The Challenge of Designing Access to the Postal Network: An Economics Perspective

Henrik Ballebye Okholm, Bruno Basalisco, Julia Wahl and Mindaugas Cerpickis

Access to the postal network has figured prominently in the regulatory debate as more and more operators are required to provide access to their postal network. Yet, guidance for operators and regulators on how to design access regimes that withstand a regulatory and competition review has to date been surprisingly limited. A faulty design of the pricing and non-pricing part of access can have negative implications for the postal operator's (PO's) profitability, for competition, for economic efficiency and ultimately the social welfare resulting from market outcomes.

This paper does not attempt to resolve the question of whether access regulation is appropriate for postal markets but instead, it aims at providing recommendations for elements of access design. This should be consistent with a regulated operator's commercial reality and compliant with principles of regulatory and competition economics. Moreover, it outlines a number of tests that a 'compliant' access regime should be able to fulfil.

The first part of this paper introduces the topic of access to the postal network by discussing the regulatory goals and main challenges underlying access. The second section discusses elements of access design from an operator, regulator and competition authority viewpoint. The third section concludes.

1 Regulatory Goals of Access

Network access is one of the key tools used by regulators to stimulate competition in network industries. Access to the postal network (hereafter referred to simply as access) describes a service whereby the incumbent PO gives access to other postal service providers and postal users to its network at selected points of the postal

H.B. Okholm (✉) · B. Basalisco · J. Wahl · M. Cerpickis
Copenhagen Economics, Copenhagen, Denmark

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supply chain and then the PO delivers the access mail fed into its network (see also ERGP 2012). From a postal regulatory point of view, access regulation aims at promoting efficiency and effective competition and, thereby, conferring benefits on the users of postal services (Ofcom 2012, p. 142).

In relation to promoting efficiency, according to the OECD (2010, p. 12), three types of efficiency should be taken into account: *allocative, productive, and dynamic efficiency* (see also Cabral 2000, p. 26):

> Allocative efficiency requires that output be at the appropriate level. Productive efficiency requires that such output be produced in the least expensive way given the available set of technologies. Dynamic efficiency refers to the improvement over time of products and production techniques (Cabral 2000, p. 28).

In relation to promoting effective competition, access regulation aims at enhancing competition in two ways. Firstly, access obligations should directly improve competition—where a postal company[1] receives mail from customers, and then accesses the NPO's network for the letter to be delivered to the final recipient.[2] Secondly, it can also enhance end-to-end competition where a postal company not only receives the letter from the customer but also then delivers it to the recipient, bypassing the NPO's network entirely.[3] Access can be a platform for end-to-end competition, if it is (a) allowing a rival operator to establish a customer base from which to begin to offer an end-to-end service and (b) allows a rival operator maintain a national service to customers with a limited delivery network (Ofcom 2012, p. 237).

Ultimately, the goal of any regulatory intervention is focused on benefits to end users, in the form of price savings, improved accessibility and/or quality of services.

From a postal regulatory or a competition policy point of view, the single most important question relating to any aspect of access design is whether an as-efficient competitor can compete. If an as-efficient competitor cannot compete given the choice of access prices and conditions, this qualifies as price-based or non-price exclusionary conduct by the dominant USP or, expressed differently, an abuse of dominant position in the meaning of article 102 of the Treaty on the Functioning of the European Union.[4]

There is much controversy about using access regulation to enhance competition. In particular, there is a risk of promoting less efficient market structures. One possible outcome is to shift senders' not just indirect but also direct demand from bulk mail to access services and vice versa. Depending on the scope of upstream

[1]Postal company represents any firm operating in the postal industry, without any regards on where it operates in the value chain.

[2]In this case, the postal company is considered in the value chain as an intermediary.

[3]In this case, the postal company also and/or only operates a postal network.

[4]The recent Post Danmark II judgement has raised the bar for an assessment of exclusionary abuse. According to the European Court of Justice (ECJ), depending on the characteristics of the market, even a less efficient competitor must be able to compete (Recitals 55–62).

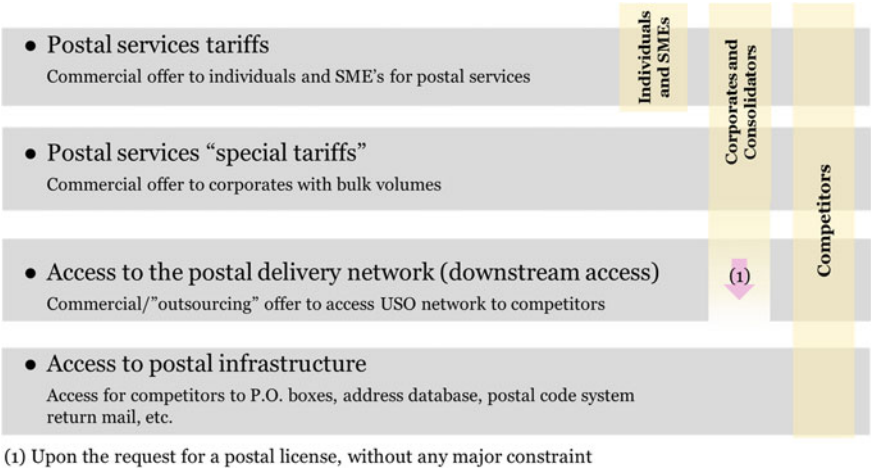

Fig. 1 Availability of postal services to different customers?

activities provided by the bulk mailer (sender) and/or access seeker, the sender may be able to procure directly both alternatives.

