

A review of the geographical dimension of Frontier Economics' Competitive Postal Market Model

Note prepared for Royal Mail

March 6th 2006

Strictly confidential

1 Introduction

Royal Mail has requested that Oxera provide an independent assessment of Frontier Economics' Competitive Postal Market Model (CPMM) treatment of the geographical dimension. This is a relevant issue because unless the geographical dimension is consistently addressed in the model for all the relevant market players, a meaningful analysis of cream-skimming entry would not be possible—ie, where there is significantly greater entry in low-delivery cost zones relative to higher-delivery cost zones in the presence of a uniform geographical tariff. This report does not assess other aspects of the CPMM, and its conclusions relate only to the CPMM's treatment of the geographical dimension.

The CPMM was developed by Frontier Economics as an alternative to Royal Mail's Entry Pricing Model (EPM) to model entry and consumer switching behaviour. The model (henceforth referred to as the CPMM (IP)), and the resulting forecast market shares for Royal Mail and entrants, underpinned Postcomm's initial proposals for the 2006 price control review, which were published in June 2005.¹ Subsequently, the CPMM has been revised, mainly to account for changes to entrant prices, Royal Mail prices, and volume forecasts. The revised version of the CPMM (henceforth referred to as the CPMM (FP)) provides the market shares that support Postcomm's final proposals, published in December 2005.²

The assessment of the CPMM's geographical dimension presented in this report focuses on the CPMM (FP), but also provides some comparison with the CPMM (IP), as well as with

¹ Postcomm (2005), '2006 Royal Mail Price and Service Quality Review', initial proposals, June 1st.

² Postcomm (2005), 'Royal Mail Price and Service Quality Review', final proposals for consultation, December 6th.

Royal Mail's EPM. Royal Mail has provided Oxera with a copy of the CPMM with the aim of assessing the impact of the geographical dimension within it. In addition, Oxera has had access to a number of unpublished supporting documents, which were provided to Royal Mail by Postcomm and Frontier Economics.³

All the material received by Oxera, including Frontier Economics' published reports, provides only a high-level explanation of the model. No equivalent to Royal Mail's detailed description of the EPM was available. Consequently, it should be noted that the description and subsequent analysis of the CPMM in this note is based on Oxera's own interpretation of the functioning of the model. Furthermore, the conclusions presented herein are based on preliminary findings.

2 Overview of the CPMM and changes between CPMM (IP) and CPMM (FP)

The structure of the CPMM encompasses different stages with a view to calculating the post-liberalisation volumes and market shares. In the initial stages, the model sets up, among other things, Royal Mail prices and entrant costs at a disaggregated level by Royal Mail route, and pre-liberalisation volumes provided through Postcomm from Royal Mail. The definition of the Royal Mail route includes the distinction by delivery zone (residential 1–5, and business 1–5), which is in line with the urban/rural distinction contained in the EPM.

The entrant decides whether to deliver the mail itself (ie, bypass) or use Royal Mail's access service on a route-by-route basis. However, the urban/rural distinction is present only at the early stages of the model. Indeed, before the remaining model calculations (including the proportion of customer direct access (CDA) volume) are undertaken, the model proceeds with an aggregation process, which results in the information being defined by product, distance, and distance–format–product. The distinction by delivery zone is no longer explicitly defined, and is effectively averaged out within those dimensions explicitly defined within the CPMM. As a result, the data aggregated by product, distance, and distance–format–product is used to determine the post-liberalisation volume shares of Royal Mail end-to-end (E2E), CDA, entrant downstream access (DA), and entrant E2E.

This overall structure of the model has not been changed for informing Postcomm's final proposals. Instead, the main changes observed in the CPMM (FP) relate to the recalibration of the model with a different set of assumptions and parameters, including Royal Mail prices, to account for the introduction of PiP prices, and entrant costs.⁴

According to Frontier Economics' January report,⁵ the entrant prices used in the CPMM (FP) are based on a separate study on entrant costs carried out by Frontier Economics and PLCWW. Oxera has not reviewed this report because it provides input data rather than affecting the structure and working of the CPMM.

³ Frontier Economics (2004), 'Competitive Postal Market Modelling: Base Case Results Based on the Strand 2 Model', August; Postcomm (2005), 'Functionality of the Competitive Postal Market Modelling (CPMM)', note prepared for Royal Mail, February; Frontier Economics (2005), 'The Competitive Pricing Market Model (CPMM)', presentation to Royal Mail, March 9th; and Frontier Economics (2006), 'Overview of the CPMM: Technical Introduction to the Model', January.

