Oxera

Funding universal service obligations in the postal sector

Prepared for

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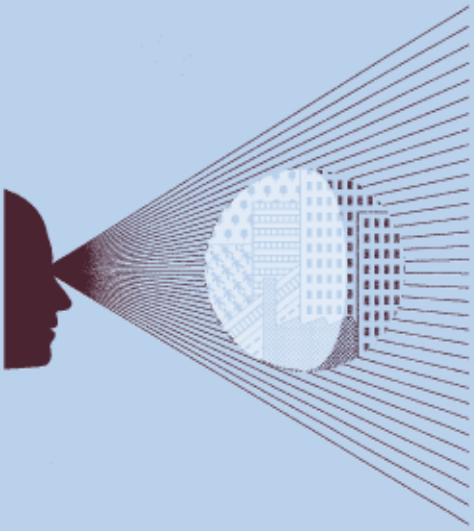

Executive summary

Background to the study

The European Commission intends to enable the European postal market to be fully open by January 1st 2009, as envisaged in the Postal Directive (2002/39/EC). In the Commission's view, the confirmation of this date will:

> allow the benefits of greater competition to improve service levels, in terms of quality, prices and choice available to consumers and to unlock the growth and employment potential of the sector. (CEC 2006b)

At the same time, the Commission considers it appropriate that universal service and the associated quality requirements set out in the Directive be maintained in full.

Within this context, the issue of financing the universal service becomes critical. This has been acknowledged by the European Commission and in the study undertaken for the Commission by PricewaterhouseCoopers (PwC 2006), which shows that, in some Member States, full market opening is likely to have a significant impact on the universal service provider's (USP) results.

In addition, the Commission identifies a number of flanking measures that countries could adopt to safeguard the provision of universal service under financially viable conditions in a competitive market. These measures, which are 'considered sufficient to make market opening possible' (CEC 2006b), include, for example, increasing the commercial freedom of the USP, implementing a cost-based access charge regime, and modifying the scope of the universal service obligation (USO).

In some markets, these flanking measures might reduce the burden of the USO such that further funding mechanisms would not be required; however, for many postal markets, such measures may be insufficient to finance the costs of providing universal service. The Commission has acknowledged the need for additional funding—indeed, it is currently proposing a set of alternative options to provide compensation. These include direct state subsidies, sector fees, compensation funds, or public tendering, although no formal analysis of the applicability of these mechanisms to the postal sector appears to have been undertaken.

Variations of these alternatives have been implemented across a number of countries and sectors that are subject to universal service-type obligations. However, the fact that some funding mechanisms have worked well in other sectors does not necessarily mean that they could work equally well in the postal sector. Therefore, how the USO in the postal sector may be funded in a further liberalised market is still a challenging question that deserves further consideration.

A number of attributes or criteria may influence the relevance of a mechanism to fund the USO, including whether the mechanism promotes efficiency, ensures fair competition, is proportional and transparent, and can be implemented in practice. While it is important to ensure that funding mechanisms are assessed against these criteria, the weight given to each is likely to vary across Member States, depending on the objectives and statutory duties of the regulatory authorities.

Against this background, Oxera has been commissioned by a group of European postal operators to undertake a detailed assessment of several alternative mechanisms to fund the USO, placing emphasis on their applicability to the postal sector.

The study begins by addressing issues surrounding how the USO may be preserved as further market liberalisation is introduced, including the measurement of the cost of the USO and its allocation. Although the focus of the study is on the funding mechanisms, the measurement of the cost of the USO is also considered, to the extent that it may have implications for the design and subsequent assessment of these mechanisms.

Furthermore, the study clearly defines a set of criteria that may be relevant for the different regulatory authorities. These criteria are used to assess the generic funding mechanisms and ultimately to determine their applicability to the postal sector. The mechanisms examined are as follows:

– reserved area;
– compensation funds of various forms;
– state funding;
– pay-or-play;
– access charge uplifts; and
– competitive tendering.

The assessment of each mechanism has been informed by a comprehensive academic literature review, as well as an extensive review of the experience with universal service-type obligations in the postal and other sectors (ie, energy, telecoms, and rail and air transport).

The USO funding problem under liberalisation

In a liberalised environment, governments and regulators may wish to preserve the USO—that is, to ensure that customers are able to access certain services on fair terms, irrespective of their geographical or other characteristics. This raises three fundamental questions regarding how, in practice, the USO may be preserved as the market is further liberalised:

– how much does the USO cost?
– who should provide the USO?
– how should the USO be financed?

Measuring the cost of the USO is a complex exercise in terms of both the theory behind the concept and the practicability of the methodologies available. Approaches that have been proposed and adopted in a number of sectors and countries have looked at the USO problem from different angles. Some have focused on the costs that an operator would avoid if it were not obliged by the USO to provide services to unprofitable routes/customers; others have focused on the forgone profits of the USP as a result of entry. Only under restricted circumstances would these methodologies provide a similar answer on what size of USO would need to be funded.

Because different USO cost methodologies can yield significantly different results, they can have important implications for the design of USO funding mechanisms, especially for mechanisms that rely purely on financing the USO from contributions within the industry.

Regardless of the methodology employed to measure the size of the USO cost, the fundamental objective of any funding mechanism is to restore the financial viability of the USP so that it can continue to provide the USO at current levels. This could be broadly interpreted as saying that, after taking into account the net subsidy from the funding mechanism and any flanking measures (including efficiency improvements that might have

been achieved by the incumbent), the USP's financial position post-liberalisation should ensure the full financing of the USO.

A related issue is the need to preserve the USO in the presence of legacy costs over which the USP has little or no room to manoeuvre. An example of legacy cost that is of particular relevance for a number of European postal sectors is the civil servant status of the USP's employees, which may restrict the ability of the USP to respond to competitive pressures. While it may be possible, conceptually, to construct a hypothetical model of the costs of the USO in a world where the USP does not face such legacy costs, this would not be a relevant consideration for the purposes of estimating the required funding to cover USO costs. Rather, the appropriate costs would depend on the size of the efficient costs borne by the USP. In principle, costs that are not controllable due to external factors, such as the civil service obligations, cannot be deemed inefficient from the USP's perspective.

With regard to the second question—who should provide the USO?—in the presence of market liberalisation, a regulatory authority would need to define clearly two key aspects:

– how to determine who should provide the USO and how it should be provided—should the USP be selected endogenously using a market mechanism, or determined exogenously by the regulator?;
– who should/can provide the USO—the incumbent operator, entrants, or all operators?

The answers will define which USO funding mechanism is relevant. Indeed, if the USP is selected using the market force mechanism, the incumbent or entrants, or both, could provide the USO. In this case, funding mechanisms, such as competitive tendering or 'pay-or-play', could become relevant to the analysis of how to finance the USO. Alternatively, if the regulatory authorities determine that the USO should be provided by the incumbent only, or shared between the incumbent and entrants, different funding mechanisms could become available, such as reserved area, compensation funds or access charge uplift.

Criteria for assessing the funding mechanisms

Any assessment of the effectiveness of alternative funding mechanisms in delivering universal service should be based on clearly defined criteria. Although the weight attributed to each criterion will depend on the specific objectives of each regulatory authority, the following criteria have been identified as being consistent with regulatory best practice.

– **Efficiency**—funding mechanisms should minimise distortions to economic efficiency, and, where possible, improve it. Three central aspects underpin the efficiency concept: allocative efficiency (the USP is able to charge prices that reflect the cost of delivering the service); productive efficiency (the services are delivered at the lowest possible cost); and dynamic efficiency (having incentives to innovate).

– **Competitive neutrality/fair competition**—for a mechanism to be competitively neutral, contributions that need to be raised to compensate for the net costs of providing universal service should avoid (or at least minimise) distortions to competition in the relevant market. That is, the mechanism should ensure that efficient entry in the relevant service market is not deterred, and inefficient entry is not promoted, and that operators assume a non-discriminatory share of the USO burden.

– **Social equity**—this refers to the concept of justice or fairness, and relates to whether a funding mechanism allows a similar price to be charged to customers with similar abilities to pay, and whether contributions are fair and reasonable.

– **Compatibility with state aid rules**—any mechanism that involves some form of government funding (direct or indirect) would need to comply with EU state aid rules.

– **Transparency and opposability**—the principles and functioning of a funding mechanism should be clear to all market participants, including their particular roles and responsibilities. Market participants and other stakeholders should be in a position to understand how the total level of funding is set; who contributes to funding the USO; and, where relevant, how the contribution of the market participants is determined.

– **Practicability**—the complexity of funding schemes and the information required for their administration should be kept to a minimum. The more complex the scheme is to administer, monitor and implement, the less likely it is that its objectives will be achieved and the more costly it will become to put in practice.

– **Proportionality**—a funding mechanism should, first and foremost, address the particular objectives it has been set to achieve (ie, to fund the USO) and should minimise distortions to economic efficiency and competitive neutrality in the postal and other related markets. Any arrangement should ensure that, at any point in time, it generates sufficient revenues to cover the net costs of providing the USO.

– **Certainty**—a funding mechanism that is certain is one that guarantees that the arrangements are sustainable (ie, the long-term availability of the universal service is guaranteed by enabling long-term investments in the system).

The remainder of this Executive Summary assesses each mechanism against this set of criteria, as well as its applicability to the postal sector.

Reserved area

This funding mechanism—the traditional approach to funding the USO in the European postal sector—works by creating a monopoly in particular services or products. With the monopoly in place, the operator can set a geographically averaged price without the threat of competitive entry. Consequently, the reserved area, when properly designed, enables cross-subsidisation between low- and high-cost consumers, with the losses made on high-cost consumers offset by the profits made on low-cost consumers.

There are several scenarios in which the reserved area might be expected to be an appropriate response to the USO funding problem, and when it may not. The reserved area scores well against the criteria of certainty and practicability. Moreover, given the low administrative costs, it would have the advantage of simplicity compared with other funding mechanisms. This measure is likely to be more appropriate when most of the competition that is precluded as a result of its introduction (continuation) is expected to be inefficient, cream-skimming[1] entry, rather than new entrants stimulating improved performance and innovation in the sector. Policy-makers who place weight on the guaranteed preservation of the existing form of the USO would be more likely to favour a reserved area. This mechanism is also likely to be more attractive in countries where there is a large cost discrepancy between delivering to a high-cost and a low-cost area, because the threat of cream-skimming entry in such countries is greater, and in countries where, if the alternative to be considered is general taxation, the efficiency of the tax system is relatively poor.

By contrast, policy-makers who place more weight on efficiency concerns, and have greater confidence that the type of entry that would otherwise be prohibited by the reserved area is likely to bring benefits to consumers, are unlikely to find the reserved area an attractive solution. This mechanism is also less likely to be economically desirable in cases where the

[1] Cream-skimming refers to the practice of selective sales to the most profitable (lowest-cost) customers.

marginal social cost of funds[2] is particularly low, and hence providing subsidies to the incumbent generates limited distortions throughout the rest of the economy.

Compensation funds

Compensation funds have often been used to finance the USO burden, for example, in the telecoms and electricity sectors (eg, in Australia, the USA, France and Canada). In the postal sector, compensation funds have also been considered, but their applicability has been more limited. In effect, the European Commission considers that compensation funds can be used to compensate the USP for any 'unfair financial burden' it has to incur in providing the USO (CEC 2006d, p.19).

General issues

Two key practical issues that often arise when setting up a compensation fund, and can have major implications for the analysis against the criteria, are:

– who should contribute to the fund and how should contribution rates be determined?
– how should the taxable base be defined so that sufficient funds are generated to cover the USO burden while distortions in the main or any related markets are minimised?

On the first point, funds can be obtained through taxes on operators or directly on consumers. Compensation funds funded with taxes on operators can take a number of forms: a tax rate can be applied to the revenues, profits, or the number of units sold (eg, the number of mail items delivered) by companies; alternatively, operators can be required to contribute a fixed sum of money towards the fund (ie, lump-sum taxes).[3] Despite the variety of alternative funding sources, in practice compensation funds funded with taxes on operator revenues have been the most widely used across a number of industries and jurisdictions, possibly because they are easier to implement than other forms of compensation fund.

Funds can also come from direct taxes on consumers in the form of levies on the units consumed (eg, a tax on mail items sent), or a lump-sum tax. However, the latter may have limited applicability in the postal sector where final consumers do not have to pay to access the network.[4] When taxes are imposed on operators, these are usually passed through to consumers, to varying extents. Hence, final customers contribute to the fund either directly or indirectly. The proportion of the tax burden borne by customers will vary depending on the structure of demand and other market characteristics.