In fact, upon the request for a postal license, end users themselves can gain access to the postal delivery network without any major constraint; see Fig. 1.

For instance, if the access price is set below the bulk mail price, then bulk mailers (e.g. business mail senders) find it less expensive to become access seekers or send mail via intermediaries that use access product, compared to buying the PO's bulk mail products. Thus, the PO will be limited in its ability to price its bulk mail product. On the other hand, setting the access price higher than the bulk mail price can amount to a margin squeeze, forcing access seekers or intermediaries to limit what they can charge, Either way, access price regulation affects prices bulk mailers pay for delivery; see Fig. 2.

In addition, notwithstanding the best regulatory intentions and technical expertise, market dynamics decrease the level of predictability. Geradin (2015) argues that the predictability of market outcomes is much lower in mail markets than in many telecommunications markets (see also Panzar 2002). As acknowledged by the OFT (2009, p. 1), this uncertainty exacerbates the effect of regulatory risk in an already risky marketplace.

There are three reasons why regulatory intervention in highly dynamic mail markets with falling volumes may cause regulatory failure and in the end reduce consumer welfare. Firstly, regulatory intervention can add to the uncertainty in the market and reduce incentives to invest leading to a 'ladder of divestment'.[5] Secondly, fast adaptation is needed, yet regulatory intervention delays changes.

[5]The 'ladder of divestment' refers to a situation where favorable access conditions incentivize network operators to compete based on access instead of investing in their own delivery capacity.

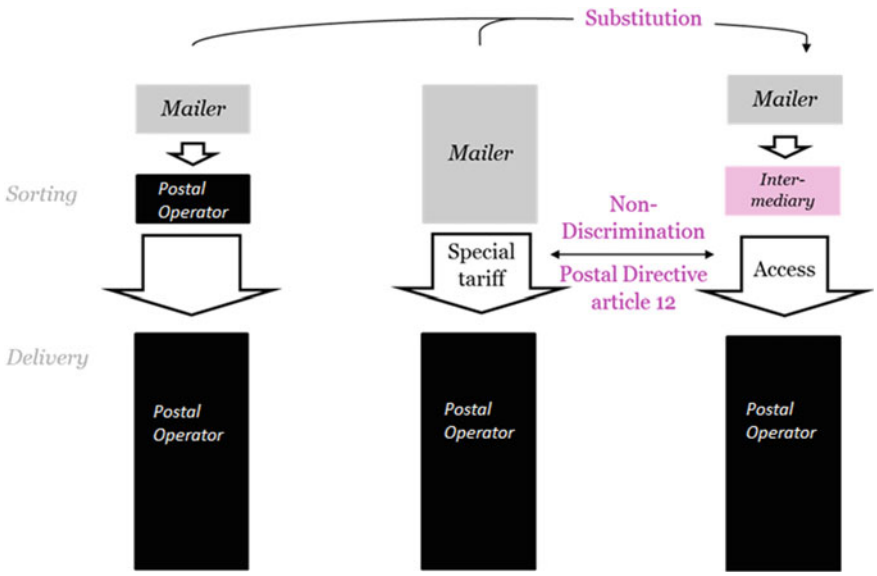

Fig. 2 Different users of access will receive same conditions

Last, but not least, balancing multiple goals is challenging. As a result, regulatory intervention comes at a cost, which puts use of access regulation for increasing end-to-end competition into question.

1.1 Economic Aspects of Access Design

Once access has been mandated by the NRA or requested by a competitor, both the USP and the NRA face a host of challenges concerning the design of the access regime. This can be grouped into three types of questions:

1. **Scope of Access:** Should access be mandated to USO products only or also to non-USO products?
2. **Access prices:** How should access charges be set to allow for efficient pricing and avoid exclusionary pricing?
3. **Access points:** At which point in the delivery chain should access take place?

The solution to each of these questions might thereby crucially depend on the viewpoint of one of the three main 'stakeholders' in the debate around access regimes:

First, the USP, which has to give access to its network, has an overall goal of maintaining its mail business profitable and ensuring the sustainability of the USO.

Second, the national regulatory authority (NRA) who has mandated access pursues the objective of introducing competition to the market by means of access regulation. According to the Third Postal Directive, the NRA should also aim at non-discriminatory and transparent access conditions and prices as well as the cost-orientation of access prices (European Parliament 2008).

Third, once access has been introduced, the national competition authority (NCA) scrutinizes the access conditions and prices to avoid three types of practices that can amount to exclusionary conduct: margin squeeze, predatory pricing or non-price forms of discrimination. We note that the NCA has no *prima facie* stakes in the introduction of access, but any access regime introduced by the USP or NRA should withstand a competition law review.

