Abstract: In this paper we present an overview on the issues concerning access, pricing, structural separation in the postal sector. We propose a regulatory model with a series of characteristics: 1) where implemented, mandated access mechanisms should be based on access prices somehow linked to costs, 2) zonal pricing should be allowed both for final customers and for those companies or competitors requiring access, 3) if an efficient and transparent system of cost accounting is put in place structural separation becomes less useful, and finally 4) to have efficient cost accounting and monitoring a strong regulator, focused on the sustainability and social and economic efficiency of the whole sector, is needed.

1. Introduction: Current debate on access in European regulated industries

The regulation of access in regulated industries has been in recent years a matter of harsh debate in industrialised countries and as Armstrong wrote in 2001: “It is hard to find a more controversial issue in industrial policy than that concerning the terms on which entrants can gain access to an incumbent firm’s network” (Armstrong, 2001b, page 36). Thus it is interesting to observe how the current debate, at the European level, on two of the most important network industries, energy and telecommunication, will affect the regulatory framework of other regulated industries.

In the energy sector, the European Commission unveiled on Wednesday the 19th of September its new energy proposals, including measures for the unbundling of generation and transmission networks in the EU. The Commission document provides also a “safeguarding clause” with which it would prohibit non-bundled companies, both European ones and others, from acquiring transmissions networks of strategic importance (Castelli A., 2007). In the telecommunication sector, sharp divisions have emerged within the European Commission about a plan to intensify competition, where a telecommunications company with a dominant market position could be forced to separate its networks and services divisions to guarantee that rivals could access its infrastructure (Laitner, 2007).

Not only the European Union, but also the OECD has invested a lot of resources in analysing access to the network and structural separation. Concerning the access issue, in 2003 they published a report addressing the regulation of access services with a focus on telecommunications (OECD, 2003b). While on the issue of structural separation they published in the last decade a series of documents. In the 2001 report on structural separation in regulated industries (OECD, 2001), in the follow up on the recommendations by the Council (OECD, 2003a) and the report to the Council on the implementation of the recommendation (OECD, 2006) the OECD reiterated its position that “i) separate potentially competitive activities from regulated utility networks, and otherwise restructure as needed to reduce the market power of incumbents; ii) guarantee access to essential network facilities to all market entrants on a transparent and non-discriminatory basis”.

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1 This paper expresses personal views of the authors that do not necessarily represent the views of Poste Italiane or UWE.
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Even if there are substantial differences between regulated network industries (e.g. fixed and variable costs and the role of technology in determining what type of fixed costs are incurred by a sector - one off big fixed cost is different than small but recurrent fixed costs) the telecommunication and the energy sectors have been leading other network industries in regulatory changeovers. The research on regulated industries has influenced the debate on the Third European postal directive, which has *de facto* been approved on October 1st 2007, and even though no clear direction at the community level has been taken on structural separation and on access we can expect further developments in this domain mostly driven by national initiatives. Postal services in three European countries, Sweden (along with telecom *(Hulkrantz, 2005)*), UK and Finland, have experienced the liberalisation process at a faster pace. The experience on mandated access with uniform pricing (UK), zonal pricing with commercial access and no mandated access (Sweden) and a compensation fund to finance the Universal Service Obligation *(here after USO)* (Finland) provide valuable information to other EU members on how the market forces have reacted to a more liberalised regulatory framework.

In the UK, due to the presence of a strong postal regulator *(The Postal Service Commission-Postcomm)*, the postal regulatory framework is a continuous work in progress. In the past year a fierce debate has taken place between the postal regulator, the national postal incumbent *(Royal Mail)* and its competitors (especially TNT UK) on how to implement zonal pricing in the British market. It is interesting how this “Battle of Britain” will influence the debate in other countries.

This paper builds upon the experience of other regulated industries and it draws on the literature on these topics and on the experience in the Swedish market and the ongoing debate in the UK. It focuses on the never experienced scenario of a postal market where Zonal Pricing is implemented alongside Mandated Access (the expected outcome in the UK in the near future). We discuss also the potential pros and cons of such outcome, taking into account the issue of structural separation that we perceive as being one way access can take place. The strong assumption of our paper is that the regulatory framework’s priority is to stimulate fair competition without financially curtailing the universal service, thus avoiding the so called “cherry picking” ^1 where entrants take large market shares of the most profitable business away from the incumbent with the risk of a “Graveyard Spiral” *(Kleindorfer, 2004)* since the incumbent is stuck with providing universal service.