In addition to deciding whether operators or consumers will contribute to the fund and the base of the contribution, it is necessary to determine whether entrants or both entrants and incumbents (or their customers) should be contributing to the fund. The answer would depend on whether the gross or net USO burden is financed. If gross costs are funded, both entrants and incumbents should be contributing to the fund. By contrast, if the net costs are to be financed, only entrants should be contributing to the fund; otherwise, the incumbent USP would be subject to 'double taxation'.[5]

[2] The marginal social cost of funds is likely to be low in countries where the efficiency of the tax collection systems and procedures is high.

[3] For illustration purposes, take the case of a sector where €100 was required to finance the gross costs of the USO and where there are two operators: the entrant and the USP. In the case of a lump-sum tax, each operator would be asked to contribute €50. For the other types of tax, a tax rate would be imposed on the operators' revenues, profits or units sold in order to raise the €100. Detailed examples of how each compensation fund funded with taxes on operators would operate in practice are provided in section 6.1.

[4] For instance, in the electricity sector, consumers have been asked to pay a fixed surcharge on their electricity bills independently of the number of units consumed. In the telecoms sector, it is common to charge a fixed amount for renting the telephone line, in addition to the cost of making a phone call.

[5] See sections 2.2 and 6 for a more detailed explanation of this point.

Once it has been established who should contribute to the fund, it is necessary to define the taxable base such that it is not:

– so narrow as to prevent sufficient funds being generated. A narrow tax base would affect the practicability, proportionality and certainty of the compensation fund, and could ultimately put at risk the viability of the USO, especially in countries where the USO burden is likely to be relatively large.[6] Although one way to generate additional resources with a narrowly defined taxable base would be to impose a high tax rate on entrants, this could make it more difficult for companies (as efficient as the USP or more efficient) to enter the market. This could therefore lead to productive and dynamic inefficiencies;

– too wide, which may risk distorting other (related) markets and tax some operators disproportionately. A wide tax base (eg, a tax on all revenues of a particular service) could risk taxing incumbents disproportionately, particularly if the proportion of areas where incumbents make losses is large. Moreover, entrants could be affected with a tax on total revenues if they offer many services that, in principle, should be outside the scope of the compensation fund's tax base.

One option which, at least in theory, addresses the issues identified above might be to include in the taxable base the services and geographic areas that provided the main source of funding during the pre-liberalisation period. Thus, for example, the revenues (or profits or units sold) that the USP and the entrants obtain from providing low-cost/high-margin services (eg, large-scale customers that send mail to low-cost routes) could be included in the taxable base and used to fund the costs of providing high-cost/low-margin universal services.

However, this definition of the taxable base may raise practical difficulties that should not be ignored, including the potential complications in defining the boundaries of which profitable services should be included in the taxable base. Similarly, it could lead to problems of certainty if the tax base becomes smaller over time, for example, because of competition from services outside the postal industry (eg, email, electronic billing), which cannot be taxed directly by the postal regulator.

The ways in which the funds for the compensation fund can be raised are assessed below against the criteria established earlier.

Revenue taxes

In terms of the assessment criteria, if the taxable base is not defined too narrowly, revenue taxes may score highly in terms of allocative, productive and dynamic efficiency, as well as competitive neutrality. This is because the tax burden that each operator has to assume would be relatively small, and therefore distortions to operators' costs—and, hence, pricing decisions—would be minimised. Moreover, provided that the taxable base is wide enough, revenue taxes might generate sufficient funds to cover the costs of the USO; hence, they may score highly in terms of proportionality and certainty.

Moreover, if the revenue tax rate is set at a level that compensates the incumbent for the lost profit caused by entry,[7] only operators as efficient as the incumbent would be in a position to enter the market. However, regulators should be careful in designing such taxes when there is scope for efficiency improvements from the incumbent. A tax that does not take into

[6] If insufficient funds are generated to cover the USO burden, in order to continue providing universal services, the USP would need either to increase overall prices, although this would undermine the affordability of the USO, or price-discriminate by charging higher prices to higher-cost consumers and lower prices to lower-cost consumers, although this would undermine the non-discrimination principle of the USO and might also go against the affordability principle.

[7] This type of tax has been defined in the economic literature as the efficient component pricing rule (ECPR) tax. The ECPR-type tax is set at a level equal to the profit margin of the incumbent on those units it loses to entrants.

account these improvements would risk 'locking in' existing inefficiencies and potentially taxing entrants disproportionately.

Revenue taxes could face problems in terms of practicability. It may not be easy to identify the operators that will contribute to the fund (eg, those offering low-cost services). Moreover, the revenues generated from the services included in the taxable base might not be easily monitored, particularly in countries where the regulator does not have strong powers, or where the costs of monitoring and ensuring that revenues are measured reasonably are high. There could also be practicability problems when defining the boundaries of the profitable segment that would be required to contribute.

Indeed, evidence from the case studies suggests that, when implementing revenue taxes, further challenges might arise. For instance, the Italian postal sector case illustrates the problems of using a narrow revenue tax base. Although all postal operators should contribute to the compensation fund, monitoring the eligible revenues has proved challenging.

Profit taxes

As with revenue taxes, if the taxable base is not defined too narrowly, taxes on profits may score highly on a number of criteria (including efficiency and competitive neutrality). However, the practicability problems that may arise in relation to compensation funds funded with revenue taxes might be more serious in the case of profit taxes.

A profit tax approach might be more likely to be subject to uncertainty, in the sense that the use of profit taxes may lead to difficulties in allocating the funding requirements across operators due to the risk of inconsistent accounting policies being adopted. This problem is not as prevalent under alternative funding mechanisms.

Lump-sum taxes on operators

Although lump-sum taxes would score relatively highly in terms of allocative efficiency since they would tend to be less distortionary than revenue, profit and unit taxes, they may face problems in relation to other criteria. Such problems result from the difficulty in identifying ex ante the number of operators that would be included in the taxable base (especially, the number of entrants) and, hence, individual contributions. Moreover, unlike other forms of tax where the total contribution changes with the scale of operation, this may not be the case with a lump-sum tax.[8] Therefore, if entrants' lump-sum taxes are set too high, entry into the market could be discouraged and productive efficiency affected.

As a result, lump-sum taxes may receive a relatively low score in terms of practicability, proportionality and certainty. In the course of the research, Oxera has not identified any cases where lump-sum taxes on operators are used to fund the USO burden, which may be an indication of the serious practicability problems that are associated with this funding mechanism.

Unit taxes

The USO has been funded through unit taxes in a number of cases, especially in the US energy sector. In practice, these taxes have taken the form of surcharges per unit of electricity (or gas) consumed by customers.

As with revenue taxes, unit taxes may score highly in terms of productive and dynamic efficiency so long as they maintain a level playing field between operators.

[8] In the case of revenue, profit or unit taxes, for example, an entrant with a small amount of mail volume would pay, in absolute terms, less tax than another entrant with higher mail volumes.

However, unit taxes may be challenging to implement, especially in countries where precise data on postal traffic is not available. This problem can be overcome if adequate statistical methods for estimating volumes are employed. In addition, as with other types of compensation fund, the regulator would need to have the legal powers and capacity to provide adequate monitoring of postal traffic and the funds going into the compensation fund in order to ensure the necessary funding in both the short and long term—ie, to meet the criteria of proportionality and certainty.

If volumes can be measured relatively easily, the use of unit taxes is less likely to be problematic. The exception would be countries with few letters per person, where a higher unit tax is likely to be required than in countries where the scale is larger. This could compromise the affordability of the USO and the proportionality of compensation funds funded with unit taxes.

State funding

An alternative funding mechanism is through (direct or indirect) government transfers. This would be particularly suited to countries where the USO burden is high compared with the funds that could be raised, for example, from taxes imposed on operators or their customers.

Depending on the efficiency of a country's taxation system, state funding can score highly in terms of efficiency and competitive neutrality. By funding the USO with general taxes—effectively spreading the tax burden over a wider base—the welfare loss would be lower than if the taxes were levied on postal operators or their consumers only. Moreover, competition in the market is unlikely to be distorted since firms do not have to assume (directly) the USO burden. Finally, if government subsidies are funded via progressive taxes, this funding mechanism could be more socially fair and equitable.

However, care needs to be taken when estimating the net costs borne by the USP as a result of the USO. If, for instance, the USP is over-compensated, state funding might create a negative impact on competition in the markets where the USP is active—the operator might use the extra revenues to subsidise the prices of certain services.[9] Moreover, as the government may play the dual role of investor and supervisory body, state funding may raise transparency and opposability issues in relation to the way costs are calculated and funds are administered.

Any transfer of state resources may lead to a state aid investigation. To comply with state aid regulations, state funding would need to satisfy the four criteria established in the *Altmark* case.[10] In effect, state funding has been investigated on a number of occasions in the postal sector.[11]

Furthermore, while state funding of the USO may remove the costs of identifying which operators or consumers of postal services should contribute and what their level of contribution should be, it might nevertheless be subject to discretionary political decisions. Indeed, it may be the case that the implied requirement to raise taxes and the government's fiscal position lead to state funding of the USO being politically infeasible.

[9] See, for example, the UFEX case. CEC (1998), p. 37; and CFI (2006).

[10] Case C-280/00 *Altmark Trans GmbH and Regierungspräsidium Magdeburg v Nahverkehrsgesellschaft Altmark GmbH* [2003] ECR I-7747.

[11] This includes, for example, the cases of UFEX (CEC 1998), UK Post Office Ltd (CEC 2005a), and Poste Italiane (CEC 2006a).

Pay-or-play

This is one of the more sophisticated mechanisms available, as it combines the question of how the USO should be funded with that of who the USP should be.

The pay-or-play approach to funding the USO has the same starting point as a compensation fund: in order to fund the supply of the product to the high-cost areas at an affordable (and most often) geographically averaged price, those who only deliver in low-cost areas need to pay into some form of compensation fund. However, in contrast to a standard compensation fund, where there is only one defined (normally exogenously determined) USP, under a pay-or-play mechanism, more than one company can decide to 'play' in the high-cost area. As a result of 'playing' the requirement on the company to 'pay' into the fund is then reduced/ eliminated.

Two main versions of this funding mechanism can be envisaged:

– a 'discrete' version, in which the choice of whether to pay or play is absolute—if entrants decide to play, they must play entirely (eg, deliver mail to every high-cost region in the country);

– a more 'continuous' version of the model, in which the extent to which an entrant decides to play in the high-cost areas alters the extent to which it is required to pay into the fund.

The attraction of this mechanism derives largely from the fact that it allows competition for 'high-cost' USO customers. Hence, if correctly designed, it scores well against the criteria of (productive) efficiency and fair competition. Furthermore, relative to other funding mechanisms that also attempt to introduce the 'allocation' question into the USO funding approach (namely, auctions/tenders), the pay-or-play mechanism could be envisaged in the postal market.

Nonetheless, the relative sophistication of this approach means that it might receive a relatively low score in terms of practicability. Moreover, concerns may be expressed about the transparency of the mechanism, as well as its certainty. This is arguably reflected in the fact that Oxera's research was unable to uncover an example where the pay-or-play mechanism had been implemented in (close to) the pure forms discussed above.[12] In particular, the determination of the tax rate(s) within the approach is likely to be particularly important and challenging given that the choice determines not only the extent of USO funding provided by entrants, but also the decision of entrants to compete in the high-cost area.

Given these trade-offs, the pay-or-play mechanism has some merit in contributing to funding USO mechanisms in the postal sector. Its appropriateness is likely to depend on the specific country characteristics. In particular, pay-or-play is more likely to be a viable USO funding option in countries where:

– the size of the USO is large—and hence where the benefits from introducing the potential for competition in the high-cost area are likely to outweigh the possibility of high monitoring/administrative costs;

– the regulatory capacity has previously been demonstrated to be high—and hence incumbents and entrants can be confident that the relatively 'complicated' pay-or-play rules would be monitored and enforced where necessary.

[12] The example of the postal sector in Finland discussed in section 8 below is not a 'pure' case of pay-or-play because the funds derived from paying are not used to fund the USO.

