

Annex 10

Establishing Non-Uniform Access Prices in The UK

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1. INTRODUCTION

This paper discusses the pricing of access to a universal service provider's postal facilities. In particular it considers the derivation of non-uniform prices that reflect differences in the cost of serving different geographical areas and describes how Royal Mail has determined such prices.

The paper firstly describes Royal Mail's obligations and the history, so far, of the development of access services. It goes on to consider the theoretical concepts of how access prices might be de-averaged and then considers the practical issues encountered in implementing non-uniform prices. Examples from the resultant pricing structure are presented.

2. ROYAL MAIL'S LICENCE REQUIREMENTS

Royal Mail is the sole universal service provider (USP) in the UK and operates under a licence issued by the Postal Services Commission (Postcomm) (Postcomm 2003). Condition 9 of this licence mandates that Royal Mail is required to provide access to its postal facilities such that:

- Access prices shall be based on a reasonable allocation of costs (and the determination of costs shall have regard to Royal Mail's obligation to provide a universal postal service in the United Kingdom)
- Royal Mail does not unduly discriminate between persons having such access to its postal facilities or show undue preference towards any such person.

¹ The authors would like to thank Frank Rodriguez and Paul Bates for their helpful comments on drafts of this paper.

Taken together these requirements mean that Royal Mail must, in good faith, enter into negotiations with 'any person' requiring access to its facilities, whether a customer or a licenced postal operator. If negotiations fail then Postcomm can be requested to make a determination of the prices and/or conditions to apply.

Royal Mail's obligations to provide access to both postal operators and private customers reflect the requirements of Article 12 of the EU Postal Directive of June 2002 (European Communities 2002).

3. DEVELOPMENT OF ACCESS

It should be noted that 'access' – in the sense of avoiding part(s) of the traditional mails network operation - is not new. The concept of 'worksharing' developed in the late 1970s in the USA, since when mailers have been able to pre-sort mail and transport it (at least) part way through the network for handover to the USP (USPS in this case) for 'final mile' delivery. Prices are quoted as discounts from the public tariff and are based on avoided costs.

Since the late 1980s Royal Mail's range of Mailsort products has provided a similar opportunity to mailers with regard to the pre-sortation options, with a similar pricing basis. However, prior to the granting of Royal Mail's licence there was no requirement to provide physical access at any 'downstream' point, and it is in this area that all recent developments have taken place.

Postcomm's decisions on Market Opening (culminating in Postcomm's document of February 2005 (Postcomm 2005a)) mean that, unlike in the USA, licenced postal operators can set up end-to-end postal networks, including final delivery. However, the inherent economies of scale of such an operation are likely to preclude the immediate establishment of delivery networks in many expensive to serve areas, thereby leaving Royal Mail as the sole (loss-making) incumbent operator in such areas. In some quarters, therefore, access to Royal Mail's delivery network is seen as an essential requirement to allow the development of competition. Such access can be used either nationally – in which case the competitor is focusing on the upstream part of the business – or geographically – in which case the competitor is also focusing on establishing its own network where it is economic to do so yet being able to offer universal coverage, although some competitors might offer a more widespread coverage at less than daily delivery frequencies.

In February 2004, Royal Mail signed its first negotiated access agreement with a licenced postal operator, UK Mail, to provide access at Inward Mail Centres subject to certain conditions (Royal Mail. 2004a). The details of this contract include an agreement on access prices for a number of product variants (differentiated in terms of the level of pre-sortation and format (letters v flats/packages)), a minimum volume requirement per Inward Mail Centre (to ensure there is sufficient volume to cover fixed cost activities such as mail acceptance and verification), and a minimum coverage of Inward Mail Centres per day. The range of product variants was later extended to include machine-readable options. The access prices were uniform to all parts of the UK, but offered on the condition that the “fall-to-earth” of access mailings must be similar to the Royal Mail national average mail profile (based on the distribution of end-to-end mail). This condition helps to protect the Universal Service Obligation (USO) because it prevents access being used for a disproportionately high percentage of mail in high cost delivery areas.

The contract developed from this initial agreement forms the standard contract now available for access customers. A number of other licenced postal operators and also some large customers have now signed this standard contract – the latter use a third party to transport their mail to the Inward Mail Centres.

UK Mail started its operation in May 2004 and is by now operating at an annualised rate of approximately 250m items and remains on track for a 3% market share by the end of its third year (UK Mail. 2005).

During 2004/05 Royal Mail delivered around 100m access items and this is expected to increase significantly over the short to medium term. At this early stage it appears that access volumes are almost entirely the consequence of customers switching from existing Royal Mail end-to-end products, and that very little, if any, “new” volume has been generated in the market by the availability of access products, although this may change as the market develops.

