an equal service, with a single price over an entire territory, even though costs fluctuate. Operators used their monopolistic situation to cross subsidise non profitable activities (mainly separated delivery in rural areas) by profitable ones (bulk mail delivery in urban regions). Although tariffs are already partly adjusted for bulk mail, the end of monopoly implies the end of cross subsidisation. Therefore, unless significant productivity increases, while the new market framework pushes to match costs and prices, incumbents will be prone to reduce the quality of their service and rise their prices in costly areas. Full opening hence raises concern. For instance Sweden, where postal deregulation was completed in the early 90's, may illustrate these worries. Prices for individual correspondence underwent a sharp rise⁴, while slightly decreasing for bulk mail (Andersson 2007 p. 11; Falkenhall & Kolmodin 2005 p. 23). At the same time, the number of post office owned by Posten AB significantly decreased, especially in rural areas (PTS 2007, Falkenhall & Kolmodin 2005). In addition, between 1993 and 2006 Posten AB employment declined by 33.5 % (PTS 2007 p. 9).

To avoid territorial and social cohesion problems, since 1997 the directives, beyond efficiency enhancement and orientation towards costs, proclaim the necessity to preserve an undemanding access to all users with affordable prices by setting Universal Service Obligations (USO).

Universal Service is a service that should be available for all users, but especially designed for individuals and Small and Medium Enterprises. This service includes quantified speed delivery goals (for d+1), affordable price, and coverage of all places on the territory at least five days a week. It applies to correspondence up to 2 kg, parcels at least up to 10 kg and registered mail (see box n°2 and 3).

Directives do not impose single pricing, but should one country choose it, the Universal Service Provider (USP) should remain free to negotiate special discount tariffs for specific customers (art. 12 al. 3, 1997th directive). So as to say that, after all, the single price pertains only to separate mail or likely to the bulk mail routes where no competitors entered. As PTS puts it: the single price « (...) prevents or at least makes it more difficult for Posten AB to cut prices only in areas where there is a local competitor » (PTS 2007 p. 9).

⁴ From 35 to 43 % in real term depending on the type of mail. This increase is partly due to the introduction of VAT on mail and to a transitory failure in the monitoring of prices by regulation authorities.

Box n°2: Universal Service Obligations in France (01/05/2007 decree)

Extent: universal service pertains to letters up to 2kg and parcels up to 20 kg.

Delivery: delivery is effective at home for each individual or firm. Except extraordinary circumstances, the service runs every working day.

Accessibility: at least 99% of the national population and 95% of the population of each district (“département”) should be less than 10 kilometres from a postal contact point. Every city with more than 10 000 inhabitants gets at least one postal contact outlet, plus one by segment of 20 000 inhabitants.

Prices: except for bulk mail, a single price applies for all the metropolitan territory.

Press delivery: newspapers and press documents recognised by the Press Parity Commission are delivered complying USO. The tariff structure should support pluralism.

Box n°3: Special territorial cohesion regulation, (05/20/2005 act)

Excepted in special circumstances, 10 % of the population of a district (“département”) may not be beyond 5 kilometres or 20 minutes reach from a postal contact point.

A special “département” council for postal territorial localisation gives advices on the location of postal contact points.

A special territorial compensation fund is set to finance the cost of the territorial cohesion. Its resources come from a discount on local taxes. Universal Service Provider obtains an 85 % rebate on community taxes.

2. What will happen to prices with full market opening?

Price competition facing Universal Service Obligations

When new competitors enter the market, they are likely to skim the cream by mainly addressing bulk mail (D+3 or D+7) in densely populated areas. As stressed before, they may set a light network. In consequence entry does not imply high costs and, depending on volume per inhabitant and postal density, even if the new entrant is less efficient than the incumbent it may propose lower prices (Bernard and alii 2004). In these circumstances, it is worth noticing that the incumbent still faces roughly the same network costs, but collects fewer resources. The incumbent is therefore prone to lower its prices where competitors entered and raise them anywhere else; at the same time he is obviously prone to reduce its operating costs. The pressure on its costs result in more mechanisation and increase in efficiency, but also may bring diminishing network in rural areas, with less postal offices, fewer delivery days and

higher prices. For instance, as quoted by Cazalda (2005) “outlying areas might receive service three days a week instead of the typical five or six currently. In other areas Saturday service might be eliminated”.

The evolving structure of prices actually transfers a definite share of the network costs previously borne by bulk mail, towards separated mail. Yet this kind of response could in turn theoretically again reduce incumbent’s resources, if numerous customers progressively leave its network considering prices are too high or access is too restricted. They could turn to phone, internet... other competitors, a damaging spiral could be triggered off, with less traffic generating fewer resources and higher relative costs, inducing higher prices...This process might initiate what Crew and Kleindorfer (2000) have named a “graveyard spiral”.

Nevertheless, since new entrant will not attract all the potential correspondence they could, and since for many routes and some types of mail there will remain no substitutes, a significant share of traffic will be kept by the incumbent. Finally in theory free competitive pressure would tend to raise the price towards the cost of the most expensive routes (Cremer 2004 p. 13) while, taken as a whole, network and service would shrink to a new extent–price equilibrium.

However, this process is not to be allowed to go too far. Network is a club good type; its usefulness goes hand in hand with the number of accessible costumers for a given period, which, on a postal point of view, derives from the combination of the total number of costumers, quickness and frequency of delivery. Let us remember that bulk and separated mail mainly share the same distribution network. Thus, if the network was to shrink too severely, it could also disturb the delivery of a fraction of bulk mail (Cremer and alii 2007), and overall efficiency might decline. The above potential withdrawal spiral is opportunely barred by the Universal Services obligations (USO).