In this paper, access seekers, i.e. the competitors, are not included as an explicit stakeholder, but it is assumed that their viewpoint will be covered by both the NRA and NCA to the extent that these authorities want to ensure that as-efficient competitors are able to compete with the USP.[6] That notwithstanding, the statutory remit of these agencies is such that the focus is on pursuing what is best for competition, which is not necessarily the same as what the incumbent's competitors want. Moreover, different competitors may be affected in different ways by regulatory or competition enforcement. So it is unavoidably challenging for NRA/NCA to factor in and balance competitors' interests.

The multiplicity of (possibly conflicting) goals that an access regime has to fulfil raises the question of ideal access design. In the following three sections, we discuss each of the five elements of access design from the viewpoint of the USP, NRA and NCA. We thereby attempt to give an insight into the economic aspects of access design to be considered as well as to give guidance on features of access design.

2 Scope of Access

If a decision has been taken to mandate access, the first decision in relation to the design of an access regime is the determination of the scope of products to which access applies. While, in some cases, national postal laws limit access to USO products, the question of whether to include only a subset of these products (or other products) still arises. In other cases, the postal law does not determine a clear product scope of access. This raises questions, such as: should access apply to a sub-set or all USO products? Should access apply to USO products as well as non-USO products?

[6]One might theoretically consider that an access regime may be designed so that also less-efficient competitors can compete (cf. Post Danmark I). In practice, it is unclear under which market structures this would be a justifiable approach for postal markets, in terms of improvements to social welfare.

Table 1 Goals for the scope of access

Stakeholder	Goals
USP	Maintain profitability, USO sustainability
NRA	Efficient access
NCA	None

From the NRA's point of view, the product scope of access should be defined such that it allows for efficient access and a competitive postal market. In other words, access should be extended (or limited) to those postal services for which end-to-end competition cannot profitably arise. In turn, the USP aims to maintain a profitable business and to ensure a sustainable USO. See Table 1 above for a summary of stakeholders' goals for the scope of access.

Notwithstanding the goals of the USP, the question of a minimum product scope for access arises, if sector-regulation does not define it. ERGP (2012, p. 5) states that the essential facilities doctrine may be a useful concept to test and determine the economic fundamentals in this question, even if the legal application of essential facility arguments depends on case law and diverges globally across jurisdictions.

A general definition of essential facilities is "facilities the access to which is essential (and not just cheaper than the alternative) in order to compete on the downstream market, and whose owner is dominant and has no valid reason (lack of capacity, cost of achieving interoperability, protection of IP rights, …) to deny access." (Caillaud and Tirole 2004, p. 3).

Moreover, in the definition of access scope NCA enforcement may not be as valuable as regulatory constraints. As set out by the US Supreme Court (2014) under the late Justice Scalia in Verizon v. Trinko,[7]

> One factor of particular importance is the existence of a regulatory structure designed to deter and remedy anticompetitive harm. Where such a structure exists, the additional benefit to competition provided by antitrust enforcement will tend to be small". In other words, in these circumstances, antitrust enforcement yields "slight benefits", likely outweighed by the costs and risks of antitrust enforcement of "detailed [access] sharing obligations.[8]

In the postal context, an essential facility describes a network or infrastructure, controlled by the incumbent operator, without access to which competitors are unable to provide services to end-customers. A network is 'essential' when replicating the services provided over that network is not feasible or economically not reasonable. The extent to which a postal network can be regarded as an essential facility will be subject to a case-by-case assessment of whether it is indispensable for competitors to rely on the incumbent's postal network in order to build a viable letter business for a certain letter product. The relevant question to ask is, whether competitors need to make prohibitively high investments in order to put competing postal networks into place.[9]

[7]Verizon Communications v. Law Offices of Curtis V. Trinko, LLP, 540 U.S. 398 (2004).

[8]*Id.* at 412.

[9]This debate relates back to the ladder of divestment, see Sect. 1.

While this question has to be answered case-by-case, we observe a number of general features of the postal sector. On the one hand, building a nationwide network requires an extensive postal network with large amounts of capital. On the other hand, the low degree of sunk costs and large share of labor cost in mail delivery provide for relatively low entry barriers. Moreover, evidence from various EU countries shows that entrants do not have to copy the incumbent's business model. Instead they can sustain viable business models without relying on access, either by limiting the geographical coverage to urban areas with high population density or the product scope of their business while operating all along the postal value chain (WIK 2010).[10] At the same time, business models with practically full geographical coverage also exist in Europe.[11] Hence, an end-to-end competitive market situation can arise without access to the incumbent's infrastructure (see Fratini et al. 2009; Copenhagen Economics 2014).

Thus, from the outset, the 'essential facility' argument for granting access beyond the product scope determined in the respective postal law is a weak one. Furthermore, the design and implementation of the scope of access requires detailed supervisory requirements, which antitrust enforcement is unlikely to meet. According to Areeda (1989), "The problem should be deemed irremedia[ble] by antitrust law when compulsory access [involves the antitrust enforcement body] to assume the day-to-day controls characteristic of a regulatory agency" (Areeda 1989 at 853).