However, the contract described above does not meet the requirements of some operators or customers. In particular, regional operators and customers necessarily cannot meet the ‘national’ mail distribution pattern or the Inward Mail Centre coverage requirements, although they may be posting sufficient volume. In response to a request from such an accessor Royal Mail developed a set of non-uniform access prices that allowed the condition of requiring a national average mail profile to be avoided, which thereby increased the opportunities for access to its postal facilities. These prices and

conditions are the basis of the contract signed in October 2004 and now form the second part of the generic access contract that is available to all. (See Royal Mail 2004b)

4. THEORETICAL CONCEPTS

Liberalisation of the postal sector is still in its infancy in many countries, including the UK, and it is not yet known whether a liberalised postal market can fully support a non-subsidised USP that offers access to its facilities in the face of bypass competition. It is envisaged that entrants will choose to position their end-to-end (bypass) networks in the cheapest and most profitable to deliver areas. These areas tend to have a high density of businesses that send and receive high volumes of mail. The more expensive to deliver mail will be given to Royal Mail in places where it is unprofitable for the entrant to deliver itself. Royal Mail is therefore faced with a situation whereby the USO is under threat if it charges a uniform access price (based on national average costs) to all parts of the country. The threat is twofold –

Firstly, access mail will tend to be addressed to rural and outlying regions where the cost of delivery is in excess of the uniform access price. This in effect would mean that Royal Mail is subsidising end-to-end competition.

Secondly, entrants can undercut the uniform access price in cheap to deliver areas and win an even greater share of profitable mail. This would start a vicious cycle, often referred to as a “graveyard spiral” (Crew and Kleindorfer, 2000), whereby Royal Mail receives a dwindling share of the profitable mail needed to subsidise its USO. Royal Mail might then be forced to increase its prices to sustain the USO, but this would allow entrants to undercut the uniform tariff in further delivery areas, and Royal Mail would be left with an ever-increasing burden of expensive to deliver mail.

Hill et al (2005) investigated the likelihood of a graveyard spiral occurring in the UK by modelling the impact of uniform access prices that are available to both entrants and customers, as well as the possibility of entrants offering end-to-end services. It concluded “a graveyard spiral is perhaps not the most likely outcome in the near term but one that remains a distinct and realistic possibility over the longer term”. Nevertheless, the model results suggest that significant price rises would be needed to achieve financial equilibrium.

A number of recent studies have explored the setting of optimal access prices in the postal sector, including Panzar (2002), Crew and Kleindorfer (2002, 2004) and De Donder et al (2004, 2005). The studies share a common

approach in that they develop models of a postal sector in which a USP offers access to its delivery network in both low cost (often simplistically referred to as urban) and high cost (often simplistically referred to as rural) areas. The USP also offers an end-to-end product that is uniformly priced to all destinations, which may or may not be optimally priced. The postal market also includes at least one entrant that can choose to compete in one or both delivery areas, using either access or bypass with potentially non-uniform prices.

Panzar (2002) identifies the possibility that access prices set on a uniform basis may fail to cover the average incremental cost of delivering to high cost areas, and hence users of access in such areas would be subsidised. A model is developed whereby access is priced on the avoided cost or margin rule version of ECPR, which given the existence of a uniform end-to-end tariff, produces the same access price in both urban and rural areas. It was found that as long as the distribution of access mail to each area is reflective of the pattern of end-to-end mailings, then the fixed network cost is recovered to maintain a break even financial position for the USP, and inefficient entry is deterred. In the case where access mailings do not reflect the national average mail profile, and in particular when additional mail is accessed in high cost areas, then inefficient entry could occur and it is unlikely that a USP would be able to recover its fixed network costs to make a profit. It is noted by Panzar that this problem would not occur if end-to-end “postal rates were rebalanced prior to mandating unbundled access ... so that the prices charged to all services and market segments were subsidy free”. This is because the proposed ECPR “pricing rule would never result in unbundled access being priced below incremental costs”. It is recognised however that access deals are likely to occur before the re-balancing of end-to-end services is accomplished, and therefore some de-averaging of access prices is needed in the interim to ensure that prices are at least as high as the average incremental cost of delivering to each area.²

Crew and Kleindorfer (2002, 2004) reach a similar conclusion and recommend some de-averaging of access prices even where end-to-end prices are uniform. They propose a pricing approach referred to as “delivery access pricing” (DAP), which can be represented in a simplified form by the following formula³:

² The 2 variants of access contract being offered by Royal Mail (uniform access prices for a national average mail profile, and de-averaged prices for a non-national mail profile) are closely aligned to the 2 cases considered by Panzar (2002).