⁴ Oxera has not reviewed whether the new set of Royal Mail prices is correctly mapped into the model.

⁵ Frontier Economics (2006), 'Market Share Analysis for Postcomm's Final Price Control Proposals', report prepared for Postcomm, January.

At a route level, the new set of entrant costs appears to be markedly different from that used to derive the volume projections for the initial proposals. As shown in the following section, entrant E2E costs appear to be higher for most of the product routes, with the relatively larger increases in the rural routes. Higher entrant E2E costs imply that the entrant bypass entry becomes less attractive relative to DA, and consequently, the CPMM (FP) predicts a higher share of entrant DA (and lower bypass) than the CPMM (IP).

Other relevant new information in the model includes the adoption of Royal Mail's forecasts for 2005/06 total market volumes that were submitted to Postcomm as part of Royal Mail's response to the initial proposals consultation in September 2005, as well as the volume growth rates estimated by Royal Mail at that time.⁶

Table 2.1 reports the aggregate post-liberalisation market shares for 2009/10 that result from the recalibration and new input data in the CPMM. In addition, and as a comparison, the table reports the corresponding results from the CPMM (IP) and from Royal Mail's EPM.

Table 2.1 Aggregated post-liberalisation market shares, 2009/10 (%)

	Royal Mail E2E	Access	Entrant bypass
CPMM (IP)	86	7	7
CPMM (FP)	77	21	3
EPM (September 2005)	73	23	5

Note: Shares correspond to the case of customer-product-weight step switching. Market shares do not add up to 100% due to rounding.

Source: CPMM and Oxera calculations.

As stated by Frontier Economics' January 2006 report *Which one?*, the final proposals version of the CPMM is more tilted towards the access solution rather than bypass. Indeed, a comparison of the market shares resulting from both versions of the CPMM suggests that the CPMM (FP) is predicting a significantly larger share of access (CDA and DA jointly), which comes at the expense of lower shares of entrant bypass and Royal Mail's E2E traffic. Furthermore, the resulting market shares from the CPMM (FP) are much more in line with those projected by Royal Mail's EPM than those used in Postcomm's initial proposals.

3 The geographical dimension

3.1 Cost differentials

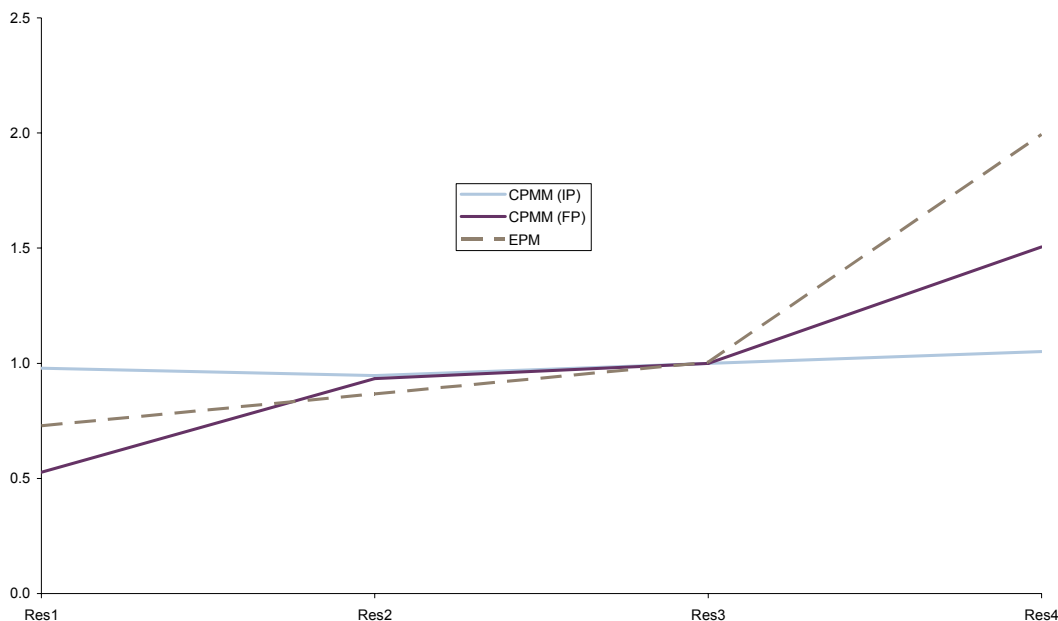
As mentioned in the previous section, the CPMM (FP) incorporates a new set of entrant E2E costs that are generally higher for most product routes, with the relatively large increases occurring in rural routes. The resulting new entrant E2E cost structure exhibits a more pronounced difference across delivery zones than the cost structure contained in the CPMM (IP).