Access charge uplift

This mechanism works by imposing a tax on the wholesale access charge that entrants would pay the incumbent for using its network to deliver mail. In practice, the access charge would be increased or uplifted by an amount or percentage, the proceeds of which would be used to finance the USO costs faced by the USP.

The access regime could be established in one of two forms:

– **bypass of the incumbent's network is prohibited**—this access regime can be seen as a special case of a reserved area for delivery. Potential entrants would be prevented from providing an end-to-end service (ie, a service involving self-provision of mail collection, sortation, transportation and delivery, which effectively bypasses the incumbent's network) and, hence, they would be obliged to use the incumbent's delivery network to provide mail services;

– **bypass is allowed**—competition in delivery is allowed and potential entrants could, if they find it profitable to do so, provide end-to-end services.

Regardless of the access regime in place, access charge uplifts can be a relatively simple and transparent USO funding mechanism to implement in the postal sector only if an access charge regime is already in place. However, how it performs against the other criteria depends on the particular type of regime that is in place.

Where bypass is prohibited, it would be possible to set an access charge uplift that allows full recovery of the USO cost—either entrants will pay this new, higher access charge, or they will exit (or not enter) the market, in which case the incumbent's original source of USO funding would be less affected. Prohibiting bypass would therefore seem to score highly against the certainty criterion, although this needs to be balanced against the introduction of other distortions that may result, such as productive inefficiencies (eg, preventing entry of efficient operators) and dynamic inefficiency due to a less competitive industry.

In this respect, there are similarities between the reserved area funding mechanism and access charge uplift with prohibited bypass. Prohibiting bypass would be equivalent to imposing a reserved area in delivery. Therefore, as mentioned above in the case of the reserved area, this funding mechanism is likely to be more appropriate in countries where the scope for efficient entry is limited. It is worth noting, however, that a reserved area in delivery still allows competition in the upstream segment of the market, and is therefore likely to score better in terms of productive and dynamic efficiency, as well as competitive neutrality, than a standard reserved area.

When bypass is allowed, severe certainty problems could occur if the tax base (ie, the access revenues) is too small, as is likely to be the case when uplifted access charges make end-to-end entry more attractive. In that sense, in countries where bypass is possible and entrants are more likely to adopt end-to-end provision as an entry strategy, access charge uplift would not be an appropriate USO funding mechanism.

An additional consideration is the type of access charge. Two types of access charge can be in place:

– **uniform access charge**—the same access charge for delivery in all regions;

– **zonal access charge**—regional access charges based on the delivery costs of each region.

Given that the zonal charge involves setting cost-oriented access charges, and that, by assumption, the uniform access charge is above the actual delivery costs in the low-cost, profitable areas (where entry is more likely), access revenues are likely to be higher with

uniform charges than zonal charges when bypass is prohibited. However, when bypass is allowed, uniform access charges may lead to inefficient bypass (ie, excessive end-to-end provision) compared with cost-based zonal access charges. This is because they would send the wrong 'build-or-buy' signals to potential entrants—observing relatively high uniform access charges (the 'buy' option), potential entrants might be induced to invest in their own network (the 'build' option) in order to provide end-to-end services, even when they are less efficient than the incumbent. Not only would this result in productive inefficiency, but also access revenues (the tax base to fund the USO) would be more likely to decrease.

Competitive tendering

An alternative policy where the designation of the USP becomes part of the funding mechanism is competitive tendering or franchise bidding.[13] Competitive tenders could be designed as 'reverse auctions', which would entail potential operators submitting a bid for the subsidy they would require to fulfil the USO, such that the winner is the operator asking for the lowest subsidy. Alternatively, the auctioneer defines the amount of subsidy, and the operators compete on the extent of universal service provision for that subsidy, such that the winner is the operator bidding for the maximum USO provision.

To gain the maximum benefits from an auction, its design is very important. This would depend on the general conditions of the universal service and on the characteristics of the sector in question (eg, technology, number of potential stakeholders, etc). The appropriate design of universal service auctions is beyond the scope of this report.

Competitive tendering has the potential to score well in terms of efficiency and competitive neutrality, as it could ensure that the USO is assumed by the most efficient operator to be at, or close to, the minimum efficient cost. Inefficient firms, if they bid at all, would be unlikely to win. Thus, this mechanism could lead to a reduction in the amount of subsidy required to ensure USO provision.

However, the efficiency and competitive neutrality properties are contingent on the auction design and market characteristics. If the regulatory authorities are unable to prevent collusive behaviour among the bidders and/or reduce the incumbent operator's informational advantages over other bidders, competitive tendering may not ensure efficiency or fair competition. Whether this problem is likely to arise depends both on the sector/industry characteristics and on the particular form of auction used.[14] Auction design is not 'one size fits all'.

To further assess the relevance of competitive tendering in the postal sector, three potential models were considered.

– Contracting out—operators would bid to provide collection and delivery services in local (rural) areas, which would be outsourced by the USP.

– Regional franchise without exclusivity—under this model, a country would be split into a number of franchised regions, which might include both high- and low-cost areas. Within each franchise, the winning bidder is the sole provider of the USO, but other operators (including winning bidders of other regions) would be allowed to compete with the USP—that is, end-to-end bypass would be possible.

[13] Throughout this report the terms 'franchise bidding', 'competitive tendering' and 'auction' are used interchangeably.

[14] A potential solution to the problem of strategic behaviour is the use of a reservation price, which could be based on an estimated universal service cost to the current USP of serving the area. However, the specification of the reservation price is not without difficulties, again requiring the regulatory authority to evaluate the costs of the USO.

– National tender—under this model, operators compete for the national provision of the USO. In addition, operators are allowed to compete with the winning USP for some areas of the market.

The three models would need to overcome some significant practical obstacles in order to render them applicable to the postal sector. For example, the regional franchise model would require:

– an adequate definition of the regional areas, such that imbalances between regions are minimised;
– interoperability of services between different regions; and
– establishing how a franchisee would be compensated for delivering mail originated outside its franchise area (ie, access charges).

Furthermore, the regional franchise model would not be able to ensure uniformity of prices across regions.[15] As such, this model may not be appropriate in cases where the regulatory authorities intend to avoid geographical price differentials.

The national tender model would share similar features to those mentioned above. Relative to the other two models, the problem of incumbency advantages is more likely in this model. Indeed, it is unclear whether, owing to these advantages, this model would result in a franchisee other than the incumbent winning the franchise to provide the USO.

A feature common to all three models is that they could score well in terms of efficiency. However, as with all forms of competitive tendering, this would depend on whether the tenders have been designed such that collusive behaviour between the bidders has been avoided, and incumbency advantages have been adequately addressed. This aspect is likely to be relevant for the application of this particular approach to the postal sector.

Furthermore, none of the three models is a funding mechanism in itself, and as such none can guarantee that, in the long run, sufficient funds would be available to safeguard the provision of the USO. At best, these models could help reduce the 'size' of the funding problem.

Concluding remarks

In the context of further market liberalisation in the postal sector, the compatibility between competition and the provision of universal service raises a number of regulatory policy questions that need to be addressed before the market is further liberalised. In particular, key issues include how to define and measure the cost of the USO, how it should be financed, and a quantitative analysis of the country-specific funding needs.

This study assesses several mechanisms that could be used to fund USO provision. Many of the mechanisms considered have been adopted in other sectors and jurisdictions with universal service-type obligations, and have been proposed by the European Commission as alternatives to the reserved area for the postal sector in order to finance any required net cost of the USO.

However, as demonstrated by the analysis in this report, the fact that some funding mechanisms have worked adequately in other sectors—including those proposed by the Commission as alternative options to the reserved area—does not mean that they would be equally adequate when applied to the postal sector. Not only might the specificities of the postal sector condition the applicability of a given mechanism, but also the characteristics of

[15] Unless price uniformity is imposed as a requirement for every item of mail collected and sent by an operator both within and outside its franchised region, which would effectively mean imposing the USO nationally on all franchisees.

a given national market could further influence the relevance of a mechanism as a means to safeguard the provision of universal service.

In addition to the market-specific characteristics, the overall balance of a given mechanism would be conditional on the specific objectives of the regulatory authority. As discussed in the report, the relevance of a given mechanism would require the different criteria to be weighted by taking into account the statutory duties and objectives of the government/ regulatory authorities. For example, some regulators whose main duty is the promotion of competition may place more weight on the performance of a mechanism against the criteria of efficiency and competitive neutrality, while a regulator whose main duty is to safeguard the universal service may place more weight on the proportionality and certainty criteria.

To the extent that the promotion of fair competition and efficiency are the main concerns of the regulator, a number of funding mechanisms could in principle ensure neutrality, although, in practice, this will be significantly influenced by the overall size of the funding mechanism. Subject to this, mechanisms such as compensation funds funded by lump-sum taxes or some forms of revenue and unit taxes, as well as pay-or-play mechanisms, could, in principle, meet the need for competitive neutrality and efficiency. However, the reserved area and access charges with prohibited bypass are less likely to be attractive where the promotion of entry is a priority for the authorities.

The analysis in this report shows that if regulatory authorities value certainty above any other consideration, the reserved area is likely to score particularly highly, while mechanisms such as compensation funds funded with profit tax, uniform access charge with allowed bypass, and forms of competitive tendering that auction the provision of the USO on a regional or national basis are likely to receive a low score.

Moreover, if practicability is a key consideration of the regulatory authorities then the reserved area, access charges and, to a certain extent, state funding could provide an attractive solution. Similarly, compensation funds funded with revenue taxes have the potential to score well against this criterion, depending on how the tax base is defined. By contrast, mechanisms such as competitive tendering are unlikely to score well against this criterion.

Therefore, the question of which mechanism is the most relevant to the postal sector is empirical, and one that may differ from country to country.

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1 Introduction

The European Commission intends to enable the European postal market to be fully open by January 1st 2009, as envisaged in the Postal Directive (2002/39/EC). In the Commission's view, the confirmation of this date will:

> allow the benefits of greater competition to improve service levels, in terms of quality, prices and choice available to consumers and to unlock the growth and employment potential of the sector (CEC 2006b).

At the same time, the Commission considers it appropriate that the universal service and the associated quality requirements set out in the Directive be maintained in full.

Within this context, the issue of financing the universal service becomes critical. This has been acknowledged by the European Commission and in the study undertaken for the Commission by PricewaterhouseCoopers (PwC 2006), which shows that, in some Member States, full market opening is likely to have a significant impact on the universal service provider's (USP) results.

In addition, the Commission identifies a number of flanking measures that countries could adopt to safeguard the provision of the universal service under financially viable conditions in a competitive market. These measures, which are 'considered sufficient to make market opening possible' (CEC 2006b), include increasing the commercial freedom of the USP, implementing a cost-based access charge regime, and modifying the scope of the universal service obligation (USO).

In some markets, these flanking measures might reduce the burden of the USO such that further funding measures would not be required; however, for many postal markets, such measures may be insufficient to finance the costs of providing universal services. The Commission has acknowledged the need for additional funding—indeed, it is currently proposing a set of alternative options to provide compensation. These include direct state subsidies, sector fees or compensation funds, or public tendering, although no formal analysis of the applicability of these mechanisms to the postal sector appears to have been undertaken.

Variations of these alternatives have been implemented across a number of countries and sectors that are subject to universal service-type obligations. However, the fact that some funding mechanisms have worked well in other sectors does not necessarily mean that they could work equally well in the postal sector. Therefore, how the USO in the postal sector may be funded in a further liberalised market is still a challenging question that requires further consideration.

A number of attributes or criteria may influence the relevance of a mechanism to fund the USO, including whether the mechanism promotes efficiency, ensures fair competition, is proportional and transparent, and can be implemented in practice. While it is important to ensure that funding mechanisms are assessed against such criteria, the weight or importance given to each is likely to vary across Member States, depending, for example, on the objectives and statutory duties of the regulatory authorities.

Against this background, Oxera has been commissioned by a group of European postal operators to undertake a detailed assessment of several alternative mechanisms to fund the USO, placing particular emphasis on their applicability to the postal sector.

The study begins by addressing issues surrounding how the USO may be preserved as further market liberalisation is introduced, including the measurement of the cost of the USO

and its allocation. Although the focus of the study is on the different funding mechanisms, the measurement of the cost of the USO is considered to the extent that it may have implications for the design and subsequent assessment of these mechanisms. In addition, section 3 considers briefly some flanking measures that have been discussed by the European Commission.