³ This is a restatement of the formulation shown in Crew and Kleindorfer (2005)

$$p_i^{DA} = \min \left\{ \max \left\{ p_i^{DA/ECPR}, ac_i \right\}, p^{E2E} \right\} \quad (1)$$

where the access price to zone i , p_i^{DA} , is capped by the retail price, p^{E2E} , for each delivery area, and the calculated access price is the higher of the ECPR access price, $p_i^{DA/ECPR}$, and the average incremental cost of access, ac^i .

Crew and Kleindorfer conclude “the DAP approach emphasises the importance of charging for downstream access according to the work yet to be done by the (USP) and not only for the avoided cost upstream work accomplished by entrants”.

The model developed by De Donder et al (2004, 2005) has a general pricing rule which is a modified version of ECPR, such that an access price p_i^{DA} , to zone i , is given by the following formula:

$$p_i^{DA} = d_i + (p^{E2E} - c^{UP} - d_i)\sigma_i + m_i \quad (2)$$

where the marginal cost of delivery to zone i is represented by the first term, d_i , the second term is the profitability cost of a displaced retail item (retail price p^{E2E} , minus upstream cost c^{UP} , minus the marginal cost of delivery to zone i) multiplied by the displacement ratio in that area, σ_i , plus a third term, m_i , which is a demand mark-up to ensure that fixed costs are recovered (to help achieve a break-even financial position) where bypass occurs.

The De Donder formula shares common elements with that given at (1). In particular, both emphasise the importance of some de-averaging of access prices to reflect differences in delivery costs in each area. The formulae also share the requirement to take into account the profitability cost of displaced items, as well as a mark-up to recover fixed network costs.

The theoretical approaches discussed above can provide some useful guidance when setting access prices. However, in practice, it is very difficult to follow a strict application of theoretical pricing formulae, not least because they include economic terms that are not easily measurable, especially before competitive entry occurs. The approach adopted by Royal Mail reflects the realities of a negotiated commercial agreement. Implicit is the idea that mail delivered to each zone represents a different “product”, such that access prices should reflect the costs of work yet to be done in each delivery zone and so should be expected to vary across zones.

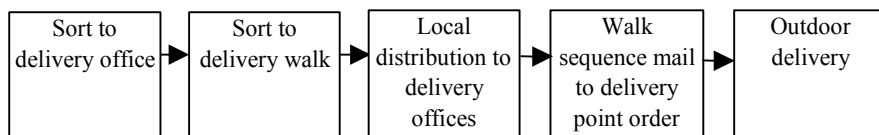
5. SETTING NON-UNIFORM ACCESS PRICES

The setting of non-uniform access prices had to satisfy a number of considerations for them to be accepted by our customers, operators and the Regulator.⁴ Firstly and most importantly, the zonal prices must be cost reflective such that the access price of each zone is above the delivery cost of that zone. Secondly the number of pricing zones should be kept to a minimum to ensure the product is relatively easy to implement and not too complicated for accessors to understand. Thirdly the definition of zones should be in terms of Royal Mail's existing postcode structure to avoid unnecessary confusion, complication and duplication of addressing. Fourthly the mapping of postcodes to zones must be entirely transparent, such that a clear set of objective and measurable rules are applied in a consistent and mechanistic fashion. Finally the definition of zones and their access prices must be socially acceptable, and seen to be fair to customers, competitors and Royal Mail with its obligations as USP.

5.1 Cost Drivers of Delivery

Royal Mail provides access to its 70 Inward Mail Centres for a variety of configurations of pre-sorted and machine-readable mail. Figure 1 provides an overview of the activities through which the access mail is then processed before it is delivered. The activities are not necessarily completed in the order shown; for example, walk sorting may occur at the delivery office (after local distribution) if the mail is too large to be machine sorted at mail

Figure 1: Major processing activities for mail accessed at Inward Mail Centers



centres.

Unit staff costs for the 3 sorting activities (sort to delivery office, sort to delivery walk and walk sequencing) do not vary significantly by geography.

⁴ Royal Mail could face Judicial Review if the terms of its zonal access contracts are felt to be anti-competitive or prejudicial.