To allow a comparison of the cost differences by zone between both versions of the CPMM and the EPM, the entrant E2E price—calculated as the sum of entrant upstream and

⁶ Ibid.

downstream costs plus a mark-up—for each Royal Mail route was considered. Figures 3.1 and 3.2 present the average entrant E2E price for different zones used in both versions of the CPMM and in the EPM. The figures illustrate the case of all relevant products in the 0–50g weight band, and prices have been normalised with respect to zone 3 (which is assumed to be equivalent to the national uniform price).⁷ Note that zone 5 entrant prices are much higher in CPMM (FP) than either CPMM (IP) or the EPM. Prices for this zone have not been included in the figures below because they relate to only 1% or so of the volumes, and therefore showing these in the two figures would tend to obscure the substantial differences in costs in the other zones, which contain 99% or so of volume.⁸

Figure 3.1 Average normalised entrant E2E prices (0–50g), residential areas

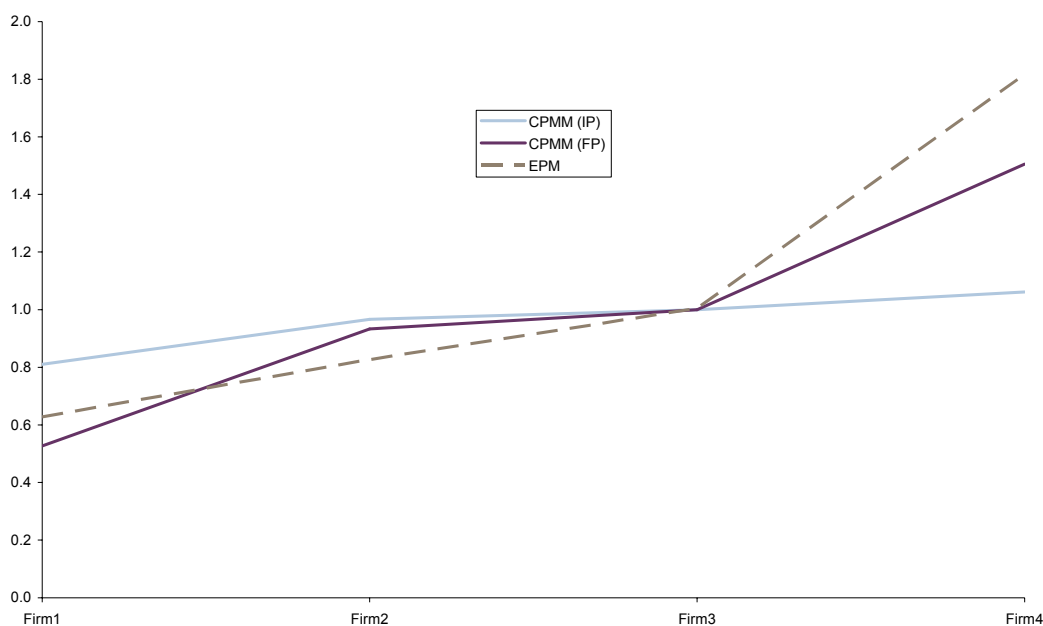


Source: Oxera calculations.

⁷ See, for example, Postcomm (2005), 'Royal Mail Price and Service Quality Review', final proposals for consultation, December 6th.

⁸ This is also in line with Frontier Economics' approach adopted in the CPMM, where the zone 5 E2E costs were not modelled explicitly. Indeed, zone 5 costs were overwritten in the CPMM and set at twice the comparable Royal Mail price to reflect the view that E2E entry would not be expected to take place in zone 5. Source: Frontier Economics (2005), 'Entrant Costs', report prepared for Postcomm, October; and Frontier Economics (2006), 'Market Share Analysis for Postcomm's Final Price Control Proposals', report prepared for Postcomm, January.

Figure 3.2 Average normalised entrant E2E prices (0–50g), business areas



Source: Oxera calculations.

Both figures show that the cost differentials by delivery zone have been substantially modified with respect to those of the initial proposals version. In particular, entrant E2E prices in zone 1 have been reduced, while prices for delivery to rural areas have been increased well above the national uniform price. For example, under the CPMM (FP), the E2E price for delivery to residential zone 1 is on average around 50% of the equivalent price for zone 3, while the E2E price for delivery to residential zone 4 is on average around 50% higher than the equivalent price for zone 3. In the CPMM (IP), residential zone 1 prices were equivalent to 98% of the zone 3 prices, while residential zone 4 prices were, on average, 5% higher than zone 3 prices. A similar picture emerges in the case of business zones. Indeed, business zone 1 prices are also on average equivalent to 50% of the equivalent price for zone 3, while delivery to zone 4 is on average 50% higher than delivery to zone 3. The corresponding CPMM (IP) figures were zone 1 prices around 80% of zone 3 prices, and zone 4 prices around 6% higher than zone 3 prices.