Section 4 defines a set of criteria that may be relevant for the different regulatory authorities. These criteria are used to assess the different generic funding mechanisms and ultimately to determine their applicability to the postal sector.

Sections 5 to 11 consider the funding mechanisms examined by this study, as follows:

– reserved area;
– compensation funds of various forms;
– state funding;
– pay-or-play;
– access charge uplifts; and
– competitive tendering.

In each section, the funding mechanism is described, with numerical examples provided to illustrate how it might work. In addition, the mechanism is assessed against the set of criteria. This assessment has been informed by a comprehensive academic literature review, as well as an extensive review of the experience with universal service-type obligations in the postal and other sectors (ie, energy, telecoms, railways and air transport). A separate appendix provides further details on the case studies considered in this report.

Section 11 summarises the main findings and concludes.

2 The USO funding problem under liberalisation

In a liberalised environment, governments and regulators may wish to preserve a universal service—that is, to ensure that customers are able to access services on fair terms irrespective of their geographical or other characteristics. This raises a number of fundamental questions regarding how, in practice, the USO may be preserved as competition is introduced:

– how much does the USO cost?
– who should provide the USO?
– how should the USO be financed?

As mentioned in the introduction, this study focuses on the third question—how the USO is to be financed. It also considers the second question to the extent that a number of the options for financing the USO are linked to the selection of the USP (eg, through competitive tendering).

Measuring the cost of the USO, however, falls outside the scope of this study. Nevertheless, recognising that estimating the size of the USO cost is a fundamental element of any USO policy, it is important to discuss briefly the methodologies used to estimate the USO cost and analyse their implications for the design and assessment of the funding mechanisms.

2.1 How to measure the cost of the USO?

The methodology used most widely for estimating the cost of the USO, particularly in the telecoms sector, has been the net avoided cost (NAC) approach. In essence, this requires the identification of unprofitable routes or groups of customers that a profit-maximising operator would not serve, were it not obliged to do so by the USO. To identify these, an incremental cost test is applied to each route or customer group served by the USP. The sum of the net losses (incremental revenues less incremental costs) from those routes/customer groups that fail the test is the NAC of the USO.[16]

The application of the NAC methodology in a liberalised environment has been criticised on many fronts.[17] Most of the problems stem from the fact that it is a static approach, which implicitly assumes that there are no other structural changes in the market post-liberalisation. In other words, since the NAC approach uses information on the existing market structure, costs and price levels, the estimated USO cost under the NAC approach is always the same, regardless of the nature of competition post-liberalisation.

More sophisticated approaches therefore rely on making assumptions about the financial position of the USP post-liberalisation. This requires, for example, predicting the scale of entry and how the incumbent would react to entry under a hypothetical scenario where the USO has been removed.

From a theoretical perspective, Panzar (2000) points out that any USO costing exercise should start from the specification of an unsubsidised market scenario that would prevail in the absence of a USO. In this benchmark scenario, the USP's financial position would then

[16] Losses from loss-making services that are provided for reasons other than the USO would have to be deducted from this estimate.
[17] See, for example, Panzar (2000), Cremer et al. (2000), Rodriguez et al. (1999), and Bradley and Colvin (2000).

need to be compared against its position following the introduction of the USO. This methodology is consistent with the European Commission's stance:

> the net cost of universal service is to be calculated […] as the difference between the net costs for a designated undertaking operating with the universal service obligations and operating without the universal service obligations (CEC 2006b)

Under this methodology, two elements would need to be calculated:

– the *net incremental costs* associated with extending the service(s) to the group of users and/or regions that were not receiving them before the introduction of the USO;[18] and

– the *forgone revenue* costs resulting from the USO if, for example, it requires the price paid by all users to be lowered, as well as coverage to be extended to a new group of users.

The *profitability cost* of the USO, a methodology proposed by Cremer et al. (2000), shares the principles of the approach proposed by Panzar (2000). Similarly, the *entry pricing* (EP) approach, proposed specifically for the postal sector by Rodriguez et al. (1999), also takes into account market conditions after liberalisation. Below, these two methodologies are discussed and contrasted with the NAC approach.

2.1.1 The profitability cost methodology

The profitability cost of the USO, as proposed by Cremer et al. (2000, p. 52), can be defined as the loss in profits incurred by the operator due to the USO. In other words, it measures the 'burden' that the USO imposes on the operator.

Under a regulated monopoly where prices are set such that a profit level is specified (scenario *m*), the profitability cost of the USO is essentially zero. The USP can break even through internal cross-subsidies and there is no need for an external USO subsidy. When the market is liberalised, however, the profitability cost can be obtained by comparing the profits of the USP under a scenario where it faces competition and the USO has been removed (scenario *cc*), against the profits under a scenario where it also faces competition but the USO is still in place (scenario *cu*).

Scenario *m* is not directly relevant for the calculation of the profitability cost because, as stated by Cremer et al. (2000), measuring the USO cost—and hence, the financing needs of the USP under liberalisation—requires the incremental effects of introducing the USO to be estimated, assuming that the starting point is a scenario where the market has already been liberalised but there is no USO in place (scenario *cc*). Otherwise, if the starting point for the incremental effects calculation were the current scenario *m*, the USO cost estimate would also be picking up information on the effects of liberalisation, in addition to the cost of the USO per se. (See Box 2.1 for a more formal analysis.)

[18] Net incremental costs are calculated as the difference in total costs before and after the introduction of the USO, net of the revenues obtained from the new users.

Box 2.1 Estimating the profitability cost of the USO

Formally, USO_{π}, the profitability cost of the USO under liberalisation, can be defined as:

$$USO_{\pi} = \pi^{cc} - \pi^{cu} \quad \text{Equation 1}$$

To understand why comparing the profits after liberalisation (π^{cu}) against the existing monopoly profits (π^{m}) would not be the correct approach, note that:

$$\pi^{m} - \pi^{cu} = (\pi^{m} - \pi^{cc}) + (\pi^{cc} - \pi^{cu}) \quad \text{Equation 2}$$

where the first term on the right-hand-side ($\pi^{m} - \pi^{cc}$) is the cost of liberalisation, while the second term ($\pi^{cc} - \pi^{cu}$) is the profitability cost of the USO, as defined by Cremer et al (2000).

Cremer et al (2000) also highlight that the profitability cost approach implicitly takes into account any benefits associated with providing the USO, as these would be picked up through higher profits in scenario *cu*. This is consistent with the European Commission's stance, which states that:

> the calculation shall take into account all other relevant elements, including any market benefits which accrue to an undertaking designated to provide universal service (CEC 2006b)

The implication of the above analysis is that there is a case for compensating an incumbent for reduced revenues or increased costs which arise from any non-neutral application of the USO, while there is no such case for compensation due simply to the effects of efficient entry by competitors.

2.1.2 The entry pricing methodology

An additional approach to the estimation of the USO cost under liberalisation is entry pricing (EP). According to this methodology developed by Rodriguez et al. (1999), the USO cost is measured as: 'the sum of the losses of revenue from each of the competed routes after new entry at the lower prices less the impact on the incumbent's costs'. In other words, this approach measures the forgone contribution as a result of entry.

When the incumbent's response to entry does not involve a change in its uniform price—ie, it simply accommodates entry and continues to price at the pre-liberalisation uniform rate—the EP approach would be equal to the profitability cost of the USO plus the effect of liberalisation. However, when the response of the incumbent following entry involves a reduction in the uniform price it charges for both the profitable (ie, competed) and unprofitable routes, then, all else equal, USO_{EP} is likely to be smaller than USO_{π}. This is because, given that it focuses on the reduction in net profits on the profit-making routes only, USO_{EP} would not take into account the reduction in net profits on the loss-making routes (see Box 2.2 below for a formal discussion of these findings).

The EP measure of the USO cost is also closely linked to the NAC approach. If, following liberalisation, the incumbent loses all profit-making routes to the entrant, it is possible to show that USO_{EP} would be larger than USO_{NAC} by an amount equivalent to the fixed common costs of the incumbent (see Box 2.2).

Box 2.2 The EP approach and comparison with the profitability cost

Formally, the EP USO cost, USO_{EP}, can be measured as:

$$USO_{EP} = \sum_{i}^{n}(R_{mi} - R_{ci}) - [C_m(Q_m) - C_c(Q_c)] \quad \text{Equation 3}$$

where:

– n is the number of routes on which entry occurs;
– R_{mi} and R_{ci} are the revenues obtained on route i before entry (m) and after entry (*c*), respectively;
– C_m and C_c are the total costs of the USP before and after entry, respectively.

When the incumbent's response to entry does not involve a change in its uniform price, the EP approach would be equal to the profitability cost of the USO plus the effect of liberalisation. To see this, note that:

$$USO_{EP} = \pi^m - \pi^{cu} = USO_{\pi} + (\text{cost of liberalisation}) \quad \text{Equation 4}$$

Because USO_{EP} focuses only on routes where entry has occurred, Equation 4 may hold if the incumbent responds to entry by reducing the uniform price it charges for both profitable and unprofitable all routes, which would affect the profits of loss-making routes as well.

Nevertheless, if the EP methodology is interpreted more broadly—which, in Equation 3, would require estimating the change in *total* revenues after liberalisation (including routes on which entry has not occurred but the price has fallen due to the incumbent's competitive response)—then Equation 4 is a valid expression showing the relationship between USO_{EP} and USO_{π}.

The EP measure of the USO cost is also closely linked to the NAC measure. If, under the monopoly scenario, the operator is breaking even, the net profits from profit-making routes (revenues minus incremental costs, $R^P - C^P$) minus the net losses on loss-making routes (incremental costs minus revenues, $C^L - R^L = USO_{NAC}$) will be equal to the common fixed costs of serving all routes (F):

$$(R^P - C^P) - USO_{NAC} = F \quad \text{Equation 5}$$

Moreover, if, after liberalisation, the entrant is assumed to take over all profit-making routes from the incumbent, the total net profits from these routes would be the EP cost of the USO, and Equation 6 then holds:

$$USO_{EP} = USO_{NAC} + F \quad \text{Equation 6}$$

In other words, in the presence of fixed common costs and when the total net profits from profit-making routes are lost to the entrant, the NAC approach would underestimate the EP cost of the USO by an amount equal to the common fixed costs of the incumbent operator.[19] However, when only a proportion of the profits from profit-making routes is lost to the entrant, the NAC approach might result in a higher estimate of the USO cost than the EP approach.

2.2 Implications for the design and assessment of funding mechanisms

As the previous discussion has shown, measuring the cost of the USO is a complicated exercise in terms of both the theoretical underpinnings of the concept and the practicability of

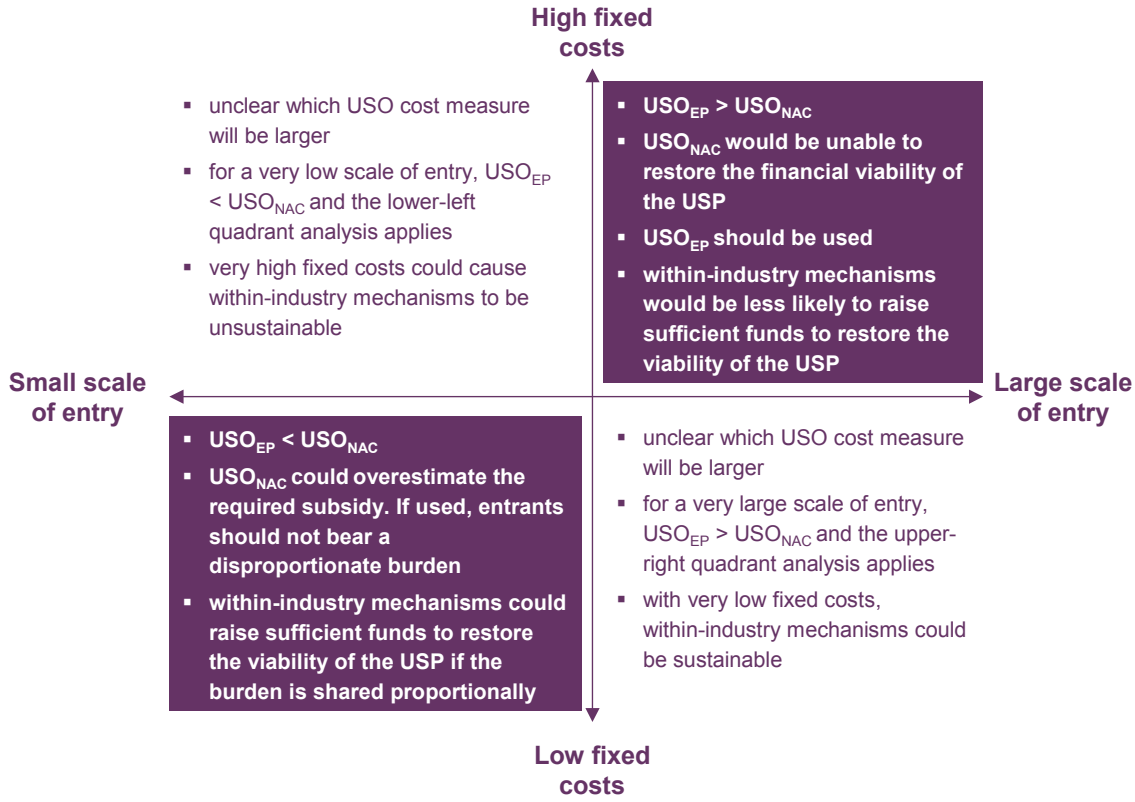
[19] See Bradley and Colvin (2000).

the methodologies available—particularly with more sophisticated measures that require assumptions to be made about hypothetical scenarios post-liberalisation.