These activity costs are driven by the unit time it takes to process each mail piece, which is mainly a function of the size and shape of the mail and the equipment in place to process the mail. The distribution of the size of mail is unlikely to vary significantly by geographical region, and cost differences due to the size/format mix of mail are reflected, to the limited extent possible within a weight based pricing structure, in the national tariff structure.⁵

A less significant driver of sorting costs is the proportion of large volume receivers of mail in a given area. These addresses, which typically are found in commercial centres, can warrant a direct selection in the primary sort stage. However, a small cost saving from a reduction in the number of handlings may not be significant when taken alongside other causes of cost variation such as higher wage rates in London or differences in the mix of labour types due to local labour market differences.

Local Distribution is the activity of transporting mail from the mail centre to delivery offices. The costs of this activity vary by geographical area, with unit costs for city centre areas being cheaper than for outlying rural areas. The average overall journey distance to a city centre office is much less than that to rural delivery offices. Vehicle utilisation is higher in city centres because these offices cover larger numbers of delivery points and high volume receivers.

Outdoor delivery is defined as the activity of travelling to each address and delivering mail through its door. Again the costs of this activity are variable depending on whether mail is delivered to city centre, suburban or rural areas. City centres include a relatively high proportion of businesses that receive a large volume of mail per day and will require the use of a vehicle.. This serves to increase the average cost of serving a business delivery point (both in terms of staff time and vehicle costs), but the per item cost is below average because of economies of scale resulting from high mail volumes.

Suburban deliveries are mainly by foot or cycle, with a high proportion of delivery points being detached residential houses with garden paths. Inter-drop travel distances are greater than in high-density urban areas and therefore fewer delivery points can be visited during the fixed-time span of a delivery route. This extra travel time per delivery point, together with the lower volumes of mail delivered to residential addresses, result in suburban unit delivery costs that are higher than in commercial city centres.

⁵ Royal Mail will adopt a Size Based Pricing tariff structure (“Pricing in Proportion”) from September 2006 and access prices will adopt this structure at the same time.

Inter-drop travel distances continue to increase as areas become more rural, to the extent that most delivery routes require the added cost of vehicle transportation. Whereas vehicle transportation in cities is cost justified on the basis of the large volumes being handled, vehicle deliveries in rural areas will typically serve low volume residential households.

In conclusion, the main differences in unit cost between geographical areas are due to the staff and vehicle costs associated with local distribution and outdoor delivery activities. Costs associated with sorting activities and buildings are relatively uniform across the UK, and in the case of buildings, the costs are relatively small.

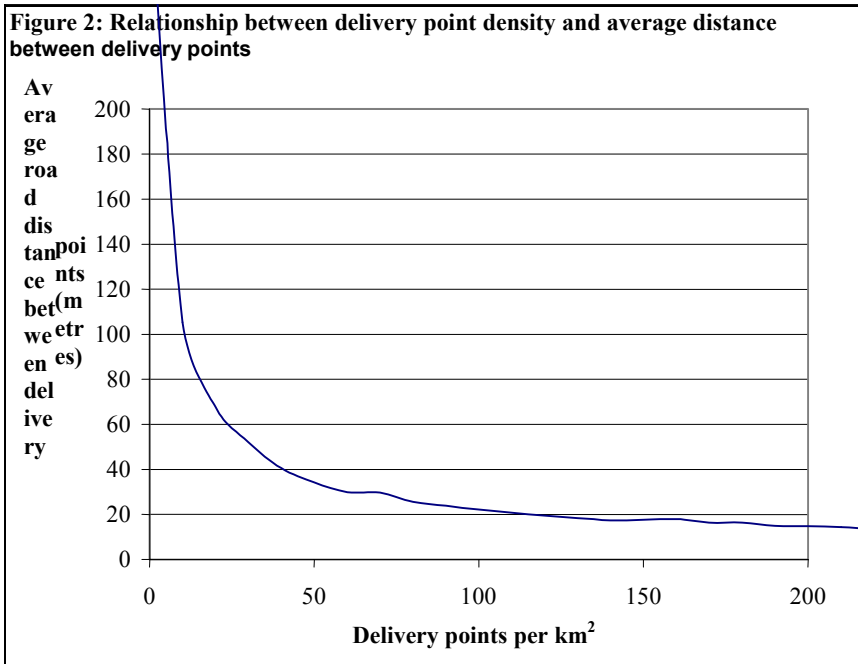
5.2 The Definition of Access Pricing Zones

The most important factors that influence geographical cost variations are found to be the travel distance between delivery points, the average volume of mail per delivery point, and the remoteness of the area from major hubs.

It was important to identify robust data to measure these characteristics by postcode, and to be able to group postcodes with similar cost characteristics into zones.

The first major cost driver characteristic - average travel distance between delivery points – is a joint function of road distances and the number of delivery points in a postcode. Royal Mail has approximated this driver by measuring the Delivery Point Density (DPD) of each postcode, which is defined as total surface area (measured in square kilometres) divided by the number of delivery points.