The USO restricts the historical operator’s capacity of response to competition; its extent appears thus clearly a major concern for him. Depending on the level of obligations, the incumbent will or will not be able to sharply downsize its network costs and raise its separated mail prices. But in any case its resources are to be affected. Although plainly legitimated for economical and cohesion reasons, the universal service could induce an unfair financial load for its provider. Therefore, all things being equal, USO may call for a specific compensation. There is more to say, unexpectedly main USO may have ambiguous effects, or even counterfactual ones, namely the combination of single pricing and cohesion requirements (PTS 2000).

On the one hand, the single price protects costumers from being overpriced when there is no competitor facing the USP; it also prevents the latter to charge predatory prices on routes where competitors are. But on the other hand, as the single price must address all the territory, especially costly areas or routes, its level is too high for low cost areas and routes. It therefore gives a true opportunity for competitors to enter the market. Moreover, it provides also the maximum price new entrants may charge and simultaneously determines their profit. Not surprisingly, Cremer & alii (2001 p. 116) find that: “Entry is viable at all the considered scales when the incumbent has to price uniformly. When non-uniform pricing is allowed, on the other hand, only large scale entry is profitable”.

What price increase for separated mail?

Since separated mail price is to rise to compensate the fall of bulk mail volume and price, the question becomes: will the increase be affordable? If not, the USP will have to strongly squeeze its costs and could be tempted to shrink its services in remote routes and areas. There are several ways to address this question. One is to analyse the unit cost per route, but it demands sophisticated data and methods. It will be addressed further on. Yet fortunately, the USP faces a very simple income problem, which on the short run, may supersede unit cost analysis. A simplistic calculation based on the preservation of turnover may thus give useful hints. The shortcomings of the estimate will be addressed at the end.

Assume an efficient USP whose total turnover is:

$$(P_{ob} \cdot a_o \cdot V_{ob}) + (P_{os} \cdot b_o \cdot V_{os}) \quad \text{1st period (monopoly)} \quad (1)$$

$$(P_{1b} \cdot a_1 \cdot V_{1b}) + (P_{1s} \cdot b_1 \cdot V_{1s}) \quad \text{2nd period (competition)} \quad (2)$$

With P for price, V for volume of mail; b_o designate bulk mail, s_o separated mail; a and b stand for the market shares for bulk and separated mail owned by the USP.

$V_{ob} + V_{os}$ is the total volume of mail, normalised to 1 for the first period.

Let us also consider first period prices P_{ob} , P_{os} being equal to 1.

Since by hypothesis the USP is assumed to be efficient, total costs equal the total turnover.

First period, the incumbent is a monopoly

$$\left\{ \begin{array}{ll} a_o = b_o = 1 & \text{market shares} \\ (a_o \cdot V_{ob}) + (b_o \cdot V_{os}) = 1 & \text{total volume mail} \\ (P_{ob} \cdot a_o \cdot V_{ob}) + (P_{os} \cdot b_o \cdot V_{os}) = 1 & \text{total turnover} \end{array} \right.$$

Second period, opening to competition

$$\left\{ \begin{array}{ll} a_1 + b_1 \leq 2 & \text{incumbent market shares} \\ (a_1 \cdot V_{1b}) + (b_1 \cdot V_{1s}) & \text{total incumbent volume mail} \\ (P_{1b} \cdot a_1 \cdot V_{1b}) + (P_{1s} \cdot b_1 \cdot V_{1s}) & \text{total incumbent turnover} \end{array} \right.$$

$a_1 < a_0$ expresses that a portion of the bulk mail is diverted by new entrants.

$P_{1b} < P_{ob}$ and $P_{1s} > P_{os}$ express the change in the price structure.

The financial equilibrium constraint for the incumbent is (1) = (2):

$$(P_{1b} \cdot a_1 \cdot V_{1b}) + (P_{1s} \cdot b_1 \cdot V_{1s}) = (P_{ob} \cdot a_0 \cdot V_{ob}) + (P_{os} \cdot b_0 \cdot V_{os}) \quad (3)$$

Let us find the value of P_{1s}

$$(P_{1b} \cdot a_1 \cdot V_{1b}) + (P_{1s} \cdot b_1 \cdot V_{1s}) = 1 \quad (4)$$

$$(P_{1s} \cdot b_1 \cdot V_{1s}) = 1 - (P_{1b} \cdot a_1 \cdot V_{1b})$$

$$P_{1s} = \frac{1 - (P_{1b} \cdot a_1 \cdot V_{1b})}{b_1 \cdot V_{1s}} \quad (5)$$

Not surprisingly, the compensating price for separated mail depends on the turnover generated by bulk mail and the evolution of the volume of separated mail.

Let us assume newcomers are only interested in bulk mail so that $b_0 = b_1 = 1$. We may compute an estimate of P_{1s} based on actual figures.