### 2. USO, Cream skimming, competition in the postal sector

In his 1837 seminal paper Sir Rowland Hill *(Hill, 1837)* introduced two basic financial innovations in postal services: a) a system of uniform pricing and b) the principle of the “sender-pays-all”, justifying both with lower transaction costs. Since then the two pillars of the USO have been uniform price and ubiquity of service and quality *(Crew and Kleindorfer, 1998)*.
All of the postal markets in Europe, both those fully liberalised and those with a reserved area, tend to have uniform prices and some of them a price cap. In a liberalised environment with uniform prices and a price cap, the incumbent needs to find ways to differentiate its offering and develop value added services to retain its most vulnerable customer base (urban large mailers) (Deduytsche et al., 2007). The competitors try to gain market share in urban areas where its costs are below the retail prices, thus leading to “cherry picking” endangering a high quality Universal Service (for example 5 or 6 days per week home delivery and more than 80% of deliveries in J+1) provided by the postal incumbent facing rapidly decreasing market shares in the most profitable market segments. To avoid a financially distressed postal operator while expanding competition especially in the segment of large mailers (bulk mailers in the UK), academics and regulators have applied to the postal sector the experience on zonal pricing, access and structural separation from other sectors.

The origin of Zonal pricing can be traced back to the 1939 seminal paper from Coase (1939) where he criticized the Rowland Hill’s (1837) uniform pricing for postal services. Zonal Pricing is a pricing mechanism whereby customers are charged varying rates according to a matrix that takes into account the location of the consumer, and in case of the postal sector the distance and the flow of volumes between the location of the sender (the one that pays) and the one of the receiver. The experience of the deregulated Norwegian electricity market, where a zonal transmission pricing system is used to cope with network capacity problems (Bjornudal et al., 2001), has turned up as being useful in the postal sector for different purposes. To avoid cream skimming the incumbent charges senders based on the structure of their volumes (total volumes, volumes for type of destination: for the same region vs other regions, toward towns vs. those that need to be delivered in rural areas). The shift from uniform pricing to Zonal Pricing leads to an increase in prices for retail customers and big decreases in prices for large mailers (high volume mailers that tend to handle standardised “business mail”) with volumes from and to major urban agglomerates (Deduytsche et al., 2007). This in fact the experienced of the Swedish postal market in the past few decades, where in the post liberalization period 1990-2004 postal prices adjusted to inflation in Sweden increased 34% for single piece and decreased 8% for bulk mail (Andersson, 2006). The critique to this system is that it tends not to modify dramatically the competitive landscape and the fact that all competitors to Sweden Post together control less than 10% of the market after two decades and that the biggest competitor, City Mail, has incurred losses and has changed owners several times (now with Norway Post’s control the financially sustainability has been reached). Thus, many regulators that would like more vibrant markets have studied two potential instruments to increase competition: access and structural separation (as we mentioned above de facto the latter one can be considered a special case of access).
3. Access and Structural separation

3.1 Framework

One of the most difficult competition policy questions in network industries undergoing “de or reregulation” is that a vertically integrated dominant incumbent firm controls the supply of a key input to its competitors. In utility industries if the network operator is also a supplier of final services normally it grants access to other suppliers. But there is the danger that the integrated incumbent will operate to exclude competing suppliers by setting high access prices (Armstrong, Doyle and Vickers, 1996). The literature has identified two ways out from this problem: mandated access (where the regulating authority controls access conditions and prices) and structural separation. Cave, from Warwick Business School, in a conference organized by the OECD in Amsterdam in 2003 (Cave, 2003) addressed the issue of regulatory end games in network industries by concentrating on end-to-end competition, access and structural separation. He developed a decision tree (see below, n.b. the shadowed areas are not in the paper and they are an elaboration of Deduytsche et al. (2007) for simplification purposes) where he addresses the issue of replicable assets and what type of competition is expected by stakeholders. He ends up in depicting four possible scenarios. In our paper we will focus on scenario II and III. Scenario I and IV are often based on the approach/school of thought that believes that in the postal sector there is no need to mandate access because commercial deals are sufficient to guarantee a correct functioning of the market.