Figure 2 shows the relationship between DPD and the average road distance between delivery points. When DPD is in excess of 100, the average road distance between delivery points is between 10-20 meters, which would enable most delivery points to be visited on foot or cycle. Road distances begin to increase significantly as DPD drops below 100, and there is a further “shift” in average road distance between delivery points when DPD falls below 10.

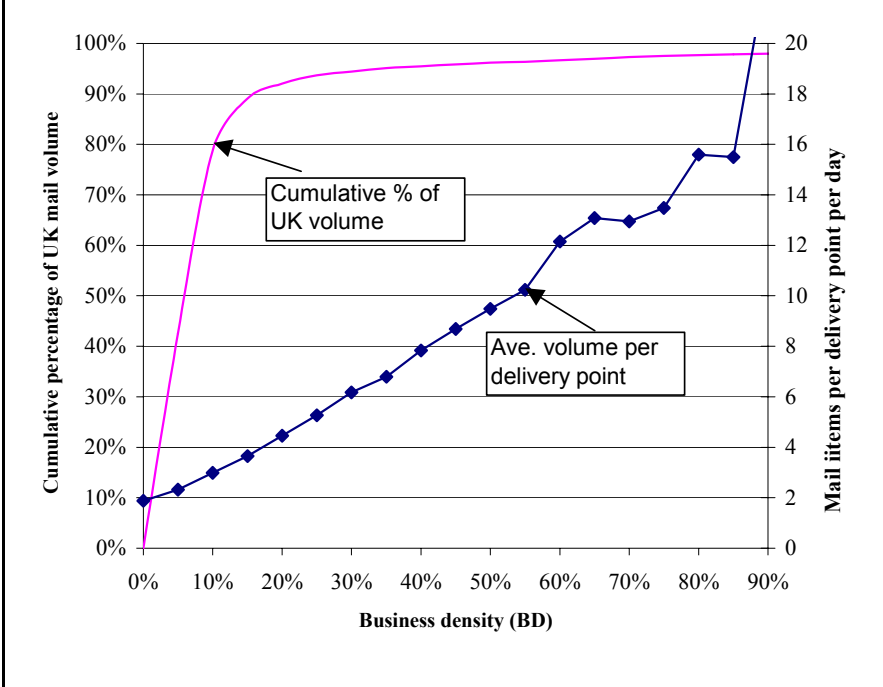


Measurement of the second major cost driver – volume per delivery point - becomes increasingly difficult as postcode areas are disaggregated into smaller areas, such that the resource needed to produce accurate volume measurements is unlikely to be justified on a cost basis. The measurement would also be unverifiable by outside parties and would therefore fail Royal Mail’s stated objective of transparency. An alternative proxy measurement is the proportion of delivery points that are registered as businesses⁶ – business density (BD). Businesses tend to receive a much higher volume of mail than residential addresses, and hence, high BD postcodes have a high average volume per delivery point.

Figure 3 shows the relationship between BD and average volume per delivery point. Postcodes with an average BD below 10% receive about 80% of total UK mail, with the average delivery point in these areas receiving just over 2 items of mail per day. The daily average volume per delivery point increases above 10 items when BD approaches 60%.

⁶ Royal Mail uses a strict definition of what constitutes a business address. This includes a requirement for a sign outside the property to advertise the business as such. The business should also be recognised by the local council and be liable to pay the business rate of local property tax.

Figure 3: Business density and its relationship to average volume per delivery point



It is concluded that the vast majority of postcodes are predominantly residential with a low BD, and it is very difficult to separate these postcodes in terms of average volume per delivery point. However postcodes with a BD above 10% have a much higher than average volume per delivery point, and typically are located in commercial centres that include the very largest receivers of mail.

The zone definitions take no account of the relative affluence of receivers of mail and are driven solely by the levels of BD and DPD, as it is assumed that the likely higher volume per delivery point of such receivers is balanced by the likelihood of having a greater distance and time between delivery points of such receivers. Any effects due to these factors would be difficult to compute, so in the interests of transparency and overall equity, no account of this has been taken.

DPD is also a good proxy for the third major driver of cost variations between geographical areas - the remoteness of the area from major hubs.

This is useful because it avoids the need to add a third dimension to the definition of delivery zones.

The analysis above suggests 3 “breakpoints” for defining zones: at BD equal to 10%; and DPD equal to 10 and 100. A further breakpoint at DPD equal to 1000 was added to establish a middle zone with approximately the same unit cost as the national average access product. This was a practical consideration to ensure that one zone had the same price as the national average price, so that the zone could be a default option if information about a postcode’s DPD or BD is missing.⁷ Table 1 provides a description of each delivery zone and a summary of its cost driver characteristics.