⇒ As a first step let us suppose that the demand elasticity for separated mail is inelastic ($\epsilon_{d/p}$) ($V_{1s} = V_{os}$), hence $V_{1s} \cdot b_1 = V_{os} \cdot b_0$

$$P_{1s} = \frac{1 - (P_{1b} \cdot a_1 \cdot V_{1b})}{b_0 \cdot V_{os}} \quad (6)$$

Considering the French case ⁵ ($b_0 \cdot V_{os}$) = 0,4;

$$P_{1s} = \frac{1 - (P_{1b} \cdot a_1 \cdot V_{1b})}{0,4} \quad (7)$$

Let us set boundaries for $P_{1b} \cdot a_1$

⁵ Note that the Swedish case is close with bulk = 0,7 (PTS 2007 p.9)

Actual Swedish case tells us that after 14 years, CityMail has gained 13 % of the total bulk mail market (PTS 2007 p. 4⁶). In United Kingdom after two years of full opening, new entrants have already diverted, 11.8% of the total addressed mail volume (Postcomm 2007⁷). On the other hand, Cohen (2005) computes one third as an upper limit for Sweden. Similarly, Deutsche Post's share which is actually about 91 percent of Germany's mail-market is, according to a Commerzbank's study, expected to drop to 70 percent within five years after total liberalization. Hence a sound hypothesis may be that new entrants may capture between 10 to 30 % at best of the bulk mail-market. The share left to incumbent therefore varies between 70 % and 90 % so that $a_1 \in [0.7; 0.9]$.

According to the Swedish experience, the price for bulk mail could decrease by 20 to 10 % (Andersson 2007), so let $P_{1b} \in [0.8; 0.9]$.

Hence altogether $(P_{1b} \cdot a_1) \in [0.56; 0.81]$

Results are displayed in table n° 3 and commented below.

TABLE N° 3

**Necessary P_{1s} separated-mail price level compensating entry,
given various options ($P_{os} = 1$)**

Bulk mail volume second period, V_{1b} ; (first period = 100 %)	$b_1 \cdot V_{1s} = b_0 \cdot V_{os}$				$b_1 \cdot V_{1s} < b_0 \cdot V_{os}$	
	(A) P_{1b} down by 20% and 30% market share a_1 loss. (first period = 1)	(B) P_{1b} down by 10% and 10% market share a_1 loss. (first period = 1)	(A) <i>Total final volume owned by incumbent, $(a_1 \cdot V_{1b}) + (b_1 \cdot V_{1s})$ (first period = 1)</i>	(B) <i>Total final volume owned by incumbent, $(a_1 \cdot V_{1b}) + (b_1 \cdot V_{1s})$ (first period = 1)</i>	P_{1b} down by 20% and 30% market share a_1 loss	P_{1b} down by 10% and 10% market share a_1 loss
100 %	1,66	1,28	0,82	0,94	1,69	1,31
105 %	1,62	1,22	0,84	0,97	1,65	1,25
110 %	1,58	1,16	0,86	0,99	1,60	1,19
115 %	1,53	1,10	0,88	1,02	1,56	1,12
120 %	1,50	1,04	0,90	1,05	1,52	1,06

⇒ As a second step, let us take into account the demand elasticity. Since most actual computed demand elasticity ($\varepsilon_{d/p}$) are negative (Cazals Florens 2004), separated volume owned by incumbent could be adversely affected. Yet, since a great deal of actual separated

⁶ Equivalent to roughly 25% of the segments on which he is active (de Bijl 2006 p. 13).

⁷ Unfortunately no data related to bulk mail were available.

mail responds to unavoidable needs let us assume that only the first 10 % price rise have an immediate impact on separated mail demand.

Let us calculate an estimate for $b_1 \cdot V_{1s}$. using the upper figure of $\varepsilon_{d/p} = -0,2$ (Cazals Florens 2004). Hence $b_1 \cdot V_{1s} = 0,392$ ⁸ and equation (5) becomes (8).

$$P_{1s} = \frac{1 - (P_{1b} \cdot a_1 \cdot V_{1b})}{0,392} \quad (8)$$

The dissimilarity between (7) and (8) is not large enough to produce significant discrepancies on P_{1s} prices even if P_{1s} increases a little more.

Our rough estimate shows that in a country like France where bulk mail represents 60 % of total mail, a drop of 10 % in the bulk market owned by the historical operator, associated with a drop of 10 % of bulk mail prices, would call, everything being equal, for an increase of 28 % in separated mail prices. With an optimistic rise of bulk mail volume by 20 %, prices of separated mail should only need to increase by 4 %. In the worst hypothetical case, a drop of a 20% in the price and of 30% in the share of the bulk mail of the incumbent would require an increase of more than 50 % for separated mail price.

These figures may seem harsh. They stem from a joint fall in market share and price of bulk mail, which in turn influences the incumbent's remaining volume. The cumulated phenomenon dramatically amplifies the consequence of a sole market loss. The data are nonetheless consistent with Cohen (2003) findings and Andersson (2007) actual data. Let us also remind the 30 % increase Posten AB introduced, a few years after Full Market Opening on separated letters. Even if it was due to a loophole in price monitoring; this rise was alleged to be a response to growing costs (PTS 2007 p. 8). Moreover Cohen (2005) asserts that price (including VAT) for first class mail has nearly double since market opening in Sweden. Price increases for separated mail are also noticed in many European countries, even if their pace is caped.

Nonetheless, these estimates should not be taken for granted. They do not take into account several important parameters as for instance, productivity gains; employment downsizing, restructuring of the network... that could ease the shock. It is also worth remembering that the USP have several sources of revenues. During the last period postal operators have increased the share of their other sources, for instance, parcels, registered mail... as well as of financial services. Moreover, as the market losses or the price decline

⁸ $1*(0,4 * (1-0,02))$

will not occur in one night, it will render the transition easier. It is also worth mentioning that, regulation agencies will not leave USP free to charge disproportionate prices.

Finally the figures should rather be considered as an altogether upper approximation for the productivity constraint that will stem from market opening. Nevertheless, there is more to think about when taking into consideration the delivery cost function.