Is competition sought/expected from end-to-end entrants alone, rather than from a combination of end-to-end and access-based operators?

YES

No access regulation. No argument for separation based on discrimination. Access arrangements by negotiations only

NO

Are there key non replicable assets held by the historic operator, to which access should be mandated?

YES

Should these assets be separated? If so how?

YES

Decide form of separation and access pricing regime

NO

Decide access pricing regime for vertically integrated company

I. End to end competition + Commercial Access

II. Structural separation + Mandated Access

III. Mandated Access

IV. End to end competition + Commercial Access
3.2 Strong assumption

Apart from the assumption presented in the introduction (that the regulatory framework’s priority is to stimulate fair competition without financially curtailing the universal service) the key assumption of the two scenarios we are interested in (Scenario II, Scenario III) is that we believe that the postal sector, or that at least the last mile (home delivery), has some characteristics of a natural monopoly. The theory says that where there are very large fixed costs and very small marginal costs then you might end up having a natural monopoly (Varian, 1990). A natural monopoly "exists in an industry where a single firm can produce at a lower unit-cost than can two or more firms (subadditivity of the cost functions).

Competition in these industries is deemed socially undesirable because the existence of a large number of firms would result in needless duplication of capital equipment (Depoorter, 1999). In their 1995 seminal paper “Unnatural Monopoly”, De Meza and Estrin (1995) investigate the merits of statutory monopoly as a means of preventing wasteful market fragmentation. Their key result is that a public firm committed to price at cost may be unable to repel entry even when it is socially desirable that it should do so. Limited entry may be worse than either statutory monopoly or free entry.

Concerning the variability of the cost structure of postal operators there are two studies in recent years which have tackled the issue: the NERA study (2004) and a series of papers from Cohen (summarised in Cohen et. all, 2004) and a group of American and European economists. The NERA study on postal services for the European Commission, based on the information available for a number of European postal operators, estimated that delivery costs account for 50% of total costs. Cohen presented a paper at the WIK conference in 2004 based mainly on United States Postal Service’s (USPS) data on the variability of costs (more specifically the cost elasticity) as a function of traffic volumes.

They show also that reducing delivery days per week that cost curves tends to be smoother and that E2E competition is feasible except for very low volumes per capita. From their analysis, it is clear that if there is a postal activity that has some characteristics of a strong natural monopoly that is the activity of delivering mail (6 days per week) in low or median volumes of mail per capita (check below Figure 1). While in other activities like Mail processing and Transportation after 200 items per capita, costs tend to be mainly variable.

Thus, we are conscious that the natural monopoly of delivery is a very strong assumption because it applies fully to some postal markets and by doing so it limits the scope of the analysis to a contexts where at least in the last mile it is economically inefficient to duplicate a network. Hence, the focus shifts from end to end (E2E) competition to providing fair access conditions while enhancing operational efficiency or at least not worsening the efficiency of the system. Before presenting our
proposal we briefly describe the different type of access (commercial, mandated and structural separation which is the extreme version of mandated access).

![Figure 1: Cost Elasticity or Variability Curves by Activity](image)

Source: Cohen et al. 2004

3.3 Mandated Access vs Commercial Access

Access in the postal sector can be subdivided in two broad categories, mandated access and commercial access. In case of mandated access the conditions and the pricing are set by the regulator, while in commercial access the conditions are set up by the incumbent postal operator (while being compliant to antitrust laws that sanction abusive behaviour).

Commercial Access concerns predominantly the long-existing presort, automation and volume discounts granted to bulk mailers and consolidators who enter mail at post office or outward sorting centers level, access in any of the first seven phases of Figure 2. Mandated Access is seen as the opening up of third party access at the level of inward sorting center or closer to recipient, in phase 8 of Figure 2 below. There are cases where upstream access prices or conditions are mandated; reciprocally, it can be argued that in the US downstream access (in the shape of destination entry discounts for direct mail) is not as such mandated by the postal law.