The direction of the change is consistent with the notion that delivery costs to urban and rural areas are markedly different, and that entrants are likely to choose to position their E2E networks in the cheapest and most profitable areas. Furthermore, both figures show that the resulting entrant E2E cost structure by zone is much closer to that considered by Royal Mail's EPM.

3.2 Effect of geographical dimension on pattern of entry

Having adopted a 'steeper' cost differential curve across delivery zones, it could be expected in principle that, other things equal, the CPMM (FP) would produce a larger effect on Royal Mail's volumes from entry driven by delivery zone differences than the CPMM (IP).

However, the model does not allow for the differential impact of entry (and types of entry) across zones to be assessed in a direct and transparent manner. For example, with the purpose of assessing the pattern of entry into a given delivery zone in the CPMM, the CPMM (IP) was run by stripping the volumes of all the relevant routes which did not contain that given delivery zone. This was then compared with the base case (ie, including all zones), which could be considered as representing the national average level and type of entry, to

assess how the CPMM (IP) dealt with entry in different delivery areas. The results of this exercise suggested that there were no significant variations in Royal Mail's and entrant bypass market shares across the zones implicit in the model compared with the national average.

A similar exercise was undertaken in the case of CPMM (FP). However, the analysis did not allow conclusions to be reached as to whether the CPMM (FP) produces a larger effect on the pattern of entry across zones than the CPMM (IP). Indeed, from this exercise, at the individual zone level, the model did not appear to achieve intuitive results. This could be explained, at least in part, by the new set of entrant costs used in the CPMM (FP) that incorporates scale effects, and by the way in which entrant (E2E and DA) and CDA prices are aggregated.⁹ An analysis of entry and type of entry for each individual geographical zone would seem to require recalibrating the model using a new set of costs that reflect the changes in scale across zones and types of product.

Furthermore, because of the approach adopted by the model that competition occurs for customers and their portfolio of mail products, a direct analysis of CDA entry in the different zones is not possible.¹⁰

4 Conclusions

The structure of the CPMM encompasses different stages with a view to calculating the post-liberalisation volumes and market shares. In the initial stages, the entrant decides whether to deliver the mail itself (ie, bypass) or use Royal Mail's access service on a route-by-route basis. However, this urban/rural distinction is present only at the early stages of the model. Before the remaining model calculations (including the proportion of CDA volume) are undertaken, the model proceeds with an aggregation process, which results in the distinction by delivery zone no longer being explicitly defined and effectively averaged out within those dimensions explicitly defined within the CPMM.

Although the CPMM (IP) accounted for some cost differences by delivery zone, these differences suggested that, based on entrant E2E price for each route, the extent of the cost differential between urban and rural routes was significantly smaller than the differentials considered in the EPM. A combination of relatively small cost differences by zones and the further averaging of these small differences produced results that suggested that the CPMM (IP) had a much smaller effect than the EPM from entry driven by urban–rural differences on post-liberalisation Royal Mail and entrant E2E volumes.

A number of changes were made to the CPMM (IP). Although the structure of the model has not been altered (including the approach of averaging routes), the CPMM (FP) incorporates a new set of entrant E2E costs that exhibits a more pronounced difference across delivery zones than the cost structure contained in the CPMM (IP). The direction of the change is consistent with the notion that delivery costs to urban and rural areas are markedly different, and that entrants are likely to position their E2E networks in the cheapest and most profitable areas. Furthermore, the new entrant E2E cost structure by zone used by the CPMM (FP) is much closer to that considered by Royal Mail's EPM. Since the model does not appear to

⁹ Prices are aggregated by calculating the relevant average price weighted by the corresponding volume in a given route. Therefore, changes in the proportion of volumes across zones would result in different aggregated prices, which in turn would affect the entry decision (ie, type and level of entry).

¹⁰ In the CPMM, the CDA entry decision is based on aggregated prices which do not explicitly consider the delivery zone dimension, unlike the DA/bypass entry decision that is made on a route-by-route basis.

allow for the differential impact of entry across zones to be assessed in a direct and transparent manner, a comparison of the pattern of entry by zone with the CPMM (IP) and the EPM becomes difficult.