3. A Transitory Competition?

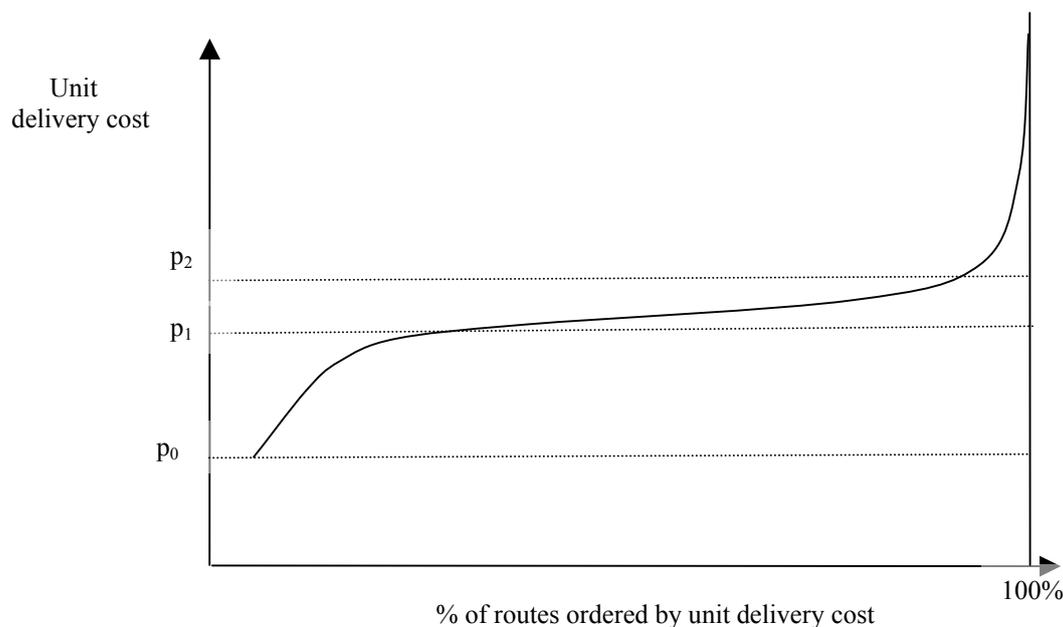
Depending chiefly on the number of mail per inhabitant and the cost profile of routes, there are credible hints that the competition could quite quickly reach an equilibrium where USP would remain steadily dominant. Thus contrary to some fears the final survival of USP would not be endangered and probably even USO might not require eventually significant subsidies. In this event, the foreseen price increase could be a one for all change of level. To understand this potential result one has to focus on a combination of factors that were not adequately taken into consideration until now.

The overall cost delivery function for one country depends markedly on its postal density. Indeed, the cost of serving a particular address rests on the number of delivery points that can be served during one hour. The deviation of this number, ranked per routes served, draws a cost profile which is specific for each country. The competitive burden that will weight on USP depends on this cost profile. If the curve contour is fairly flat, at least along a lengthy segment (graph n°3, see also Cohen 2003, NERA 1998), there may be little cream to skim, as the fraction of profitable routes would be limited. Indeed, once the profitable mail would be captured, prices could rise slower than the traffic increase (graph n°3, between p_1 and p_2), thus not covering the growth of the new entrant's operational costs. The phenomenon is especially true, since as a newcomer he needs to offer a discount.

In the end, once a definite share of the market has been diverted, and the corresponding price change implemented, the incumbent's single price and the remaining route costs will become closer and the competition hence reaches a step and may pause. Cohen (2003) stresses that in United States: "ten percent of the routes generate nearly half the gross profits", one may infer that an incumbent could expect to keep about 90% of the residual routes with their equivalent traffic.