Regardless of the methodology employed to measure the size of the USO cost, the fundamental objective of any funding mechanism is to restore the financial viability of the USP so that it can continue to provide the USO at current levels. This could be broadly interpreted as saying that, after taking into account the net subsidy from the funding mechanism and any flanking measures—including efficiency improvements that might have been achieved by the incumbent—the USP's financial position post-liberalisation should guarantee the full financing of the USO.

In that sense, because different USO cost methodologies can yield significantly different results, they can have important implications for the design of USO funding mechanisms. Figure 2.1 shows the potential impact of two variables—the size of fixed common costs and the scale of entry post-liberalisation—for the NAC and EP cost measures. Similarly, some of the implications for the design of USO funding mechanisms in each scenario are analysed.

Figure 2.1 Defining the cost of the USO



Source: Oxera.

Figure 2.1 highlights the importance of the size of fixed common costs. When fixed costs are high, funding mechanisms that raise money from within the industry would be less likely to restore the financial viability of the incumbent post-entry. This is because, although before liberalisation the incumbent breaks even, the total profits in the market after liberalisation could fall short of the break-even point by an amount equal to (or higher than) the entrant's fixed entry costs.

For example, if the entrant does not expand the size of the market, total industry revenues post-entry can only be as high as they were pre-entry (they might even be lower if competition drives prices downwards). In addition, the entrant has incurred fixed costs to build its network. Therefore, total industry profits (before taking into account efficiency gains

by the incumbent) would be, at most, equal to pre-liberalisation profits less the entrant's fixed costs.

Similarly, when fixed costs are very high and entrants are able to capture a relatively large share of the profitable market (the top-right quadrant), USO_{EP} can be significantly larger than USO_{NAC}. In this case, using the NAC approach to calculate the USO funding requirement could lead to severe funding problems for the USP. When fixed costs are low and entrants have a small share of the market (bottom-left quadrant), the opposite would hold, and the use of the NAC approach could overestimate funding needs and lead to concerns of state aid (if funding comes from the state) or competitive neutrality (if funding comes from within the industry).

Importantly, the size of the fixed common costs of the incumbent can be affected by the presence of non-controllable, legacy costs, such as labour contracts with the government. The higher these costs, the more divergence there is likely to be between the NAC and EP cost measures, and the higher the potential for under-compensating the incumbent if the NAC measure is used.

One option for the regulator would be to deal with these costs separately—eg, through state funding—and calculate the costs of the USO net of these legacy costs. However, even with this approach, the presence of these legacy costs—which are (arguably) raising the fixed costs above what they would otherwise be—could facilitate entry. This is because the break-even uniform price pre-liberalisation must be higher, which encourages cream-skimming, and therefore the net subsidy required to restore the incumbent's financial viability will be higher.

The analysis of the funding mechanisms presented in the following sections of the report abstracts from these issues. In particular, the numerical examples presented below have been constructed under the assumption that there are no fixed costs, and prices remain at pre-liberalisation levels—hence, there are always sufficient funds post-entry to restore the financial viability of the incumbent using within-industry funding mechanisms.

This is done for expositional purposes only in order to show how each mechanism would work in practice. Moreover, under these simplifying assumptions, the choice of which approach to use is reduced to a discussion about whether the USO cost should be measured on a net (EP) or gross (NAC) basis. In the numerical examples that follow, this choice determines whether only the entrant should contribute to a fund (under the net/EP approach) or whether both the incumbent and the entrants should contribute (under the gross/NAC approach).

2.2.1 How are the operators' incentives before and after liberalisation affected by different measures of USO cost and funding mechanisms?

An additional issue is that the regulator must measure the cost of the USO before market liberalisation. On the one hand, this gives the incumbent the right incentives to focus on profit maximisation (under the constraints imposed by the USO). However, there is a significant risk that the actual funding required could turn out to be larger (or smaller), in which case the USP would be under- (or over-) funded. Both the EC and NAC approaches would suffer from this problem. For example, if the NAC estimate is used and, ex post, the situation in the top-right quadrant of Figure 2.1 is observed (ie, there are high fixed costs and entry at high levels), there would be funding problems. Using the EP approach would not solve the problem, since this would require predictions about the potential effect of market entry after liberalisation—the actual effect might turn out to be very different.

On the other hand, if the funding requirement is estimated after market entry has taken place and the actual financial position of the incumbent can be assessed (ie, ex post), the funding problems would disappear, but additional problems might have been introduced (eg, the incentives for the USP to respond to entry by being cost-efficient would be weaker).

This report does not explicitly consider whether funding requirements should be calculated ex ante or ex post.

2.2.2 Funding the USO and the presence of legacy costs

As mentioned above, the approaches to estimating the burden of the USO would be influenced by the size of the incumbent's fixed common costs, which can be affected by the presence of legacy costs, over which the USP has little or no room to manoeuvre. An example of legacy cost—of particular relevance for a number of European postal sector—is the civil servant status of the USP's employees, which restricts the ability of the USP to adapt to competitive pressures by reducing the labour force.

The presence of legacy costs becomes particularly important for assessing the impact of full market liberalisation on the funding needs of the incumbent USPs. Indeed, a fall in the incumbent's profits may be the result of the combined effect of the USO and the incumbent's legacy costs.

While, conceptually, it may be possible to construct a hypothetical model of the costs of USO in a world where the USP does not face such legacy costs, this would not be a relevant consideration for the purposes of estimating the required funding to cover USO costs. Rather, the appropriate costs would depend on the size of the efficient costs borne by the USP. In principle, costs that are non-controllable due to external factors, such as the civil service obligations, cannot be deemed to be inefficient from the USP's perspective.

Nevertheless, where steps can be taken in future to improve the USP's cost structure, incentives should be in place to encourage such behaviour, and the estimated cost of the USO would need to be updated over time to reflect reasonable targets for improvements in the firm's cost level.

2.3 Allocating the USO

In the presence of further market liberalisation, a regulatory authority that has established the case for having a USO in place would need to define clearly two key aspects:

– how to determine who should provide the USO and how it should be provided—ie, whether the USP(s) is selected endogenously using a market mechanism, or determined exogenously by the regulator;

– who should/can provide the USO—ie, the incumbent operator, entrants, or all operators.

The answers to these questions will define which funding mechanism is relevant. Indeed, if the USP is selected using the market force mechanism, the incumbent, entrants, or both could provide the USO. In this case, funding mechanisms such as competitive tendering or 'pay-or-play' could become relevant to the analysis of how to finance the USO.

Alternatively, if the regulatory authorities determine that the USO should be provided by the incumbent only, or shared between the incumbent and entrants, different funding mechanisms could become available. For example, in the first case, the reserved area and compensation funds could be relevant, while, in the second case, compensation funds or access charges could be alternatives to explore.

2.4 One size fits all?

The fact that some funding mechanisms have worked well in other sectors does not necessarily mean that they could be equally applicable to the postal sector. The postal sector exhibits a number of features that have a significant impact on all aspects of regulatory

policy, including the approaches to funding the universal services in the context of market liberalisation. Indeed, as acknowledged in the PwC study prepared for the European Commission:

> the opening of the postal market is probably more complex and delicate to address than most of the market openings introduced in others in the course of the previous two decades in Europe. (PWC 2006, p. 123)

Indeed, there are a number of characteristics in the postal sector that are not necessarily present in other industries subject to universal service-type requirements, including:[20]

– postal networks are more labour-intensive than other sectors, such as energy and telecoms;

– technological innovations, which might help to address USO funding issues, are relatively more scarce in postal services;

– because of the emergence of alternative means of communication, the demand for postal services is unlikely to continue to expand in the future, unlike other sectors. This could be particularly relevant when defining suitable funding mechanisms;

– consumers of postal services do not have to pay in order to access the services, unlike in the telecoms or energy sectors, for example, where a connection charge may be required.

These differences across industries imply that it is important to test the potential effects of such variation on the applicability of a given funding mechanism to the postal sector. For example, although the use of two-part tariffs to finance a compensation fund would be possible in the telecoms and energy sectors, in the postal sector this is less likely to be an option. Moreover, given that, in the postal services sector, unlike other sectors, most revenues are concentrated in a relatively small number of profitable customers, additional care may need to be taken with mechanisms that pass through a significant burden of the USO funding to these highly profitable customers.

[20] See, for example, Cremer et al. (2000).

3 Flanking measures

The potential benefits of liberalisation of postal markets include increased competition for the benefit of customers; productive and dynamic efficiency leading to new postal products; and enhanced quality of service. However, these need to be balanced against the requirement to safeguard the provision of the USO by efficient and viable USPs.

To this end, the PwC 2006 study on the impact of liberalisation on the USO, prepared for the European Commission, highlighted the need to introduce flanking measures before market opening—ie, a series of preliminary measures aimed at enhancing the benefits of liberalisation, while reducing its potential downsides.

Flanking measures can be broadly classified into three types.

– **Increased commercial freedom for the USP**—this would include measures such as allowing the incumbent USP flexibility to apply non-uniform prices for bulk mail so that it can respond to entry more effectively.

  Where the USO includes a price uniformity requirement, a more radical measure would be to relax price uniformity for all products, including those within the scope of the USO. This could result in similar services being priced differently, for example, depending on whether the service is provided to urban or rural areas. This measure would need to be balanced against the possibility that the relaxation of the uniformity requirement could lead to a failure to meet desirable levels of service provision—for example, if the positive externalities of postal services exceed consumers' private valuations.[21] In such circumstances, in the absence of a uniformity obligation, the prices for some areas/ services could exceed customers' willingness to pay, and the equilibrium level of output would fall below the socially efficient level.

– **Implementation of a cost-based access charge regime**—as further discussed in section 9, correctly defined access charges could help safeguard the productive efficiency gains associated with market opening, by sending the right 'make-or-buy' signals to potential entrants. In that respect, incumbents may have strong incentives to set cost-based access charges since, otherwise (if access charges are above cost), higher levels of end-to-end entry could be observed, which would be more detrimental to the incumbent's financial position.

– **Modification of the scope of the USO**—in some countries, regulatory authorities could opt for the scope of products, services and quality standards that fall within the boundary of the USO to be redefined. However, should such measures prove unfeasible in practice, an alternative would be to relax the scope of the USO to be provided by the incumbent. These USO services could instead be provided by newcomers to the market, with their responsibilities being allocated via competitive tendering mechanisms, for example. This could result, at least in theory, in an incumbent bound by a less onerous USO and therefore better able to face liberalisation and remain financially viable.

The flanking measures described above are aimed at reducing the burden (size) of the USO, but do not necessarily ensure the long-term provision of the universal service. In some markets, these measures might reduce the USO burden such that further funding measures would not be required. However, for many postal markets, such measures are unlikely to be

[21] See, for example, Lundgren (2002).

enough, and, as acknowledged by the PwC study and the Commission, additional funding mechanisms will be required.

In that sense, the working assumption adopted in this current study is that, with or without flanking measures in place, the USP requires some level of external funding to remain financially viable. As such, a mechanism that provides this funding would need to be set up.