3 Access Prices

The effective price charged for access by the USP to a user of access can be lower than the price the USP charges for a standard end-to-end service due to operational or volume-stimulation considerations.

First, from a cost and operational perspective, access to the postal network usually involves a number of preparatory and pre-sorting activities that the access user completes before injecting the mail into the postal network. The fact that the USP avoids these activities and therefore has lower cost is reflected in the access price (typically via a so-called operational discount applied to the price of a standard end-to-end service).

Second, from a demand-stimulation perspective, since access buyers typically deal with large quantities of mail, the question arises as to the most economically efficient way to provide quantity discounts to intermediaries (such as access buyers) that is consistent with the purpose of quantity discounts, that is to foster scale economies within the PO (within the bounds of competition law). The setting of prices for access has been the most contentious question for operators, regulators

[10]See Bring Citymail in Sweden as an example.

[11]For instance, Sandd in the Netherlands.

and competition authorities alike, since they have to strike a fine balance between numbers of potentially conflicting goals, which we discuss in turn.

For the USP, it is most important to maintain a high degree of pricing flexibility under an access regime. When setting prices, POs aim at recovering the costs pertaining to an efficient postal network. For national POs, where a large share of a firm's total costs consists of fixed and common costs, efficient pricing implies market-based pricing and, therefore, price differentiation. This means that POs cannot recover their cost by pricing at marginal cost, as might a firm that faces no fixed or common costs in the production of its products and has non-increasing marginal costs. Allocatively efficient prices with markups above marginal costs to recover fixed and common costs will reflect their customers' price sensitivities for the product or service in question. This so-called market-based pricing (related to yet distinct from Ramsey pricing since the latter concept is associated with monopoly) is necessary for the efficient recovery of fixed costs (Tirole 1988, p. 70).

POs apply various forms of second and third degree price differentiation to stimulate senders' volumes, fostering allocative efficiency. Absent price differentiation, senders (which have much differing preferences) would face all the same price per same type of letter. If the PO had to offer only a single price, then to recover its high fixed and common costs, that price would be much above marginal cost. This would leave out of the market many potential senders (those valuing the service above marginal cost but below the single-price of sale): a loss of allocative efficiency. Price differentiation allows the PO to provide simultaneously multiple price points, to match the different preferences of different senders. The additional transactions made possible by the presence of multiple offers increase allocative efficiency on the market. Thus, the POs' price differentiation increases economic efficiency and social welfare.

Market-based pricing becomes even more crucial in postal markets where volumes are declining and in which customer preferences are changing. In such a context, it is important for POs to have the pricing flexibility that enables them to respond to changes in demand as well as competition and adjust their services and prices in a timely manner.

From the NRA's perspective, access prices must abide by a number of criteria to be in line with the goals of efficient entry and to ensure competition. The Third Postal Directive (Recital 39) requires access prices to be cost-oriented, i.e. for access prices to reflect the costs that the USP avoids with access compared to the costs it incurs when delivering the standard mail service covering the complete range of features offered for the clearance, sorting, transport and distribution of individual postal items (European Parliament 2008). The USP's access prices hence have to be in line with the principle of avoided costs.

Furthermore, article 12(5) of the Third Postal Directive requires the USP to apply access tariffs in a transparent and non-discriminatory manner. This means that access seekers that conduct the same level of preparation and sorting activities need to be rewarded with equivalent access prices including equivalent associated conditions as confirmed by the CJEU Deutsche Post/Vedat Deniz judgement (2008, Recital 28).

Table 2 Goals for access prices

Stakeholder	Goals
USP	Maintain pricing flexibility
NRA	Efficient entry, cost-orientation, non-discrimination, transparency
NCA	Non-discrimination, avoid margin squeeze

In turn, the NCA's goal is to prevent exclusionary pricing. The NCA scrutinizes whether, given the access prices and conditions set by the USP, an as-efficient competitor can compete. If an as-efficient competitor cannot compete, this can amount to competition issues of price-based exclusionary conduct, i.e. an abuse of dominant position in the meaning of article 102 of the Treaty on the Functioning of the European Union (TFEU).[12] See Table 2 below for a summary of stakeholders' goals for access prices.

Exclusionary pricing can take two forms. Either the margin between access tariff and retail price for a given services is too slim for an as-efficient competitor to compete (margin squeeze) or the overall (effective) end-to-end prices are too low for an as-efficient competitor to compete, i.e. it constitutes predatory pricing (European Commission 2009, Recital 23). This raises the question of how and what level access charges should be set maintain the USP's pricing flexibility, to allow for efficient entry and efficient pricing while avoiding exclusionary conduct. The considerations in this section are also summarized in Table 2.

Against the background of these goals for access pricing, several economic issues arise as to the design of the operational, cost-related part of access pricing and the quantity-related part of access pricing. We discuss those in turn.