Table 1: Cost driver characteristics of each delivery zone

	<u>Zone 1:</u> <u>Commercial</u>	<u>Zone 2: High</u> <u>DPD</u>	<u>Zone 3:</u> <u>Medium DPD</u>	<u>Zone 4: Low</u> <u>DPD</u>	<u>Zone 5: Very</u> <u>low DPD</u>
Definition	BD>10%	DPD > 1000	DPD <=1000 & DPD >100	DPD <=100 & DPD >10	DPD <= 10
% UK surface area	1%	3%	12%	52%	32%
% Surface area is urban	41%	74%	19%	4%	1%
% UK delivery points	8%	42%	33%	16%	1%
% UK mail volume	15%	37%	31%	16%	1%
Average MC to DO distance	3.9	6.7	16.4	34	87
Average road distance between delivery points (metres)	8.4	6.4	12	43.7	121
% Delivery routes are by motorised transport	25%	17%	28%	51%	79%
Average mail items per delivery point per day	4.5	2.2	2.4	2.6	2.6

Zone 1 accounts for less than 1% of the UK surface area, but 8% of delivery points and as much as 15% of national mail volume. In contrast, zone 5 accounts for 32% of UK surface area but only 1% of national delivery points and mail volume. Zones 4 and 5 have low DPD and therefore the road distance between delivery points is relatively great (43.7 meters and 121.0 meters respectively). These delivery zones are more likely to have motorised transport and this can double the costs of delivery.

⁷ This might happen if the postcode is new or has recently been reconfigured. A full re-assessment of zones is carried out annually to avoid potential confusion and disruption to customers through continuous changes of zone definitions whilst ensuring that the definitions are reasonably up to date.

Royal Mail has chosen to adopt its existing postcode system to define zones. This has the advantage of being readily available and maintained in databases used by mailers of pre-sort products, and is recognisable by customers and households. For the purposes of implementation, it does not make a significant difference whether zones are calculated at an aggregated or disaggregated postcode level.⁸ However for the purposes of cost reflectivity, it is important that zones are configured using disaggregated postcodes to help ensure that geographical variability is not averaged out across large areas.⁹

Royal Mail has defined zones at a postcode sector¹⁰ level of aggregation, of which there are approximately 10,000 in the UK, with an average of 2,700 delivery points in each. Postcode sectors have been tagged to one of the 5 zones according to DPD and BD calculations. If the mapping had been carried out at the more aggregated categorisation of postcode areas, 94% of zone 1 delivery points would be re-tagged to different zones, and 74% of zone 5 delivery points would also be re-tagged.

The mapping is dependent on the specific characteristics of each postcode sector (DPD and BD) and is independent of both its location in the UK, and the characteristics of neighbouring postcode sectors. This approach ensures that postcodes are not necessarily penalised if they are located in outlying parts of the UK. For example, of the 121 UK postcode areas, 117 contain a postcode sector in zone 1.

The mapping of postcodes to zones will not be constant over time. Royal Mail will review each postcode sector at least once per year to monitor whether DPD and/or BD have changed to the extent that the postcode should be mapped to a different zone. Possible reasons for a reclassification include an increase in the number of delivery points in a sector, e.g. after the development of a new housing estate, or a reduction in the number of registered businesses due to a recession.

⁸ Some Royal Mail customers already presort mail to walk selection, which is a more disaggregated level of sortation than required for zonal access customers.

⁹ More aggregated categorisations of postcodes make it more likely that a rural area and a city area are grouped together. The average characteristics and cost of such a group would tend towards the middle, and hence an average price for this group would not be reflective of the different costs of delivering mail to city or rural areas.

¹⁰ A postcode sector is defined by the first 3 or 4 characters of the outward postcode plus the first character of the inward postcode. For example, SK7 2HE is in the postcode sector SK7_2. A postcode area is defined by the first 1 or 2 letters of the outward postcode, e.g. SK (Stockport) in the above example.

It is important to note that postcodes are mapped to zones by reference to cost driver characteristics rather than the actual reported costs of delivering to specific postcodes. This ensures that zones are not influenced by whether delivery offices in a particular area are more or less efficient than average.