Mandated Access pricing mechanisms can be subdivided in many different ways we have decided to use four simplified categories (Deduytsche et al., 2007): I) Access Price = costs incurred by incumbent, II) cost incurred + profit margin, III) Retail price-avoided costs (by the incumbent)\(^{vii}\), IV) Value based pricing (price for any individual customer can be customized to reflect the specific value delivered the return the mailer gets on its investment in the mail channel)\(^{viii}\).
The type of pricing mechanism used deeply impact the market outcome – type of competitors (consolidators, printers), relationship between competitors and incumbent (Incumbent Postal operator as a “Unifying Force” or as an “Integrator”, (Wegener, date n.a.), number of competitors and their market share (for example a “retail minus” pricing mechanism is expected to curtail the use of access).

We will leave for further research the issue of the optimal access pricing regime, never the less for the purpose of this paper it is important that the access price is somehow linked to costs.

3.4 Structural separation

When regulators and competition authorities of network regulated industries want to prevent or correct abuse of dominant position by an incumbent they tend to consider structural separation. All this to allow third-parties and new entrants to inter-connect with the incumbent's network and technologies and it is achieved by breaking down the value chain and making all system functions “separable but interoperable” and offered by multiple vendors. The postal sector is no different, in the UK the postal regulator, Postcomm, first studied this option back in 2004. There is a on-going debate on the impact of unbundling of network industries. The OECD recently analysed how it had been applied across countries and sectors While recognizing that separation may have stimulated innovation and efficiency, OECD concluded that the calculus of costs and benefits related to structural separation differed significantly from one sector to another (OECD, 2006).

As it happened in the telecoms industry in the US in the wake of the “Carterfone ruling” of 1968 (the FCC ruling that allowed competition in the equipment market, resulting in a large drop of the AT&T market share for equipment manufacturing), the non-dominant carrier order of the FCC from 1980 (that gave competitive long distance companies ‘equal access’ to local networks) and the AT&T...
breakup in 1982/1984 (Woroch, 2002 and Grote, 2006). The breaking down of the value chain paved the way for innovation and interoperability for the benefit of all users. Changing industry and country, the full unbundling of the whole energy supply chain is a top priority on the European Union energy agenda. The same logic may not be applied to the mailing industry, which needs mass volumes to generate economies of scale, absorb high fixed costs and keep delivery costs low. Unbundling the mail value chain may lead to inefficiencies, quality problems and operational bottlenecks. Thus, the vertical integration of the Post’s activities can be more effective than an unbundled value chain in terms of “transaction costs”, operational efficiencies and economies of scale. In their seminal paper, Haldi and Olson (2006) pointed out that the postal literature was devoid of discussion about unbundling the USPS or any other post. They put it down to the fact that posts have been for so long vertically integrated networks that it is difficult to imagine them organized any other way.

The breaking-up of a network incumbent can be of different degrees. It can range from accounting separation (e.g., separate accounts from upstream and downstream activities of the Post), to operational separation of upstream vs downstream units reporting to a same holding company (separating activities into independent entities within one common holding structure), to club ownership (joint ownership of the downstream firm by all upstream operators) to a complete ownership (or structural) separation. The higher the degree of separation, the greater the need to have mail commoditisation so that the economies of scale are not wasted, and the higher the innovation upstream. The higher the level of cooperation between upstream and downstream players the lower the resulting loss of economies of scale (Deduytsche et al., 2007).