4 Criteria used to assess funding mechanisms

Criteria used to assess the effectiveness of alternative funding mechanisms in delivering universal service, while minimising any potential distortions, include:

- efficiency;
- competitive neutrality;
- social equity;
- compatibility with state aid rules;
- transparency and opposability;
- practicability;
- proportionality;
- certainty.

Each is considered in more detail below.

4.1 Efficiency

Funding mechanisms should minimise distortions to economic efficiency, and, where possible, improve it. This would be the case, for example, if customers, who would not otherwise do so, can access postal services as a result of the impact of the funding mechanism on prices or the availability of new services.

In practice, three central aspects underpin the efficiency concept:

- allocative efficiency;
- productive efficiency;
- dynamic efficiency.[22]

A funding mechanism that promotes **allocative efficiency** is one that allows the USP to charge prices that reflect the cost of delivering the service, including an appropriate return on capital invested. Allocative efficiency is inherently in conflict with the idea that USO should be provided at non-discriminatory prices (eg, setting geographically uniform prices). This is because the prices charged to service users will not necessarily reflect the cost of providing the service.

Productive efficiency relates to the fact that operators are delivering the service at the lowest possible cost, using the optimum mix of inputs given the existing state of technology. In this context, funding mechanisms should provide the incentives to adopt the best-available technology, maximise use of resources, and exploit economies of scale. It should also provide incentives to choose the most efficient firm(s) to provide the services, and avoid inefficient duplication of fixed costs.

Finally, **dynamic efficiency** refers to the incentives a firm has to innovate to provide new and improved products and services. That is, the potential for dynamic efficiency gains will be realised if, as a result of the funding the USP develops, new ways of delivering a service or new products are created.

[22] See Jenkins and Yemail (2005).

4.2 Competitive neutrality

Funding mechanisms may affect the viability of existing operators, as well as the entry process, by placing some operators at an advantage over others. In order to be competitively neutral, contributions that need to be raised to compensate for the net costs of providing universal service should avoid (or at least minimise) distortions to competition in the relevant market.

In practice, for a mechanism to be competitively neutral, its design should ensure that:

– efficient entry in the relevant service market is not deterred, and inefficient entry is not promoted;
– operators assume a non-discriminatory share of the USO burden.

In relation to the efficiency aspect, a funding mechanism should be 'well balanced'. On the one hand, it should not raise barriers to entry so that more efficient operators are deterred from providing the USO. Such an effect on competition could occur, for example, if the funding to the USP allows it to offer lower prices than it otherwise could with its production technology. Under such circumstances, potentially more efficient, lower-cost operators may not be attracted to enter the market as they could find it difficult to compete with the USP. Efficient entry would also be prevented if the contribution to funding the USO were set at such a level that efficient operators were unable to enter the market profitably.

On the other hand, the level of funding should not be so low as to promote inefficient entry. In other words, USPs should be adequately compensated in order to prevent cream-skimming by less efficient entrants. Otherwise, the viability of a USP may be put under threat, with potentially negative consequences for customers—ie, they have to obtain the service at a higher price from the less efficient entrants.

Whether a given mechanism would prevent or incentivise efficient entry is partly about measuring the costs of the USO. This is not the focus of this study, but nonetheless needs to be addressed when discussing USO funding. The question is whether, for a given USO cost, the different funding mechanisms could affect efficient entry—which might be the case if the allocation of the burden across players is disproportionate.

Competitively neutral funding also requires that, if firms have to help fund the USO (such as in the case of a compensation fund), their payments should be non-discriminatory. Non-discrimination refers to the requirement that operators contribute to the fund regardless of their size and status (ie, whether they are the incumbent or new entrants). As stated by the OECD (2004, p. 223):

> Competitively neutral funding means that the incidence of 'taxation' falls on specified products, or specified products delivered to certain customers, independent of the identity of the firm or technology used in providing them, so as not to distort the costs of competing firms.

Therefore, the contribution should be non-discriminatory but also proportional, so as not to hinder efficient entry.[23]

[23] The importance of ensuring that mechanisms used for funding the USO are competitively neutral has been highlighted on a number of occasions. In the USA, for example, the Federal Communications Commission (FCC) recommended 'basing universal service policies on the principles enumerated in the Act, as well as the additional principle of competitive neutrality' (FCC 1996). The principles referred to in the 'Act' include the obligation to offer affordable, ubiquitous telecoms services.

4.3 Social equity

Social equity refers to the concept of justice or fairness. In practice, social equity is a normative concept and value judgements are necessary to decide which members of society are favoured over others.

Equity considerations are generally driven by the USO, and not by the funding mechanism. The funding mechanism may influence the extent to which the equity considerations of the USO can be maintained.

The social equity criterion is related to whether a funding mechanism allows a similar price to be charged to customers with similar abilities to pay, and whether contributions are fair and reasonable.

Another dimension of the equity criterion relates to the contributions made by market participants when they have to fund the USO.

4.4 Compatibility with state aid rules

Any funding mechanism that involves some form of government funding needs to comply with EU state aid rules. Hence, these rules are particularly important for compensation funds funded by government subsidies from general taxation.

Under Article 87(1) of the EC Treaty, any transfer of state resources, direct or indirect, that is selective, gives an advantage to the recipient over its rivals, and distorts (or is likely to distort) competition and/or trade between Member States would be classed as illegal state aid. However, under the Service of General Economic Interest (SGEI) framework, financial support from the state to postal operators with a USO may not necessarily be considered state aid.[24] State funding of SGEI would only be considered state aid if a set of four cumulative criteria specified in the *Altmark* case are not met:[25]

– the recipient of state funding must have public service obligations to discharge, and the obligations must be clearly defined;

– the parameters on the basis of which the compensation is calculated must be established beforehand in an objective and transparent manner to avoid it conferring an economic advantage which may favour the recipient undertaking over competing undertakings;

– the compensation does not exceed what is necessary to cover all or part of the costs incurred in delivering the public service obligations, taking into account the relevant receipts and a reasonable profit;

– where the undertaking is not selected through a public procurement procedure, the level of compensation must be determined on the basis of an analysis of the costs which an efficient undertaking would have incurred.

Unless the measure falls under the conditions provided by the European Commission Decision 2005/842/EC (CEC 2005b), the compatibility of the measure is then assessed on a case-by-case basis by the Commission on the basis of Article 86(2), according to the relevant framework (CEC 2005c).

[24] See CEC (1998), preface and para 8.1.

[25] See Case C-280/00 *Altmark Trans GmbH and Regierungspräsidium Magdeburg v Nahverkehrsgesellschaft Altmark GmbH* [2003] ECR I-7747.

4.5 Transparency

According to the transparency criterion, the principles and functioning of a funding mechanism should be clear to all market participants, including their particular roles and responsibilities. More specifically:

– market participants and other stakeholders should be in a position to understand the way in which the total level of funding is set; who contributes to funding the USO; and, if relevant, how the contribution of the market participants is determined;

– it should also be clear who the beneficiaries of the funding are; the requirements for accessing the funds; as well as how the funds are administered and by whom;

– all parties should be in a position to assess the financial gains of the USP;

– the information used to determine the market participants' roles and responsibilities should be publicly available and capable of being verified and criticised (ie, opposed).

4.6 Practicability

The complexity of funding schemes and the information required for their administration should be kept to a minimum. The more complex the scheme is to administer, monitor and implement, the less likely it is to achieve its objectives and the more costly it will become to put in practice. This criterion is also related to transparency—it should be reasonably easy to obtain information that allows the stage and progress of the funding mechanism in achieving its objectives to be audited.

4.7 Proportionality

Proportionality of instruments is one the key principles of regulatory best practice. This criterion states that a funding mechanism should, first and foremost, address the particular objectives it has been set to achieve. In other words, any arrangement should ensure that:

– the USO is viable in the short run—it should generate sufficient revenues to cover the net costs of providing the USO;

– the levies to be paid should be proportional if operators have to contribute to funding the USO. In other words, they should not be so burdensome that they hinder the ability of efficient operators to expand and enter the market profitably. This would imply, for example, that it would be appropriate to exempt market participants with very small scale from contributing to the fund, as the administrative burden would exceed the benefits of these small operators contributing to the funding of the mechanism. Furthermore, by requiring very small operators to contribute to the funding of the USO, the scope of entry would be reduced, with potential long-term detriments to consumers.[26]

  For instance, the European Commission has stated that:

  > In the case of cost recovery [of the USO] by means of levies on undertakings, Member States should ensure that the method of allocation amongst them is based on *objective and non-discriminatory criteria and according to the principle of proportionality*. This principle does not prevent Member States from exempting new entrants which have not yet achieved *any significant market presence*. [emphasis added] (CEC 2002a, para 21)

[26] This is the rationale adopted by a number of regulatory authorities (eg, in France, USA and Canada) for setting the threshold below which operators would not be required to contribute to a compensation fund.

A similar position has been adopted by the Commission in the case of the postal sector. Proportionality requires the funding mechanism to strike a reasonable balance between sometimes competing objectives—for example, the need to ensure that the funding mechanism is sufficient to cover the net cost of the USO while also minimising the extent of any distortions caused by the mechanism. Ideally, contribution rates for third parties would not be excessive or out of line with their financial position in the market.

4.8 Certainty

A funding mechanism that is certain is one that guarantees that the arrangements are sustainable—in other words, the long-term availability of USO services is guaranteed by enabling long-term investments in the system. Hence, a mechanism that provides certainty in terms of the funds that would be available (eg, it is not exposed to changes in political decisions) would be preferable to one that results in unpredictable and unsustainable funding arrangements.

5 Reserved area

5.1 Description of the mechanism

This funding mechanism—the traditional approach to funding the USO in the European postal sector—creates a monopoly in which one company provides a number of services to a number of routes. With the monopoly in place, the operator can set a geographically averaged price without the threat of competitive entry. Consequently, the reserved area enables cross-subsidisation between low- and high-cost consumers, with the losses made on high-cost consumers offset by the profits made on low-cost consumers.

The coverage of the reserved area need not encompass the entirety of the services included within the USO. For example, under the current EC Directive, the reserved area only applies to products weighing less than 50g, whereas the USO frequently extends to a wider set of products. In this case, the net profits made by the USP in the reserved area (which in turn will consist of supply to profitable and unprofitable customers) need to be sufficient to offset any losses that the incumbent will make from supplying USO products, at a geographically averaged price, outside of the reserved area.

5.2 Numerical example

The following numerical example has been designed to illustrate how different USO funding mechanisms would operate in practice in the postal sector.

A simplified description of a hypothetical postal market is given in Table 5.1. It is assumed that there are three types of customer: high-cost customers (of which there are assumed to be relatively few, receiving only one letter each); average-cost customers (of which there are assumed to be many, receiving two letters each on average) and low-cost customers (of which there are relatively few, but it is assumed that each receives three letters). Despite these different costs, the USO requires a uniform price of €1/letter.

Table 5.1 Key characteristics of the postal market before liberalisation

Customer type	Number of customers	Number of letters per customer	Uniform price (€/letter)	Cost (€/letter)
High-cost	100	1	1.0	2.5
Average-cost	800	2	1.0	1.0
Low-cost	100	3	1.0	0.5

Source: Oxera.

Before liberalisation, the incumbent USP is in financial balance, with total revenues and total costs of €2,000. With this cost structure, liberalisation would threaten the USP's financial stability. The example below presents a situation in which the entrant captures 30% of the market for low-cost consumers. For simplicity, it is assumed that the entrant has the same cost function as the incumbent and the price it charges for delivery to low-cost areas is only very slightly less than the €1/letter charged by the incumbent.[27]

The result is that the incumbent would not be able to break even, while the entrant would make positive economic profits, as illustrated in Table 5.2. Therefore, in a situation with no

[27] In reality, the 'problem' may be even worse, as the entrant could compete for low-cost customers even if it did not have the same cost structure as the incumbent but had higher costs (but lower average costs than the geographically averaged price).

funding mechanism to compensate the incumbent operator, the continued provision of the USO in its current form could not be guaranteed.

Table 5.2 Financial position of incumbent and entrant after cream-skimming entry at 30% scale

Customer type	Units/revenues (€)	Costs (€)[1]	Profit (€)
Incumbent			
High-cost	100	250	–150
Average-cost	1,600	1,600	0
Low-cost	210	105	105
Total	**1,910**	**1,955**	**–45**
Entrant			
High-cost	0	0	0
Average-cost	0	0	0
Low-cost	90	45	45
Total	**90**	**45**	**45**

Note: [1] The entrant is assumed to face the same costs per letter as the incumbent.
Source: Oxera.