3.1 Access Prices: Cost-Plus or Retail Minus

The first choice the USP or NRA needs to make is whether to set prices according to a cost-plus or retail minus model. Cost-plus pricing means that access prices reflect the long-run incremental cost (LRIC) of the operator plus a reasonable mark-up. With retail-minus pricing, the access price is set as a discount on the total retail price of the standard end-to-end service, the discount reflecting the PO's avoided cost for those activities that are carried out by the user of access.

The PO's ability to apply market-based pricing crucially hinges on the choice between cost-plus and retail minus pricing. The cost-plus model implies that the operator has to charge a similar price for services for which it incurs similar costs (e.g., domestic bulk mail and international bulk mail, insofar as these are indeed

[12]Recent case law suggests that the bar for assessing exclusionary conduct should be even higher in the sense that the USP's behavior should not even prevent a less efficient competitor from competing, see Post Danmark II, Recitals 55–62.

similar). As long as the "plus" is constant across all consumers and services (as is standard regulatory practice) this approach prevents market-based pricing, since prices do not adapt to customers' price sensitivities. The consequence of this will be higher prices for price sensitive mailers, as well as lower market volumes and therefore higher costs and higher prices for all mailers.

Second, such a model would cause significant bypass by intermediaries that are free to set prices according to customers' price sensitivities and can enable competitors to take over the "best deals" (also called arbitrage). This risks undermining the operator's profitability and USO sustainability. On top of that, it discourages the possible emergence or extension of alternative end-to-end delivery networks, curtailing the incentive for an infrastructure-based business model.

As opposed to cost-plus pricing, the retail-minus approach maintains the PO's flexibility in pricing access. When the PO is able to set the retail price, it is still able to charge different access prices depending on the price-sensitivity of different customers and, via the minus (i.e. operational discount), the PO will still be able to reflect the difference in service between the access and the standard retail service. This however applies only if the access products are defined at a granular level. With insufficient granularity of access products, it is likely that an access product/price corresponds to multiple retail products, each with different customer bases and price sensitivity, thus the access-retail price link is unraveled. If this is the case, retail-minus pricing may have similar (negative) effects as cost-plus pricing.[13]

While the PO would may benefit from a retail-minus approach to access pricing, the NRA has to take into account several different goals when choosing between the two approaches. From a pure cost-orientation perspective, the performance of a retail-minus approach depends upon the extent to which retail prices are in the first place cost-oriented. This ensures that access prices are also consistent with cost orientation.

From the point of view of allocative efficiency, however, the NRA should favor the retail-minus approach. Preventing market-based pricing via the cost-plus pricing model would be detrimental to the postal industry, in the short run (in terms of reduced sustainability of the USO) and in the long run (in terms of endangered survival of all delivery operators). Moreover, declining volumes make it difficult to forecast costs, which makes the cost-plus type of price regulation less adaptable to (sudden) drops or changes in mail demand. On top of that, the retail-minus approach also ensures efficient competition, as work-sharing discounts give a direct incentive to perform work-sharing activities as soon as those can be produced more efficiently.

However, how does the retail-minus perform in relation to the goals of the Postal Directive and competition law, namely non-discrimination and avoidance of exclusionary conduct? The retail-minus approach should ensure non-discrimination,

[13]These effects may include: (i) restraining an operator in differentiating prices based on users' price sensitivities, (ii) encouraging mailers to seek access directly, (iii) encouraging competitors to use access to serve only end-users with low price sensitivity, and (iv) setting retail prices higher can lead to losing customers with high price sensitivity.

as all access users that undertake the same preparatory and pre-sorting activities on their mail are eligible for the same discount levels. More specifically, it ensures non-discriminatory treatment of mailers that pay the same access price independently of whether they buy access directly or whether they go through an intermediary. Furthermore, the application of retail-minus pricing should safeguard the USP against any allegation of margin squeeze or predatory pricing—provided that the minus is at least as large as avoided costs, consistently with the work-sharing operational discount principle, e.g. as mandated by the EU Postal Directive, as clarified by the CJEU Deutsche Post/Vedat Deniz case. It should avoid margin squeeze, because any as-efficient (upstream) competitor should be able to offer prices to the final customer (e.g., big mailers) that is equal to or below the total operational rebate that the USP offers on its retail price for the end-to-end service.

Whereas conceptually, the retail-minus approach seems to fit both the goals of the Postal Directive and competition law, practically whether or not the USP's operational rebates withstands a regulatory and competition policy review hinges on the correct application of the avoidable cost methodology. We suggest for the USP and/or NRA to test the correct application of the avoidable cost methodology in four steps:

First, the avoidable cost calculation needs to build upon reliable cost information, usually from regulatory cost accounts that are approved by the NRA (European Commission 2009, recital 25). In many instances, a challenge arises, when the regulatory accounts are not sufficiently granular. In this case, further cost analysis is needed.

Second, the calculation needs to build upon a relevant comparison between the access product and the corresponding end-to-end products or products.

Third, the USP needs to identify the avoidable activities in a correct manner and considering the correct time horizon.

Finally, the avoidable cost of each individual activity needs to be calculated correctly, using the right approximation of avoidable cost (which is often the variable cost).