Graph n°3

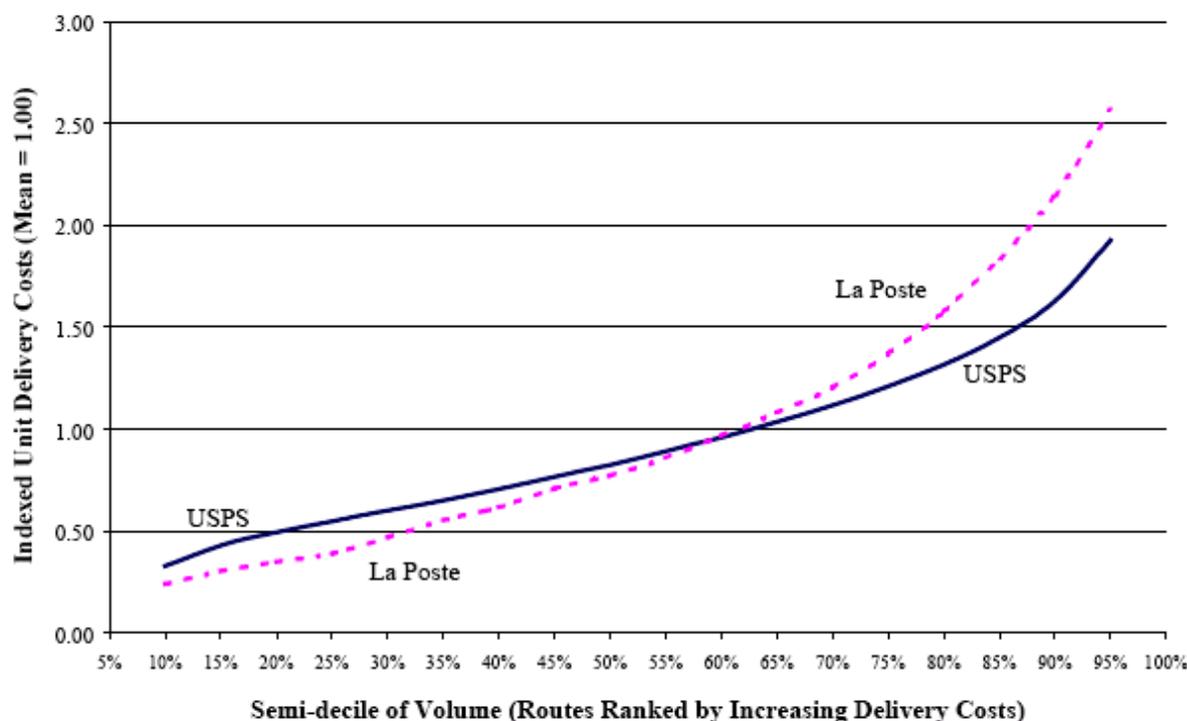
Delivery cost profile per postal routes



Postal density depends on three main factors. It is firstly related to geographical factors, noticeably a country's surface and the distribution of its population on the territory. The share of urban population is thus of a major interest. Therefore, relatively plane delivery cost profile, at least along a large segment of the curve, is more likely to be found in countries where the share of urban population is high (table n°4). However, postal density also rests on technical aspects, for instance the way delivery is performed. Should it be done only at home or partly in post office letter boxes or alongside roads, it may greatly vary. Postal density is, for instance, higher in United States than in France (Bernard and alii 2004), even if United States is evidently a wider country with many remote areas (graph n°4). France's curve depicts both a lengthy and a wide deviation.

Graph n°4

Comparison of Unit Delivery Costs of La Poste and USPS



Source : Bernard and al. 2004

To summarise, new entrants may quite rapidly skim the easy contestable segment, which is sorted bulk mail, but because of postal density matters and of economies of scale and scope, they probably will encounter true difficulties to go farther.

The countries that may correspond to such a situation mainly combine relatively high correspondence per inhabitant and urban population level. Approximately 10 countries within EU 27 match the two criteria, of which five have already completed deregulation. Anyhow, other side aspects, such as minimal Universal Service Obligations, low legacy costs or wage premium... should not be forgotten. The fact that, in Germany, the government intended to fix a minimum wage for the whole postal sector illustrates that legacy costs or wage premium are also important factors.

TABLE N°4
Postal market 2003 data for EU 27

	Letters / inhabitant per year (under 20g)	Urban population %	Price for first class mail, euros	Price for first class mail, SPA	Total internal mail turnover *	Reserved area in % of letters
Germany	194	88.0	0.55	0.50	14 076	85
United Kingdom	315	91.0	0.44	0.41	11 847	/
France	321	76.0	0.53	0.52	11 300	79
Italy	105	86.0	0.60	0.58	3 973	/
Sweden	334	33.0	0.60	0.49	2 753	/
Netherlands	326	97.0	0.40	0.38	2 660	/
Belgium	/	97.0	0.50	0.47	2 000	/
Spain	117	75.0	0.27	0.31	1 854	82
Austria	/	65.0	0.55	0.52	1 701	/
Denmark	269	67.0	0.55	0.43	1 482	69
Finland	412	49.0	0.65	0.53	1 035	/
Portugal	124	79.0	0.42	0.53	648	81
Ireland	188	57.0	0.48	0.39	515	78
Greece	54	69.0	0.49	0.60	401	/
Luxembourg	295	81.0	0.50	0.43	146	92
Poland	83	62.0	0.42	0.89	1 161	61
Czech Republic	93	77.0	0.20	0.39	396	61
Hungary	91	65.0	0.36	0.64	269	60
Slovenia	199	49.0	0.20	0.27	128	74
Estonia	55	69.0	0.28	0.51	42	/
Cyprus	76	66.0	0.34	0.38	30	/
Bulgaria	10	70.0	0.23	0.63	29	84
Livonia	28	68.0	0.23	0.49	19	38
Lithuania	15	67.0	0.29	0.59	19	/
Slovakia	96	56.0	0.37	0.75	/	50
Malta	/	91.0	0.16	0.23	/	/
Romania	15	55.0	0.12	0.31	/	48
Unweighted average	159.0	70.6	0.395	0.488	2 436.8	69.5
USA **	667,31	79,0	0.41 \$	/	55 010 \$	/

Source: Eurostat, 2004 data. INSEE for urban population * Millions of Euros for EU 27. ** USA: UPU 2005 data: letter 2007 price, First class + standard mail turnover.

Conclusion

Since the previous openings were actually of little consequences, the Full Market Opening planned for 2011 will represent a large leap for many postal operators. It will bring along a strong strain for the universal service provider, especially because single pricing for separated mail is commonly chosen. Historical operators will have incentives to noticeably raise the prices for individual mail and to try to sidestep the Universal Service Obligations. This result especially holds for countries where postal density is uneven, with significant discrepancies between areas, where postal delivery average per inhabitant is high, and legacy costs significant (PWC 2006). In these circumstances, several competitors will be prone to enter the market, as well as prosperous niches will be available. However once the first shock, with a significant change in price level for separated mail, will be absorbed, it is likely that a new market equilibrium will arise where competition could pause. This result stems from the cost profile of postal routes that often depicts a relatively flat segment. The more the cost profile of postal routes will be plane, on a lengthy portion of the curve, the quicker the new market equilibrium will establish. Once the rather flat position reached, market losses for the USP will raise slower than route costs will increase for new competitors. Therefore after the first step of price rise, the USP will be able to face competition. Approximately ten countries in the EU 27 could match these criteria. However the final opinion must be balanced with other national factors, such as the extent of Universal Service Obligations, legacy costs or wage premium, which may prolong the difficulties for the USP.