One immediate response to this problem might be for the USP to increase its prices to offset the losses now incurred. However, far from improving the USP's financial health, this could serve to make its competitors more attractive, increasing switching from the USP to the entrant, and thereby precipitating what has become known as the 'graveyard spiral'.[28]

An alternative would be to increase prices in the high-cost area only, although this might be inconsistent with the affordability constraint of the USO.

The reserved area solution to this problem is to prevent entry in a sufficient part of the profitable segment of the market such that the USP can continue to cross-subsidise losses in the high-cost market. If the proportion of high-cost customers was smaller, the reserved area would not need to cover the full market. In the example above, even though, in delivering to the high-cost area, the incumbent makes losses of €150 (this amount could be considered to be equivalent to the cost of the USO), this is exactly offset by the profits made in the low-cost area, so the net economic profits are zero, as shown in Table 5.3.

Table 5.3 Financial position of the incumbent with a reserved area

Customer type	Units/revenues (€)	Costs (€)	Profit (€)
High-cost	100	250	–150
Average-cost	1,600	1,600	0
Low-cost	300	150	150
Total	**2,000**	**2,000**	**0**

Source: Oxera.

5.3 Assessment against criteria

Table 5.4 summarises the assessment of the performance of the reserved area mechanism against the criteria discussed in section 4. The reserved area is often justified in terms of the

[28] See Crew and Kleindorfer (2000), pp. 3–28.

wide social benefits (the whole of society has access to the universal service), certainty and transparency. However, depending on certain characteristics of the market, problems may arise in relation to efficiency and proportionality. A detailed discussion is presented on each criterion.

Table 5.4 Summary of assessment of reserved area

Criterion	
Efficiency	Where entrants would in principle be able to provide higher-quality services at a lower price, a reserved area may result in allocative, productive and dynamic inefficiencies. However, the application of the uniformity/affordability USO itself generates an allocative inefficiency
Fair competition	The process of selecting the USP is not competitive. Furthermore, competition concerns may arise if the USP is also active in the competitive segment of the market and seeks to leverage its market power in this segment. Some of these concerns could, however, be mitigated with adequate competition law and regulatory controls
Social equity	If social equity is interpreted as equivalent to ensuring that, regardless of location of sender or recipient, the unit price remains the same, the reserved area scores well against this criterion. However, if social equity accords with the notion that the price structure is altered so that the burden placed on low-income consumers is not as great as that on high-income consumers, the assessment against this criterion would be an empirical question, which is likely to depend on the geographic distribution of high- and low-income customers
Compatibility with state aid rules	Unlikely to create any issues of illegal state aid
Transparency and opposability	The reserved area can be clearly defined in terms of weight or monetary threshold (eg, letters under 50g or items priced less than €1) and the relevant timescale
Proportionality	Problems may arise when defining the scope of the reserved area. A proportional reserved area would require the USO's net cost to be estimated
Practicability	The reserved area is not subject to complex administrative or compliance costs, unlike other mechanisms
Certainty	A predictable source of financing could be maintained if the size of the reserved area is adequately defined

Source: Oxera.

5.3.1 Efficiency

The performance of the mechanism against the criterion of efficiency needs to be sub-divided into the three categories of allocative, productive and dynamic efficiency, which were mentioned in section 4.

Allocative efficiency

Allocative efficiency is achieved when prices reflect costs. By preserving geographical cross-subsidies within the reserved area, the reserved area approach would therefore appear to score relatively poorly against this criterion, as prices may diverge significantly from costs. However, this is an inherent feature of the affordability or uniformity constraint, rather than a specific consequence of the reserved area. The reserved area may limit the extent to which profitable customers in this area could see price reductions if they were outside the USO.

The allocative inefficiency concerns could be magnified because, under this approach, the USO is funded from a relatively narrow base—specifically, the low-cost customers of the USP within the reserved area. For example, using the simple example above, of the total market of 2,000 letters,[29] the total funding for the USO comes from the payment made for the

[29] 100 letters delivered to the high-cost area, 1,600 to the average-cost area and 300 to the low-cost area.

delivery of 300 letters in the low-cost area. In contrast, an alternative mechanism for funding the USO might involve, for example, subsidising the USP from general taxation, which would mean that every taxpaying entity in the country would be contributing to the funding of the USO—a much broader funding base. Using a narrow base to fund the USO implies that the extent to which prices have to deviate from costs in order to provide the funding is that much greater; as such, allocative efficiency is exacerbated. Cremer et al. (2001), when discussing reserved areas, make this point:

> Nevertheless the fundamental problem remains, namely, the tax base, ie the set of goods on which surcharges can be levied to finance subsidies to some consumer groups, is restricted in an artificial way. Since cross-subsidies can be viewed as implicit (commodity) taxes, optimal tax theory tells us that this exogenous restriction of the tax base is likely to bring about a welfare loss.

The allocative efficiency properties of the reserved area would therefore appear to be quite low. However, while the reserved area artificially constrains the base over which the funding is collected, it needs to be compared with the allocative inefficiencies that might be generated through other means of funding the USO. This would need to be assessed on a case-by-case basis. In particular, cross-subsidisation within a reserved area avoids the need for taxes to be raised explicitly, when the raising of these taxes can, in itself, create economic distortions. In particular, raising taxes creates distortions (allocative inefficiencies) through a number of mechanisms:

– transactions that would take place before the tax is imposed subsequently do not take place because of the imposition of the tax (the 'deadweight loss' of taxation);
– there are costs associated with the administration of the tax regime;
– there is the risk of 'leakage', as people may seek to (illegally) evade paying taxes;
– there is also the risk of corruption, as not all taxes are transferred from the taxpayer to a (legitimate) subsidy recipient.

The combined impact of these distortions is measured by the 'marginal cost of social funds': the higher this figure, the greater the size of these distortions.

Given the costs and benefits of cross-subsidies in a reserved area (which artificially restrict the number of people paying for the USO) and general taxation (which widens the base on which to raise funding, but introduces its own distortions), Gasmi et al. (2000) examine the welfare/allocative efficiency implications of both approaches. Although their focus is on the telecoms sector and they make a series of further refinements in their scenarios, the underlying issue examined is the choice between these two approaches. The results of their analysis suggest that only relatively limited distortions in funding from general taxation are required in order for cross-subsidisation (via a reserved area) to appear more attractive. In particular, their base case suggests that as soon as the marginal cost of social funds increases above 0.1 or 0.2, cross-subsidies become more attractive. To place these findings in context, the authors consider that this value in developing countries is likely to be above 1.0, while in developed countries it is likely to be smaller. For example, the UK Treasury considers the figure for the UK to be between 0.2 and 0.3 (HMT 2000). Gasmi et al. (2000) conclude that:

> The main empirical output of the analysis is to provide thresholds for the cost of public funds beyond which cross-subsidies constitute a powerful tool for financing universal service. The main policy implication of the results is that developing countries often satisfy those thresholds.

The allocative inefficiency resulting from implicitly taxing a relatively narrow consumer base therefore needs to be seen in the context of the inefficiencies that would be generated through funding the USO from a wider source (ie, general taxation). The results from Gasmi et al. (2000) suggest that the allocative inefficiency associated with cross-subsidies is likely to be relatively similar to the allocative (and other types of) inefficiencies associated with

general taxation in a country with a relatively efficient tax regime, and may be even more attractive when the tax regime is particularly inefficient.[30]

Productive efficiency

The second dimension of efficiency is that of productive efficiency: whether the mechanism has any impact on the extent to which the costs of postal delivery are minimised. The economic issue underlying this criterion is relatively straightforward: do the economies of scale that can be exploited (or remain intact) as a result of preserving the USP's monopoly status within the reserved area more than offset the fact that retaining a monopoly will remove the stimulus of competition, which may incentivise the USP to reduce costs?

This is an empirical question and one that may differ from country to country depending on the extent to which the USP benefits from economies of scale that would be protected by the reserved area, as well as the scope for competition.[31] An answer to this question is important since any impact on scale economies is likely to be related to whether the affordability requirements of the USO could be ensured.

Related to the assessment of scale economies, a country-by-country assessment would be needed on the extent to which economic regulation of the USP might be able to replicate the productive efficiency benefits associated with liberalisation through, for instance, the introduction of incentive-based regulation.

Dynamic efficiency

By removing the prospect for entry in the reserved area, the impact that competition may have on incentivising innovation may be lost. This is consistent with the Hayekian view of competition as a process of searching for the highest-value/most efficient approach to providing services, and, under some circumstances, could have a cumulatively larger impact than the one-off changes that a move to cost-reflective pricing might generate.

However, as Crew and Kleindorfer (2006) note:

> We are mindful, of course, that liberalization could spur dynamic efficiency, product innovation and other benefits of competition, but we should be careful before attributing too much to these sources.

Indeed, the scepticism expressed above may be particularly relevant in the postal services sector, which has less scope for technological improvement than many other sectors.

5.3.2 Fair competition/competitive neutrality

The potential impact of the reserved area on fair competition appears to relate mainly to three issues.

– First, and arguably most importantly, competition in the market for all products/weight steps within the reserved area is, by definition, precluded. This includes both efficient competitors (ie, those that are, or have the potential to become, lower-cost operators than the USP) as well as inefficient competitors (ie, those entrants who are less efficient than the competitors but can exploit cream-skimming opportunities, which could result from the price–cost margin imbalances created by the USO). In part, therefore, how well

[30] The previous analysis has focused on the comparison between the reserved area and the use of general taxation to fund universal service provision. As further discussed in section 6, there are other potential alternatives to fund the USO, including funding within the industry (eg, revenue taxes, profit taxes, etc). A priori, it is less clear how any efficiency distortion introduced by the reserved area would compare with the distortions introduced by mechanisms that rely on funding within the industry.

[31] The impact that the greater likelihood of competition would have on this decision is unclear. On the one hand, greater competition would be expected to create a stronger pressure on the USP to reduce its costs; on the other hand, it is more likely to result in the USP losing its economies of scale.

this mechanism scores against the criterion of fair competition, relative to other USO funding mechanisms that allow entry to occur and then deal with the consequences, is likely to be determined by the proportion of (precluded) entrants who, if they were allowed to enter, would be expected to be efficient/inefficient. The more entry is expected to involve exploitation of artificial price–cost margins created by the imposition of the USO, the more that this mechanism, by preventing this entry, would appear to avoid inefficient entry. However, a relevant consideration here is whether governments/ regulators weight the negative implications of inefficient entry as highly as the positive impact of efficient entry. In some cases, even the potential for competition may be seen as sufficient to justify removing the reserved area, even if it also introduces the potential for cream-skimming.

– A second consideration is that, although the reserved area precludes competition in the market, there remains the possibility of introducing competition for the right to provide the reserved area services (and hence the USO) through some form of auctioning or tendering process, as discussed further in section 9. However, if the allocation of the reserved area/USO services is exogenously predetermined to be the incumbent operator, this opportunity for introducing fair competition is lost.

– A third consideration is the extent to which, in creating a monopoly in some areas, the USP may be able to leverage its market power in the reserved area to impair the development of competition in related markets.

In summary, the analysis of the reserved area against the criteria is relatively ambiguous. On the one hand, by explicitly precluding all forms of competition, the reserved area could be thought of as scoring relatively poorly against this criterion. However, if the majority of the competition that is precluded by the reserved area is likely to be inefficient entry that would be able to exploit cream-skimming opportunities, precluding this entry may not be of particular concern. Indeed, the continued use of a reserved area could lead to a lower cost of provision than some other funding mechanisms. Hence, in such cases the reserved area would score well against this criterion.

Crew and Kleindorfer (2006) use a calibrated model to assess the potential impacts of liberalisation and the USO. They then compare a situation of full liberalisation (ie, end-to-end entry is allowed) with the USO preserved against one in which only access entry is allowed and otherwise the incumbent is assumed to retain a reserved area. The authors conclude that:

> As to full liberalisation … its welfare impact is negative for these examples because entrants cherry-pick [cream-skim] the low-cost mail, leading to significant increases in the single-piece price to maintain break-even operations. Thus … the impact of liberalisation on overall welfare could well be negative (as it is for these examples) … If the PO is not sustainable as a result of entry, the resulting loss in the scope of the USO could imply much higher welfare losses than the transitory gains from competition.