3.2 Quantity Rebates: On Aggregate or a Per-Sender Basis?

A key decision in the design of access regimes revolves around the way quantity rebates should be applied and calculated for the PO's different customers (intermediaries, competitors or big mailers). More specifically, the question is whether quantity rebates should be granted based on the aggregate mail volume injected by an individual customer over a certain period (typically one year) or based on the volumes injected by each of the senders i.e. end-users.

From the PO's point of view, market-based pricing relies on second degree price differentiation, which allows mailers to self-select the discount level, based on what quantity of services they choose to purchase from the PO. Another classical example of second degree price discrimination is the two-part tariff, which

corresponds to a volume discount system (Tirole 1988). Economic theory shows that with 2nd degree price differentiation (volume discounts i.e. non-linear pricing) the market is expanded, more buyers take part in the market and more goods are sold than under simple linear pricing—assuming that buyers are heterogeneous.

This assumption holds in the postal industry, where business customers (mailers) have very different preferences and valuation for the postal service. Willig (1978) proved that non-linear pricing schemes have superior efficiency than pricing based on a single tariff.

Thus, volume discounts increase allocative efficiency, as they facilitate setting the added payment for additional volume closer to marginal cost. When customers vary, the supplier can enable additional sales by reducing the price for the biggest customers, to approach the level of marginal cost. Insofar as additional transactions are thus enabled, social welfare consequently is increased (Varian 1990).

To ensure an effective market-based pricing mechanism, a PO can apply these discounts on a per sender basis, so that the mailers' self-selection mechanism functions without interference. The per-sender model for quantity rebates implies for the quantity rebate level to be calculated based on the volume of mailings generated individually by each sender of mail. Intermediaries (consolidators or any access seeker) still obtain quantity rebates: the latter are not calculated for the total (aggregated) mail quantities they deposit, but by summing the discount level associated to the quantity of mail of each of the senders that provide mail to the access seeker.

POs apply a per-sender model to preserve the quantity-stimulating function that is at the heart of a quantity rebates scheme. More specifically, the per-sender model prevents bypass and arbitrage by intermediaries using access regulation to obtain very large volume discounts.[14] If intermediaries obtain a volume discount based on aggregate volumes they can give small senders the high level of quantity rebates that the USP originally intended for large senders. In particular, mailers with low price sensitivity may be able to buy access directly from the access provider.

Without the possibility to apply rebates on a per-sender basis, the only way for the USP to minimize the room for arbitrage is to increase the lowest prices (i.e. prices paid by segments of consumers with high price sensitivity). This would result in overall higher prices for price sensitive users, leading to lower market volumes, higher unit costs and higher prices for all end-users. In a context of possible e-substitution, this might incentivize mailers to substitute away from postal mail towards electronic mail. Lower volumes and higher costs may also reduce the financial sustainability of the USO.

Instead, under the per-sender model, the quantity-stimulating function of the rebates is preserved and consolidators obtain the same quantity rebates than their own clients (senders) would obtain if they dealt directly with the USP. The

[14]The definition of intermediaries includes any sender X that starts acting as an intermediary (consolidator), e.g. allowing any other company Y to get a PO's quantity discount, "without having increased its volume of mailings".

per-sender model allows for allocative efficiency via a close match between prices and mailers' sensitivity to price via the self-selection mechanism. This form of market-based pricing has thus a demand stimulating purpose and effect; it also constitutes demand stimulation insofar as it prevents or delays e-substitution. From the USP's perspective, it would hence be most efficient and most profitable to implement a per-sender model for quantity rebates.

Concerning its goal of efficient entry, the NRA should consider that only the per-sender model ensures efficient entry. Without the per-sender model it would be possible for intermediaries to build a business model based on the purely administrative consolidation of large quantities of mail without needing to be more efficient in the sorting or preparation activities.

Concerning the goals of non-discrimination for both the NRA and NCA, the per-sender model is not distorting competition in the mail market. While quantity rebates are a form of price discrimination, price discrimination becomes problematic only when customers in comparable situations are treated differently (as defined in the EU law principle of equal treatment, see CJEU bpost case, recital 27).[15] To test whether these quantity rebates create competitive concerns, it needs to be tested whether the quantity rebate via a per-sender model results in a *primary line injury*, i.e. a distortion of competition between the PO and its competitors, or a *secondary line injury*, i.e. a distortion of competition between the PO's customers. For this to occur, the firms the treatment of which is being assessed must first of all be on the same line, i.e. the comparability condition.

The European case law on the per-sender model clarifies that, firstly, quantity rebates used to stimulate demand are not discriminatory—senders of small versus high quantities of mail are not in comparable situations concerning quantity rebates. Secondly, that the application of quantity rebates on a per-sender basis is not discriminatory—senders versus intermediaries are not in comparable situations concerning quantity rebates.[16]

Following the economic reasoning in these decisions, the per-sender model does not induce a secondary line injury. Senders (i.e. mailers) and intermediaries are not in comparable situations as to the objective pursued by quantity rebates, which is to stimulate demand of postal services.[17] Only bulk mailers can be encouraged by quantity rebates to increase the volume of mail handled by the USP. In other words, since intermediaries and senders do not compete with each other, a per-sender model cannot distort the competition between them.