Will the new equilibrium be a better one? On a welfare economics point of view, the overall prices adjustment could only change the distribution of the weight borne by the various agents. It could be a null sum swap. However, on the one hand, because of diminishing scale and scope economies, the lower number of items delivered per inhabitant by the incumbent should lessen its efficiency. On the other hand, due to the rationalisation induced by market opening, cost effectiveness of the delivery should increase. The overall combined result is thus indecisive, especially when taking into consideration the number of new entrants and the evolution of the whole market. Prospects regarding to the volume of mail are hence a key issue. Should the traffic stagnate or decrease due to the technical trend, and the balance could be negative.

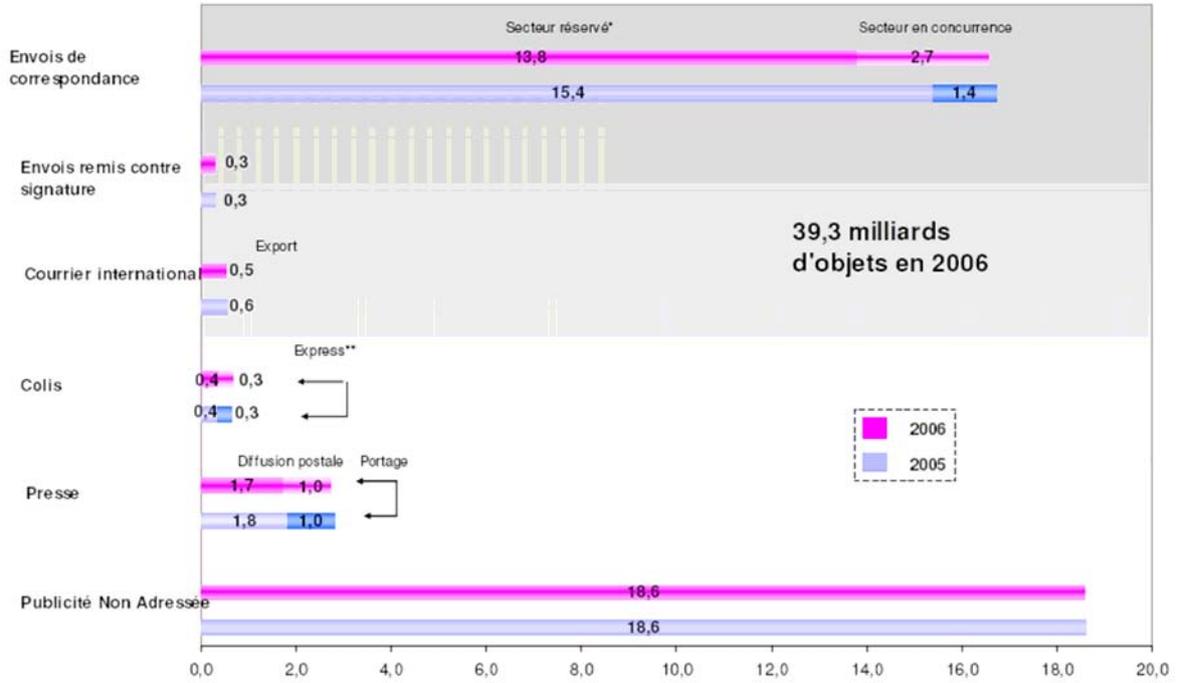
References

- Andersson. P 2007 « Les effets de la réforme des services postaux en Suède, *La vie économique*, mars, pp. 9-11.
- ARCEP (2008) “Les règles de comptabilisation, en application de l’article L. 5-2, 6° du code des postes et des communications électroniques”.
- ARCEP 2007, *Observatoire statistique des activités postales* : année 2006, octobre 2007.
- ARCEP 2006, *Observatoire statistique des activités postales* : année 2005, décembre 2006.
- Barthelemy. F Toledano. J 2004, « En France le courrier est envoyé vers les zones riches et actives », in Toledano Ed. *Economie postale : les fondements*, Economica p. 88-99.
- Bernard. S, Cohen.R, Robinson. M Roy. B, Toledano. J, Waller. J, Xenakis. S 2004, Hétérogénéité des coûts de distribution et vulnérabilité à l’entrée », in Toledano ed. *Economie postale : les fondements*, Economica pp. 181-200.
- Bradley.M Colvin. J Perkins.M (2006b) « Measuring Scale and Scope Economies with A Structural Model of Postal Delivery » in crew 2006b.
- Calzada J 2005 *Universal Service Obligations in the Postal Sector: Endogenous Quality and Coverage*, Imperial College London and Universitat de Barcelona March 13.
- Cazals. C, de Rycke. M, Florens. J-P, Rouzaud. S 2004, “Monopole naturel et économie d’échelle dans la distribution postale”, in Toledano Ed. *Economie postale : les fondements*, Economica pp. 117-132.
- Cazals. C, Florens. J-P 2004, “Econométrie de la demande de courrier, comparaison entre données en coupe instantanée et données dynamiques” in Toledano ed. *Economie postale : les fondements*, Economica pp. 72-87.
- Cohen. R Robinson M. Sheehy R. Waller J. Xenaki S. (2003) “An empirical analysis of the graveyard spiral”, in *Competitive Transformation of the Postal and Delivery Sector*, edited by. Crew M.A and. Kleindorfer P.R. Boston, MA: Kluwer Academic Publishers,