<table>
<thead>
<tr>
<th>Policy</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
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<tbody>
<tr>
<td>Ownership separation</td>
<td>Eliminates incentives for discrimination; allows for lighter handed regulation of downstream entities</td>
<td>Potential loss of economies of scope; may require costly and arbitrary separation</td>
</tr>
<tr>
<td>Club ownership</td>
<td>Eliminates incentives for discrimination within club</td>
<td>Club may seek to exclude outsiders; may facilitate collusion; only effective in certain circumstances</td>
</tr>
<tr>
<td>Operational separation</td>
<td>May facilitate control of discrimination and anti-competitive behaviour</td>
<td>Possible lack of profit motive reduce incentive to provide innovative and dynamic services</td>
</tr>
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One of the case study outside the postal industry under scrutiny analysed by postal operators across Europe is the well known case in the UK telecoms industry, where there is a legal (and
operational) separation but reporting to a holding company has recently been implemented (separating activities into independent entities within one common holding structure, thus not a real ownership separation). Openreach, a separate division of the United Kingdom telecommunications operator BT was created to 'ensure that all rival operators have equality of access to BT’s own local network', and sell a range of products to communal areas. Part of this regulatory package was the creation of an Equality of Access Board. The Board is supported by an Equality of Access Office, which monitors the performance by Openreach of its obligations in the Undertakings. The Equality of Access Board monitors compliance with the legally-binding Undertakings given to Ofcom (Telecommunication regulator) by the BT Group, assesses the delivery of equivalence by Openreach and reports regularly on this to the BT Group Board. It consists of five members – three independents, one BT Group non-executive board director and one senior BT manager (Openreach, 2005).

As we have mentioned above several times, we can consider structural separation an extreme case of mandated access, the lower the degree of separation the closer to mandated access with a vertically integrated postal operator.

4. Our proposal: Mandated Access with Zonal pricing

The debate which is taking place in the UK on “if and how to apply Zonal Pricing in the postal sector” can only partially refer to the Swedish experience of Zonal Pricing. In the latter case the type of access to the postal network is closer to Commercial Access and not to Mandated Access like in the UK. Thus the “Pros and Cons” of applying this innovation in the UK are at this stage inferred. The pros of Mandated Access with Zonal Pricing can be summarised in six potential gains: a) it could be another step towards cost reflectivity (Postcomm, 2007) after the introduction of Mandated Access, b) it could remove completely the issue of cross subsidy between the different geographical areas, c) it could protect financially the USO services by giving the incumbent more pricing flexibility, d) it could ensure greater transparency in the market, e) it could send the right pricing signals, f) it would align Royal Mail’s offering to competitor and downstream access offering if it retains the same structure as downstream access to ensure consistent definitions in the market place (Clarkson, 2006).

The potential “Cons” can be summarized in three points: a) it could be unpopular with its customers – both senders of mail and recipients in rural areas (Postcomm, 2007) since there is a risk of abusively high pricing in rural zones, b) it could curtail end to end competition/delivery competition (here after E2E), c) it could stop smaller customers benefiting from downstream access (Russell, 2006). Thus the main criticism is that it could restrain competition both in the E2E segment (in Sweden competitors after nearly twenty years have less than 10 per cent market share) and in the downstream access segment. The key for a successful introduction of Zonal Pricing hence it needs to address the risks while keeping in mind the financial sustainability of the USO.
On this issue it is important the 2001 seminal paper by Armstrong (2001a) where he discusses the interaction between competition and price regulation in telecommunications markets, but that we feel it can be extended to the postal sector. Concerning the network access charges he says that, when network bypass is a possibility, they should be equal to the incumbent’s cost of access (excluding “opportunity costs”) in order to achieve productive efficiency because it gives the entrant the correct “make-or buy” incentives for its network provision. The entrant will enter when it is optimal to do so (“make”), and will choose to use the incumbent’s network (“buy”) when it is efficient for it to do so. Even if one uses the Baumol-Willing Rule (Efficient Component Pricing Rule (Ergas, Ralph, 1996)), that states that it is efficient to set the price of access to an essential facility equal to the direct cost of access plus the opportunity cost to the integrated access provider, the principle of cost reflectivity stands and market decisions (“buy” or “make” the network) are not distorted.

Thus, after having analysed the literature and the experience of other regulated industries and if we had the authority to start a debate on these issues we would propose a framework for the postal sector: a) where implemented, mandated access mechanisms should be based on access prices somehow linked to costs (to avoid market distortions), b) if mandated access is allowed then a zonal pricing scheme should be put in place (to avoid “cherry picking” and endangering a high quality Universal Service and to keep the financial sustainability of the incumbent) , c) zonal pricing should be allowed both for final customers and for those companies or competitors requiring access (zonal access pricing - to avoid market distortions at the regional level), d) a decision on structural separation should be taken only after an assessment country by country, analysing the issue of the degree of interoperability and especially by evaluating the role played by the size of the market and more specifically on volumes per capita (in countries with low and medium volumes per capita the duplication of the network seems useless), e) if an efficient and transparent system of cost accounting is put in place structural separation becomes less useful, and finally f) to have efficient cost accounting and monitoring a strong regulator is needed. Such a regulator would need to have as a mission the social and economic efficiency and financial sustainability of the whole sector and not only focus on the degree of competition or the mere number of competitors.