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[15]"The principle of equal treatment, which is one of the fundamental principles of EU law, requires that comparable situations must not be treated differently, and different situations must not be treated in the same way, unless such treatment is objectively justified" (CJEU bpost case), recital 27.

[16]These cases involved the Belgian USP bpost and the French USP La Poste.

[17]See Case C 340/13, bpost v IBPT [2015], Recital 27, 48, Conseil de la Concurrence, Opinion 07-A-17 of 20 November 2007, Recital 195, 205, 206; Opinion of Advocate General Sharpston, delivered on 16 October 2014, Recital 88–90, 92.

Moreover, the per-sender model does not per se induce a primary line injury, since it does not interfere with the separate application of operational discounts based on avoided costs, which allows intermediaries (including access-based operators) to develop sustainable business models and to compete with the USP.[18] For instance, in France, La Poste's price structure including a per-sender condition was cleared in a market characterized by the presence of alternative end-to-end networks.[19]

On top of that, the per-sender model levels the playing field on the consolidation market. In fact, in absence of a per-sender model larger consolidators would be more attractive for mailers since for achieving higher accumulated discounts. This would create considerable entry barriers for small consolidators. Furthermore, a regulatory decision blocking per-sender could constitute discrimination, by applying comparable treatment to dissimilar situations.[20] In conclusion, applying a per-sender rule in order to preserve the quantity stimulating function of quantity rebates is consistent with economic efficiency and compatible with the relevant case law.

3.3 Quantity Rebates: Avoiding Exclusionary Conduct

The issue of volume discounts has been a major area of analysis in the literature and practice of network industries. Volume discounts (either to originators of mail or to worksharing providers) are an important example of nonlinear pricing in the postal service, though their analysis has only recently begun (Crew and Kleindorfer 2012).

As to volume discounts, competition law constraints imply that the PO's pricing should avoid amounting to exclusionary conduct, which is a concern insofar as a firm is dominant. In fact, quantity rebates can have a loyalty-enhancing effect. Loyalty-enhancing rebates can in the extreme (given shape and intensity of discount structure) lead to market foreclosure. According to European Commission (2009, §23) anti-competitive foreclosure arises when a dominant firm's pricing practices make it unattractive for customers to switch a relevant share of demand away from the dominant firm to an alternative supplier, even if the alternative supplier is an as-efficient competitor.[21]

European case law after the CJEU AKZO case (CJEU 1991) and Commission prioritization guidance (European Commission 2009) guides dominant companies

[18]Conseil de la Concurrence, Opinion 07-A-17 of 20 November 2007, Recital 205.

[19]Conseil de la Concurrence, Opinion 07-A-17 of 20 November 2007.

[20]This has been explicitly postulated in the Opinion of Advocate General Sharpston, delivered on 16 October 2014, Recital 88.

[21]One form of loyalty-enhancing rebates are retroactive rebates, whereby customers obtain a discount on all the units purchased, if a certain threshold of purchases is met.

to compare prices against own costs (bright-line test).[22] When the effective price that an as-efficient competitor would have to set to attract part of the purchases from a customer at the dominant PO is below costs, the pricing of a dominant company is exclusionary, because an as-efficient competitor cannot attract customers from the dominant firm and remain profitable. In other words, some customers, which are contestable, are made not contestable by the pricing policy of the dominant company.

An effects-based analysis—as advocated by the European Commission for its prioritization—assesses a quantity rebate case-by-case concerning its effects on competition (European Commission 2009). More specifically, the analysis of a dominant firm's pricing can assess whether the price level and structure has any impact for the relevant quantity that competitors can compete for. This can be a part of a broader examination of "all the circumstances of the case", to be conducted within a competition case (see Post Danmark I 2012).

To check for foreclosing pricing, the NCA carries out a price-cost comparison. As confirmed by the Post Denmark I judgment (see Post Danmark I 2012), the relevant cost benchmark to use for the postal sector (as an approximation of AAC) is the incremental cost benchmark, i.e. the cost attributable to (i.e. incremental to) the product in question.[23] More specifically, the average incremental costs are the costs that would disappear in the short or medium term (three to five years) if the USP were to give up its business activity of distributing a certain mail product (see Post Danmark I 2012).

In a market where access is introduced and used by competitors to the dominant company, the presence of access makes a second business model available to competitors as they contest the dominant firm's customers. Therefore, an as-efficient competitor test should incorporate this additional option when assessing (or forecasting for compliance purposes) the effect of the dominant company's pricing structure. In other words, the presence of access can imply an adaptation of the test for predation and this can have implications in postal markets. However, this exercise requires making assumptions about the extent to which a competitor relies on end-to-end vs an access-based business model.

Consistently with the bright-line approach to compliance requirements for dominant companies, it can be disproportionate to hold dominant companies accountable to comply with competition law if they do not and cannot have the information needed to comply—in the case information on the choice of business model by the competitor. For the same reason, the equivalently efficient operator

[22]Notwithstanding the legal certainty enshrined in the bright line criteria that the dominant company should inform its compliance upon a known quantity, i.e. its own costs, a rival may be excluded by a rebate based on how the rebate relates to the rival's cost, not per se to the cost of the dominant firm (Brennan 2008).