- Cohen. R, Robinson. M, Sheehy. R, Sharkey. T, Waller. J and Xenakis. S, 2006 “The conflict about preserving small rural post offices: difference in the distribution of pharmacies and post offices” Presented at Winton M. Blount Symposium on Postal History November 3-4, Washington, D.C. November.
- Cohen.R and Chu. E (1997) “A measure of scale economies for postal systems” in *managing change in the postal delivery industries,.. crew m. and kleindorfer. p, ed. kluwer academic publishers, 1997*
- COM 2006 “Étude prospective concernant l’impact sur le service universel de l’achèvement du marché intérieur des services postaux en 2009” COM (596) final.
- COUR DES COMPTES 2003, « Les comptes et la gestion de La Poste (1991-2002) », Rapport au président de la République, octobre.
- Cremer. H 2004, “Concurrence et service public dans le secteur postal”, Toledano Ed. *Economie postale : les fondements*, Economica pp. 7-13.
- Cremer. H, de Donder. P Boldron.F, Joram. D and Roy. B 2007, “Social costs and benefits of the universal service obligation in the postal market”, May.
- Cremer. H, Grimaud. A, Marcy. S, Roy. B, Toledano. J, 2001 “Entry and Competition in the Postal Market: Foundations for the Construction of Entry Scenarios”, *Journal of Regulatory Economics*; Vol.19: N°2 107-121.
- Crew M.A.and Kleindorfer P.R. (2006a), *Progress toward Liberalization of the Postal and*
- Crew M.A.and Kleindorfer P.R. (2006b) “Liberalization Of The Postal And Delivery Sector” Edward Elgar.
- Crew, Michael A. and Paul R. Kleindorfer. 2000. “Liberalization and the Universal Service Obligation in Postal Service.” In *Current Directions in Postal Reform*, edited by M.A. Crew and P.R. Kleindorfer. Boston, MA: Kluwer Academic Publishers.
- Crew. M A. and Kleindorfer. P R 1998, “Efficient Entry, Monopoly, and the Universal Service Obligation in Postal Service,” *Journal of Regulatory Economics*, Vol. 14, N° 2 / September, pp. 103-126.
- De Bijl Paul W.J. DE, Van Damme Eric, and Larouche Pierre (2006) « Regulating Access to Stimulate Competition in Postal Markets? » in Crew M.A.and Kleindorfer P.R (2006a). eds.
- Falkenhall. B and Kolmodin A 2005, *A Broad Economic Analysis of the Effects of Liberalising the Postal Market Documentation and considerations for the Swedish Postal and Cashier Service Commission*, ITPS Swedish Institute for Growth Policies Studies.
- Florens. J-P, Roy. B, 2004, « Economie des coûts et secteur postal », in *Economie Postale : les fondements*, Toledano ed. Economica, pp. 103-115.
- Herisson. P 2007, « L’achèvement du marché intérieur des services postaux de la Communauté », *La Gazette Cahier détaché n°3*, 16/04/2007 pp.235-250.
- Hill. T.P, (1999), “Tangibles, intangibles and services: a new taxonomy for the classification of output”, *Revue Canadienne d’Economie*, avril pp.427-446.
- Kenny. C (2006) “Questioning the Monopoly-Supported Postal USO in Developing Countries” in Crew M.A.and Kleindorfer P.R. (2006a) eds.