5.3 Access Prices by Zone

Zonal access prices are derived from the average uniform access price for a Royal Mail national average posting profile, and the access delivery cost of each zone compared to the national average delivery cost. The access price in zone i , p_i^{DA} , is given by

$$p_i^{DA} = p^{DA} + (c_i^{del} - c^{del}) \quad (3)$$

where p^{DA} is the national uniform access price, c_i^{del} is the access cost (i.e. the cost of the activities shown in Figure 1) in cost zone i , and, c^{del} , is the national average access cost. The approach ensures that the access price in any zone is above the access cost for that zone, provided that the national uniform access price is above the national average access cost. The national uniform access price can be expressed as the national average access cost plus a profit margin, and therefore (3) can be re-written to show the access price of each zone as a function of the access cost of that zone plus a profit margin,

$$p_i^{DA} = (c^{del} + \pi^{DA}) + (c_i^{del} - c^{del})$$

$$p_i^{DA} = c_i^{del} + \pi^{DA} \quad (4)$$

where π^{DA} is the profit margin for the national average access product. It can be seen from expression (4) that the profit margin for all zonal access prices is identical, in absolute terms, to the profit margin for the national average access product. This means that the percentage profit margin decreases as the access cost of a zone increases. If the mark-up for each zone was proportional to the access cost of that zone, the difference in prices between zone 1 and 5 would increase above the current level.

Given the need for Royal Mail to test its policy on zonal pricing against competition law requirements (for example, to not be unduly

discriminatory), a conservative approach to pricing has been adopted (minimising the difference between the prices of zones 1 and 5). For similar reasons it was decided not to adopt a Ramsey type approach to pricing whereby profit margins are flexed in each zone to reflect whether the market in each zone is captive. Ramsey pricing would almost certainly result in higher profit margins (and hence inflated prices) in rural areas where competitors are less likely to develop bypass delivery networks to rival a Universal Service Provider offering a uniformly priced end-to-end service.

The access price of each zone can also be expressed as an avoided cost discount from a notional de-averaged E2E price. At the moment Royal Mail charges a uniform price on each of its E2E products, but this might change in the near future because some pre-sort products could be exempted from this pricing constraint by the Regulator. De-averaged prices for these E2E products would reflect the cost differences of delivering to each zone, and might take the following form

$$p_i^{E2E} = c^{avoid} + c_i^{del} + \pi^{E2E} \quad (5)$$

where p_i^{E2E} is the notional E2E price for mail destined to zone i, c^{avoid} , is the upstream cost that is avoided if customers access rather than purchasing E2E products, and π^{E2E} is the profit margin charged for E2E mail delivered to zone i. De-averaged access prices can therefore be rewritten by combining (4) and (5)

$$p_i^{DA} = (p_i^{E2E} - c^{avoid}) + (\pi^{DA} - \pi^{E2E}) \quad (6)$$

where the access price for zone i is a function of the notional de-averaged E2E price minus avoided upstream costs, and the profit margin differential between the E2E and access products.

5.4 Examples of Zonal Prices

Royal Mail has developed and published zonal access prices for a range of product variants, which are differentiated in terms of the level of pre-sortation and machine readability and most of which are broadly comparable to the range of end-to-end Mailsort products. All are handed over to Royal Mail at the Inward Mail Centres. All but the final two variants (1400(DO) sort and Walksort) require sortation at the Inward Mail Centre.

The variants are summarised in Table 2.

Table 2 : Access product variants

Variant	Formats	Detail
120	Any	Sorted to Inward Postcode area (e.g. SK,TW)
120 OCR	Letter	Sorted to Inward Postcode area (e.g. SK,TW). Addresses must be machine readable by OCR
120 CBC	Letter	Sorted to Inward Postcode area (e.g. SK,TW). Items must have a machine readable barcode applied by the poster or upstream operator.
700	Letter	Sorted to Inward 'Machine Plan' (approximately 700 selections). Items must have a machine readable barcode applied by the poster or upstream operator.
1400 (DO)	Any	Sorted to Delivery Office(DO). After Revenue Protection activities the bags are transferred to the DO without individual items being sorted at the Inward Mail Centre.
Walksort	Any	Sorted to delivery route within bags sorted to Delivery Office. After Revenue Protection activities the bags are transferred to the DO without individual items being sorted at the Inward Mail Centre.

As an example of the prices Table 3 shows Royal Mail access and E2E prices by delivery zone for the 120 selection OCR product variant,¹¹ for the year 2005/06. The Mailsort 2 OCR 120 tariff of £0.174 is discounted from the 2nd class public tariff price of £0.21. In turn, the uniform access 120 OCR tariff of £0.13 is discounted against the equivalent Mailsort tariff, and this is equal to the zone 3 price under a non-uniform access contract. Zonal prices for the other zones i , reflect the differences in access cost between zone i , and the national average access cost.