[23]See also Commission Decision of 20 March 2001, Case COMP/35.1 41 Deutsche Post AG, OJ L1 25/27. §10 The Commission stated that Deutsche Post "must earn revenue on [the specific service open to competition] which at least covers the costs attributable to or incremental to producing that particular service".

(EEO) is the cost standard used in ex-post competition enforcement: dominant companies should compare prices against their own costs, since they cannot know their competitors' costs.

A further complication for an access-giving dominant company's pricing compliance effort is that different competitors can have different business models and different scales of operation. An access-giving dominant company, by definition, does not use a business model based on using access. Thus, how can a dominant company apply an equivalently efficient operator approach that encompasses access as part of the business model when its own business model does not? A reasonable effort could be to test and calibrate an as-efficient competitor model based on a set of plausible stylized competitors that match the available information on existing competitors.

4 Access Points

The third question for access design is at which point in the delivery chain access should take place, i.e. at which point the access seeker should drop off its mail in order for it to be fed into the delivery network. While both the USP and the NRA have a common goal of efficiency, the NRA might want to facilitate access for different types of access seekers by providing for several access points along the delivery chain, for instance by mandating access not only to sorting centers but also at local distribution offices. See Table 3 for a summary of stakeholders' goals for access points.

However, any access points further downstream that the inward sorting center are likely both operationally inefficient and incompatible with the cost-orientation requirement for access prices. Access that is provided further downstream, for instance at distribution offices, would lead to a duplication of resources and therefore to an increase in costs. Insofar as mail can only be fed efficiently into the mail stream at sorting centers, the USP would have to redirect the mail from the multiplicity of distribution offices to the sorting center thereby incurring extra transport costs. Moreover, the USP can also not avoid the sorting and transport activities and costs from the sorting center back to the local distribution office. On top of that, distribution offices might not be equipped to handle the large mail volumes that access usually involves. Thus, access should be allowed only where it is efficient for the USP from an operational point of view, i.e. the inbound and/or outbound sorting centers, see Fig. 3.

Table 3 Goals for access points

Stakeholder	Goals
USP	Efficiency
NRA	Efficient and workable access
NCA	None

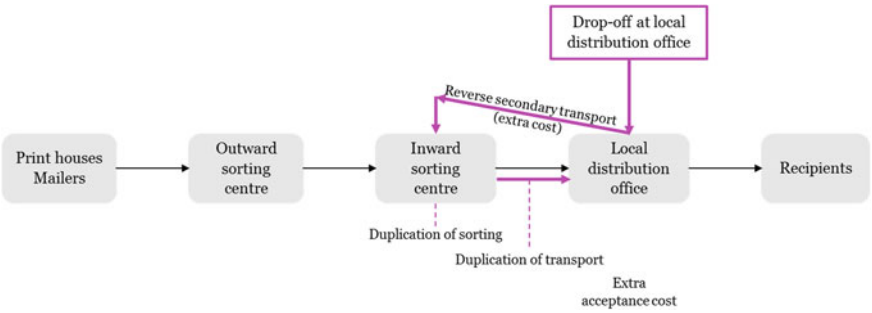

Fig. 3 Access at distribution offices causes a duplication of resources

Finally, any access prices charged would have to reflect the lack of avoided costs. This creates a tension between the cost-orientation requirement and the requirement for access prices to be lower than the standard end-to-end service price.

These elements have been at the basis of the German and Italian NRAs' conclusion not to set out access to local distribution centers (AGCOM 2013a, b; Pohl 2010, p. 26). They are further corroborated by the finding, that in virtually all EU member states with access regulation implemented, access takes place at inward and/or outward sorting centers. Thus, if access is granted at different points in the delivery network there should be different access prices, with the difference reflecting the cost avoided when moving up the delivery chain from one access point to the next.

5 Conclusions

While the aim of the paper was not to resolve the question of whether access regulation is appropriate for postal markets, it has investigated the different questions that arise when designing an access model—when it is mandated. It has also outlined the different possibilities for designing access from the viewpoint of the USP as well as the postal regulator and competition authority.[24]

It is the methodological conclusion of this work that the sometimes seemingly conflicting goals of those three stakeholders can be catered for by the same elements of access design. This finding can help the prior analysis and discussion of whether access is appropriate in the first place.

If it is agreed for access to be mandated, an access model compatible (from a regulatory and competition economics viewpoint) with the goals of all three key stakeholders would: (a) apply to a limited set of products for which it is

[24]A further factor for consideration is the economic effect of geographically differentiated prices (zonal pricing) in access, to which the same principles discussed in this paper should apply.

demonstrated that the PO's network is an essential facility, (b) include a retail-minus approach to access pricing, (c) include a per-sender model for quantity rebates, and (d) allow for access only at sorting centers.

In the end, whether or not an access regime withstands regulatory or competition review ultimately depends on the way it is implemented. The devil will be—as always—in the detail.

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