5. Conclusion

On July 24, 2007 the UK Postal Regulator (Postcomm, 2007) announced that it was rejecting Royal Mail’s application on Zonal Pricing because it had put forward a pricing structure that appeared to have a number of discriminatory features and it would have been introduced in a way that would lead to unreasonable changes for customers. Furthermore, it proved highly unpopular with its customers in rural areas – both senders of mail and recipients. Thus, it seems the outcome on this issue difficult to predict also because the large customers in urban areas have not asked for Zonal Pricing.
and are not “lobbying” the postal regulator to implement it while the rural mailers are very vocal.

In this paper we attempted to go beyond the issues involving a single country and try to put in place a sort of Regulatory engineering exercise. We tried to start designing a regulatory model that encompasses the opportunities arising from Zonal Pricing in a context with Mandated Access while addressing the issue of the sustainability of USO. One strong assumption is the reduction of the risk of the “Graveyard Spiral” by increasing the pricing flexibility for the incumbent (Kleindorfer, 2004). The second one is that somehow we believe that especially the delivery activity of the postal supply chain has the characteristics of being a natural monopoly (in high volume countries this argument is weaker), thus we assumed that the duplication of the whole delivery network would be socially undesirable (but in some regions of a country the duplication might take place). In our model we go a step further than most papers addressing the issue of Access and Zonal pricing by taking the position that also access prices should be zonal because it would help not distort the decision of competitors to make or buy both at the national and at the local level. We have left for future research the issue of how zonal access pricing is linked to costs and to what type of costs (e.g. to include or not to include opportunity cost).

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End notes

1 Cherry Pickers (Cream skimmers) take advantage of an incumbent’s price when it is based on an average of heterogeneous costs. They serve the low cost portion of the market and price below the incumbent. Conceptually cream skimming has two basic dimensions -- product and geography.

Product cream skimming is where a competitor tries to capture the most profitable portion of the market for a product with heterogeneous costs. Geographic cream skimming is where a competitor tries to provide a service only to selected, low cost areas.” (Cohen et al., 1999).
For a discussion on the use of scenario planning applied to regulatory issues in the postal sector check Crews et al (2006) and Deduytsche et.al. (2007).

The modern approach to defining natural monopoly was initiated by a seminal paper from William J. Baumol in the American Economic Review in 1977 (Baumol, 1977). Furthermore, there are two versions of natural monopoly: strong and weak natural monopoly. In the first one average costs decrease while in the latter one average costs increase even if they are subadditive (Gegax and Nowotny, 1993). While there is an extensive literature on natural monopoly in capital intensive sectors, in case of labour intensive sectors, such as the postal sector, the literature is scarce and very seldom there is an analysis on recurring fixed costs.

The concept of subadditivity is a precise mathematical representation of the natural monopoly concept (Baumol, 1977). There is a close relation between economies of scale are a sufficient but not necessary condition for a natural monopoly (Depoorter, 1999).

The study is based in the first part on detailed set data from USPS, that it shares with the US postal regulator (PRC) and focuses on the cost elasticity and how it is affected by volumes and institutional (fixed) costs in the US. In the second part of their study they extend their analysis to France, UK, Germany and Italy where the dataset is not as detailed as the USPS's one.

Only the US and the Vatican have more than 600 items per person, most of industrialized countries range from 130 to 450 items per person.

The linking of prices to costs is more complicated and there is an extensive literature on this topic. Such literature addresses the various ways to account for Direct Costs and Common costs ranging from "Long Run Marginal Cost", "Embedded Direct Cost", "Fully attributed (Distributed) Cost", "Stand alone Cost". For simplification purposes we avoided to address these issues in this paper. To have an overview of the literature in this domain check Jamison (2006). For Efficient Component Pricing ((Economides N., White L. J., 1995)

This involves making value judgments regarding the value of a particular product for some categories of mailers.