¹¹A Mailsort 120 OCR mailing is presorted to 120 selections. This is broadly one per postcode area. All mail is required to be fully addressed and postcoded using an OCR (Optical Character Recognition) font.

Table 3: Royal Mail prices for access and equivalent E2E products, by delivery zone (2005/06 - UK pounds)

Zone (i)	$c_i^{del} - c^{del}$	2005/06 prices (0-60g/100g) ¹			
		<u>E2E: Public</u> <u>Tariff 2nd class</u>	<u>E2E: Mailsort</u> <u>2, 120</u>	<u>Uniform Access:</u> <u>120 OCR</u>	<u>Zonal Access:</u> <u>120 OCR</u>
1	(0.019)	0.21	0.174	0.13	0.111
2	(0.005)	0.21	0.174	0.13	0.125
3	0.000	0.21	0.174	0.13	0.13
4	0.021	0.21	0.174	0.13	0.151
5	0.085	0.21	0.174	0.13	0.215
Average	0	0.21	0.174	0.13	0.13

¹E2E prices apply up to 60g, Mailsort and Access prices apply up to 100g

It is interesting to note that the de-averaged access price for zone 5 of £0.215 is higher than both the Pre-sort and Public Tariff equivalents for the E2E service. There is a possibility that this will encourage customers to segment their mail by zone, such that mail destined for zones 1-4 will be downstream access, whilst an E2E service will be used for zone 5. However Royal Mail has decided that the principle that access prices should be above zonal delivery costs is a more important consideration at this stage.

Zonal access customers are charged a price based on the “fall-to-earth” of their mail to delivery zones. If a customer accesses all its mail in zone 1, it is charged an average price for access 120 OCR of £0.111 per item. A more likely situation is that a customer accesses in all zones, in which case the average unit access price for a mailing would be somewhere between £0.111 and £0.215, and would tend toward £0.13 unless the customer has a non-national mail profile that is skewed towards city centre or rural delivery points.

At the commencement of the contract the customer’s posting profile over the previous 12 months is used to determine the average price to be used for the forthcoming three months. This average price is recalculated every three months using the actual posting profile and adjustments made if necessary to ensure that the correct revenue has been collected. In the future, subject to technological developments, it may be possible to calculate the price at the time of posting, for each posting. The five individual zonal prices used in the calculation will be subject to review annually alongside other prices.

Table 4 shows a number of examples of how the average price varies depending on the fall-to-earth of a customer's posting. The examples cover a posting with a 'rural' bias and a posting with an 'urban' bias and it will be noted that the overall average for these hypothetical cases differs by the relatively small amount of 1p per item, although as previously noted the difference could be as much as 10.4p (zone 1 vs zone 5)

Table 4 : Examples of average prices for Access 120 OCR variant

Zone	Zonal price (p)	'National' Distribution	'Rural' Distribution	'Urban' Distribution
1	11.1	15%	5%	25%
2	12.5	37%	20%	45%
3	13.0	31%	46%	20%
4	15.1	16%	26%	9%
5	21.5	1%	3%	1%
Average		13.0	13.6	12.6

6. Conclusions

Royal Mail is required under the terms of its licence to offer access to all its facilities such that access prices are based on a reasonable allocation of costs, and that Royal Mail does not unduly discriminate between persons having such access. The first access contract between Royal Mail and a licenced postal operator was signed in February 2004. The contract specified a uniform access price to all parts of the country, provided that access mailings have a similar "fall-to-earth" to the Royal Mail national average profile for end-to-end mail. This first contract has subsequently been agreed with a number of other postal operators and large customers, but it proved unsuitable for regional mailers that could not meet the national average mail profile.

A second access contract was therefore developed to meet the requirements of regional mailers, in which the requirement for a national average mail profile was not included, with prices for 5 delivery zones being related to the costs of transporting mail to, and delivering mail in, each zone.

Zonal pricing is still at an early stage of development in the UK. The derivation of prices, the zonal definitions themselves and some detailed

aspects all remain under review; for example, the zone 5 price is currently above the corresponding retail price and the number of zones might be modified in the light of experience.

Developments in zonal access pricing are also likely to depend on the outcome of Royal Mail's current Price Control Review. Postcomm's initial proposals include access prices within the price control where they will be subject to pricing constraints that are yet to be finalised. (Postcomm 2005b)

Overall Royal Mail has taken a pragmatic, market led view in balancing the direction given by the theoretical concepts with the need to develop acceptable commercial responses to the legitimate requests from operators and customers for access to Royal Mail's key 'last mile' delivery operation.

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