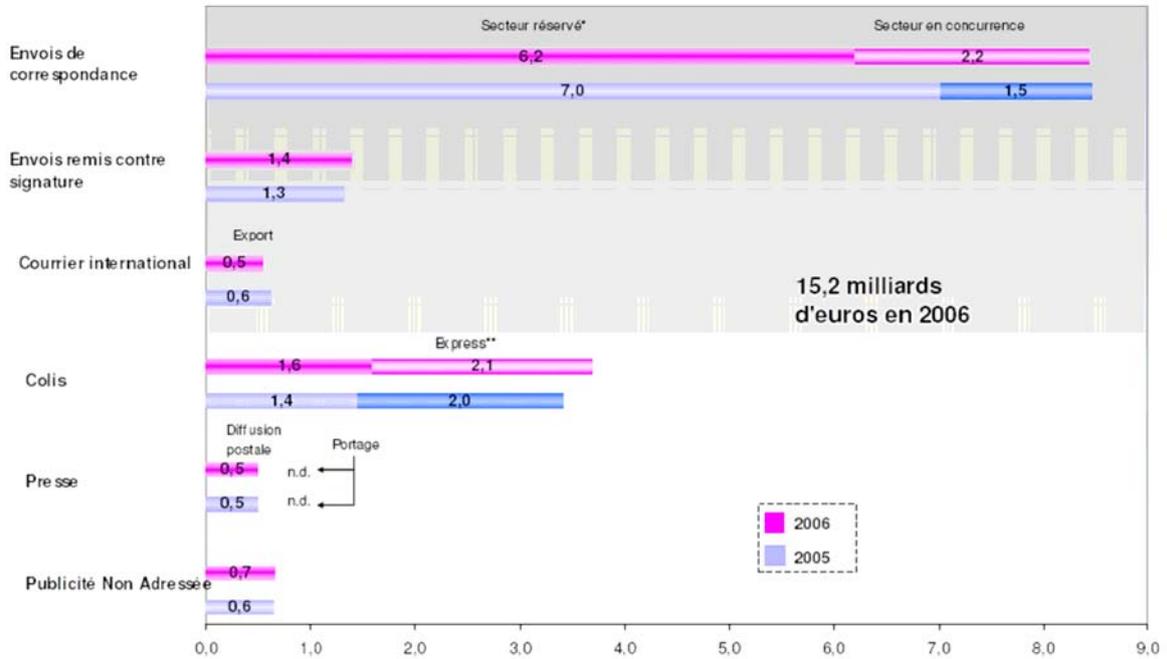
- Larcher. G 1997, *La Poste, opérateur public de service public face à l'évolution technique et à la transformation du paysage postal européen* Commission des Affaires économiques et du Plan - Rapport d'information n° 42, Sénat.
- Larcher. G 2003, *La situation de La Poste dans la perspective du contrat de plan*, Rapport d'information du Sénat 11 juin n°344.
- NERA (2004) "Economics of Postal Service, final report", a report to the European Commission DG-MARKT, july, London.
- OXERA 2007, *Funding universal service obligations in the postal sector* Report prepared for La Poste, De Post-La Poste, Hellenic Post, Poste Italiane, P&T Luxembourg, Correos, Magyar Posta, Cyprus Post, Poczta Polska January.
- Panzar, J. 1991. "Is Postal Service a Natural Monopoly?" In *Competition and Innovation in Postal Services*, edited by M.A. Crew and P.R. Kleindorfer, Boston, MA: Kluwer Academic Publishers.
- POSTCOMM 2007, "competitive market review, UK postal market", report 30/10/2007
- PTS 2000, *Uniform Tariffs and Prices Geared to Costs? - Swedish Experiences of the Incompatible Demands of the European Postal Directive*, Swedish National Post- and Telecom Agency, doc. 00-15327.
- PTS 2007, *The liberalised Swedish postal market the situation 14 years after the abolition of the monopoly*, Swedish National Post- and Telecom agency, March.
- PWC 2006, *The Impact on Universal Service of the Full market Accomplishment of the Postal Internal Market in 2009*, Final Report, Price Waterhouse Coopers, May.
- Roy. B, 2004 « Analyse technico-économique des coûts des travaux extérieurs de la distribution postale » in Toledano Ed. *Economie postale : les fondements*, Economica p. 151- 180.
- SEC 2006 *Commission staff working document accompanying the proposal of directive, impact assessment*, 18/10/2006, n°1291
- Toledano. J 2004 "Royaume Uni, Allemagne, Suède et les autres, des cheminements différents vers l'ouverture », in Toledano ed. *Economie postale : les fondements*, Economica, pp. 219-234.

APPENDIX

GRAPH N° 5A ET 5B
French postal market in volume for 2006-2005 (billions)



French postal market turnover in 2006-2005 (billions of Euros)



Source : ARCEP 2007

TABLE N°5

USO ACCESSIBILITY CRITERION FOR POSTAL SERVICES IN SELECTED EUROPEAN COUNTRIES

COUNTRIES	UNITED KINGDOM	GERMANY	NETHERLANDS	FRANCE
NATIONAL ACCESSIBILITY CRITERION	95 % of population should be less than 5 km from a postal outlet on a national level	100 % of population less than 2 km from a postal outlet in urban areas	100 % population less than 5 km from a postal outlet in residential settlement (continuous housing)	99 % of population should be less than 10 kilometres from a postal outlet.
LOCAL ACCESSIBILITY CRITERION	95 % of population less than 10 km from a postal outlet for every 120 postal code zones	At least one postal outlet for every 2.000 inhabitants zone, one office for 80 km ² in rural areas	At least a postal outlet for every 50.000 inhabitants for cities over 50.000 inhabitants	95% of the population of each district should be less than 10 kilometres from a postal outlet. Every city with more than 10 000 inhabitants deserves at least one postal contact outlet, plus one by segment of 20 000 inhabitants.
MINIMAL NUMBER OF POSTAL CONTACT OUTLET		At least 12.000 postal outlets of which 5.000 owned	2.194 offices of which 902 with full service	7500 to 9000 outlets*,
PRESENT NUMBER OF POSTAL CONTACT OUTLET	17.500 postal outlets, 97 % franchised (only 590 owned post offices)	14.000 postal outlets of which 5.800 owned	2.200 postal outlets	17 028 outlets, of which 14 000 owned

* Prorior 2006 p.15, Hérisson 2007 p. 247

Table 6: Employment at Sweden Post 1985-2005

Year	Number of Employees	Year	Number of Employees
1985	54 000	1998	42 108
1990	57 000	2001	41 669
1993	50 000	2003	37 905
1996	45 137	2005	33 520

Geoff Bickerton (2006) « Postal deregulation: Its impact on postal workers and the response of a postal union” 14th Conference on Postal and Delivery Economics, 31 May – 3 June, Bern, Switzerland

Résumé : *L'article s'intéresse aux conséquences de l'ouverture totale à la concurrence dans les services postaux. Dans un premier temps il rappelle les caractéristiques particulières du secteur ainsi que le processus de déréglementation déjà engagé. Il examine ensuite les effets sur le prix du courrier égrené ainsi que sur la capacité de résistance de l'opérateur historique de l'ouverture totale à la concurrence. Il apparaît qu'après une première période de concurrence forte et de modification de la structure de prix, le marché pourrait atteindre un équilibre durable.*

Abstract: *The paper focuses on the impact of the Full Market Opening in postal services especially on prices. The paper first summons up the specificities of the sector and the deregulation implemented so far. The paper then studies the consequences on separated prices and the survival of the historical operator of market opening. It seems that after a first period of effective competition, with a change in the price structure, the market could reach a new steady equilibrium.*