A similar result is obtained by De Donder et al. (2002), who also develop a model that is solved using numerical methods. In their base case, the requirement to price at a uniform level is maintained by the USP, but entrants can enter where it is profitable for them to do so. In the base case, the impact of introducing competition is to increase overall welfare, with entrant and low-cost (business) customers benefiting, while the USP's profits suffer. However, if this case is altered so that it is assumed that the USP attempts to break even by increasing prices following the introduction of competition, the authors find that increasing prices not only does not solve the funding problem (beyond a certain point it precipitates a graveyard spiral), but it also reduces welfare compared with the scenario with no liberalisation.

Both of these models suggest that there is a risk that the primary form of new entry after liberalisation will be of the cream-skimming type, and therefore that the impact of the reserved area on fair competition may not be as negative as first assumed.

5.3.3 Social equity

If social equity is interpreted as equivalent to ensuring that, regardless of location of sender or recipient, the unit price remains the same, the reserved area scores well against this criterion. Furthermore, significantly, this is not just in the legal sense that the USP would have to offer affordable (or perhaps the same) prices to all mail senders—a characteristic common to most mechanisms—but also in a market outcome sense. The possibility that, regardless of any legal requirements on the incumbent, those wishing to send mail to low-cost areas could benefit from a low price offered by a new entrant would be legally prohibited.

However, this interpretation of social equity may not accord with a more general definition—ie, that the price structure is altered so that the burden placed on low-income consumers is not as great as that on high-income consumers (ie, the price system is explicitly progressive). Examples of this form of social equity include special tariffs developed for low-income users in the telecoms and energy sectors. By contrast, as a result of the affordability and/or geographical uniformity constraint, those customers wishing to send mail exclusively in low-cost areas are cross-subsidising those who wish to deliver to a wider range of areas. The extent to which this pattern of cross-subsidy maps onto a pattern of cross-subsidy between high- and low-income users is an empirical question, which is likely to differ depending on the geographical distribution of high- and low-income consumers and their mailing habits in each country. Indeed, the reserved area helps to preserve the uniformity constraint, which may improve equity relative to, say, pure competition where low-income customers (if they are high-cost on average) would face higher prices. [32]

A further question related to social equity and the reserved area is which services should be are excluded from its coverage (ie, under the current Directive, mail above 50g). If competition for products outside the reserved area leads to price reductions in these products, while prices for products inside the reserved area are not reduced, consumers of the former products will benefit more from liberalisation than consumers of the latter. Who these beneficiaries are can then be assessed, as can the extent to which social equity objectives are promoted by this outcome. Again, although a full empirical assessment of this issue would be required, it might be expected that it would primarily be business customers who would be using services outside the reserved area, and domestic customers those products inside the reserved area. As such, it could be argued that the reserved area would be unlikely to promote any social equity objectives that may be in place. However, as mentioned before, the question would be whether another mechanism would be better at promoting social equity objectives.

5.3.4 Compatibility with state aid rules

As this mechanism does not involve the direct or indirect transfer of financial resources from the state to the USP, but instead relies on cross-subsidies within the market, this approach is unlikely to raise any concerns about state aid.

5.3.5 Transparency and opposability

The performance of the reserved area on this criterion can be divided into two elements—the transparency/opposability of the mechanism:

[32] As mentioned in section 4, equity considerations are primarily driven by the USO, and not by the funding mechanism. The funding mechanism may influence the extent to which the USO could be maintained.

– once it has been established;
– at the time when the scope of the reserved area is being established.

In the first case, the reserved area is relatively transparent and easy to understand, as illustrated by its continued use in most European countries. In the second case, however, the issue is more controversial. The correct calibration of the size of the reserved area would be the area such that the net profits made in the reserved area exactly accounted for the net losses made in the supply of USO products outside of the reserved area. While this issue would be relatively simple when the reserved area is defined as all those products included in the USO, it becomes considerably more difficult when the reserved area is only a sub-set of the USO products.

Starting from the scenario of pre-liberalisation, the reserved area would expand across all areas of the USO, and the incumbent would be able to cross-subsidise unprofitable services with profits derived from more profitable services. When the sector is being liberalised, the reserved area would be effectively reduced, and the incumbent's share in the non-reserved part of the market may fall. This, in turn, may reduce the profits available for the USP to finance the non-profitable USO, which could result in the USP having an imbalance that would need to be addressed. If the USP increases its uniform prices, it could lead to the graveyard spiral scenario. Alternatively, additional sources of funding would be required.

This suggests that it would be important to estimate the balance of cross-subsidies within the reserved area, and, if the cross-subsidy is not enough, to ensure that funds from outside the reserved area contribute to the imbalance. In this case, regulators would need to be able to provide reliable projections of the impact of liberalisation on the profitability of products within the USO but outside of the reserved area. Furthermore, even with an understanding of what the likely magnitude of any such losses might be, it would be necessary to understand the implications for the threshold of the reserved area and for the prices that should be allowed to be charged for reserved-area products.

Addressing such questions in a detailed way is likely to generate considerably different points of view between different stakeholders in the industry (ie, high opposability), while the detailed modelling work that could be required may not be easy for many stakeholders to access or understand (ie, low transparency). Alternatively, an ad hoc approach could be taken without a detailed assessment of these issues; however, as Crew and Kleindorfer (20010 have noted, this approach has its own problems:

> The current approach of arbitrarily lowering limits, playing it by ear and hoping for the best seems distinctly unpromising as an approach for arriving at an efficient solution.

Specifically, there is the possibility that the approach is disproportionate, as explored below.

5.3.6 Proportionality

The issue of proportionality can be divided into two parts:

– whether the mechanism is proportionate, assuming that it is set at the 'correct' level;
– the problems of proportionality that emerge if the reserved area is inappropriately defined.

On the first question, the discussion effectively becomes a judgement as to whether the removal of the prospect of competition with the reserved area is a proportionate response to the USO funding problem. At least in part, this will depend on the perception of the likely form of competition in the reserved area and the discussion above regarding efficient and inefficient entry. For instance, if the scope for efficient entry in the reserved area were likely to be small, precluding this entry would be unlikely to be of significant concern. The opposite would hold if liberalisation of the reserved area were anticipated to bring consumer (and producer, especially for new entrants) benefit.

Where the reserved area is inappropriately defined—potentially as a result of a limited attempt at estimating the burden/net cost of the USO, as discussed previously—the judgement on this criterion becomes more clear-cut. In particular, if problems with assessing the appropriate scope for the reserved area lead to it being defined too broadly, the mechanism would be disproportionate to the problem of USO funding. Competition, and the associated benefits, would be unnecessarily curtailed. In the opposite scenario—where the reserved area is defined too narrowly—the solution would not be disproportionate but it would not be effective. The example of the Spanish postal market gives an indication of this problem (see Box 5.1 and the Appendix).

Box 5.1 The definition of the reserved area in postal services (Spain)

In Spain, the regulatory framework establishes a reserved and a non-reserved area for the provision of universal services.

– The reserved area for postal services comprises intercity and international letters and postcards up to 50g. It also includes money orders. The only operator in the market is Correos.

– The non-reserved area of the universal service comprises local intra-city mail (urban) up to 2kg, intercity and international letters (from 51g to 2kg), parcels up to 10kg, registered and insured mail. Direct mail, books, catalogues, periodicals, and other items whose circulation is not prohibited also belong to the universal service (provided that these dispatches are sent under the options mentioned in Article 15.2 of the Postal Law). Document exchange cannot be reserved.

According to Correos, the scope of the reserved area is too small to finance USO-related postal services. Indeed, the income of the reserved area is estimated to be approximately 9% lower than the reserved area costs.

In addition to the reserved area, the legal framework established the possibility to compensate insufficient cross-subsidisation within the reserved area through public funding. The USP is eligible to receive an annual subsidy if its income from the reserved area is too small to recoup USO-related costs. However, the level of public financial support has fallen during the last few years, from €219m in 1996 to €1m in 2005 (representing around 0.05% of Correos' total income). As further explained in the Appendix, the Spanish Postal Act also proposed a compensation fund as a possibility, although this has not been implemented to date.

Source: Correos.

5.3.7 Practicability

On this criterion, the reserved area scores very well: the current experience of the use of the reserved area in many countries across Europe illustrates the practicability of the mechanism. A particularly significant aspect is that this mechanism is not subject to administration or compliance costs, and is difficult to evade.

For instance, Gasmi et al. (2000) note that, unlike a compensation fund, the reserved area does not have to deal with any problems associated with 'leakage' in the collection of taxes:[33]

> Revenues generated by taxes may or may not be totally used for the purpose of financing universal service. In particular, institutions that leave substantial discretionary decision power to executives may open the door to corruption which most probably will cause a leakage of a non-negligible part of tax revenues from the economy.

[33] The authors are discussing this phenomenon in a telecoms context and in an explicitly developing country framework. On this latter point, however, the authors note that 'the phenomenon of corruption is not peculiar to developing countries.'

5.3.8 Certainty

This is a further criterion against which the reserved area is likely to score well. By creating a monopoly over certain products, the threat of competition undermining the funding mechanism is removed. Furthermore, as reserved area products are typically ones where overall volume levels are relatively stable, not only is there no threat of loss of volumes to competitors, there is also limited threat of overall market volumes deteriorating too significantly. Indeed, the European Commission itself notes that, on the grounds of certainty, the reserved area scores well, arguing that it 'maintains a (largely) predictable source of financing for the incumbent provider.' (CEC 2006d)

The only exception is where the reserved area is defined inappropriately narrowly and where, for either political or economic reasons (eg, the market demand is elastic), it is not feasible to increase prices sufficiently on the narrow range of products included within the reserved area in order to ensure the financing of the USO. The case of the definition of the reserved area in Spain discussed above may illustrate this point.

5.4 Summary

From this discussion, it is possible to reach an assessment as to the scenarios in which the reserved area might be expected to be an appropriate response to the USO funding problem, and when it may not. As seen above, the reserved area scores well against the criteria of certainty and practicability. Moreover, given the low administrative costs, it would have the advantage of simplicity compared with other funding mechanisms. This measure is likely to be more appropriate when most of the competition that is precluded as a result of its introduction (continuation) is expected to be inefficient cream-skimming entry rather than new entrants stimulating productive and dynamic efficiency benefits by the incumbent. This suggests that policy-makers who place weight on the guaranteed preservation of the existing form of the USO would be more likely to view a reserved area favourably, especially given that it is a 'tried and tested' methodology that has been shown to be practical. It is also likely to be more attractive in countries where there is a large cost discrepancy between delivering to a high-cost and a low-cost area, as in these countries the threat of cream-skimming entry is greatest, and in countries where, if the alternative to be considered is general taxation, the efficiency of the tax system is relatively poor.

By contrast, policy-makers who place more weight on efficiency concerns, and have greater confidence that the type of entry that would otherwise be prohibited by the reserved area is likely to bring benefits to consumers (ie, the scope for efficient entry is large), are unlikely to find the reserved area an attractive solution. It is also less likely to be economically desirable in cases where the marginal social cost of funds[34] is particularly low, and hence providing subsidies to the incumbent generates limited distortions throughout the rest of the economy.

[34] The marginal social cost of funds is likely to be low in countries where the efficiency of the tax collection systems and procedures is high.

6 Compensation fund

Compensation funds are one of the mechanisms most widely used for compensating providers for the net costs of complying with the USO. In a number of countries (eg, Australia, France, and the USA), these funds have been set up to finance universal service in a variety of sectors, including telecoms and electricity.

Furthermore, they have been considered in the context of postal services. In effect, Article 9(4) of the Postal Directive states that

> in order to ensure that the universal service is safeguarded, where a Member State determines that the universal service obligations, as provided for by this Directive, represent an unfair financial burden for the universal service provider, it may establish a compensation fund administered for this purpose by a body independent of the beneficiary or beneficiaries. In this case, it may make the granting of authorisation subject to an obligation to make a financial contribution to that fund… (CEC 2002b)

A number of Member States have made provisions to set up a compensation fund in order to guarantee the provision of universal service in the postal market (CEC 2006d, p. 19). These include Belgium, Cyprus, Denmark, Spain, Great Britain, Italy, Latvia, Portugal and Slovenia. Thus far, the use of compensation funds as a funding mechanism in the postal services sector has been rather limited—the only example being Italy. However, as the sector is further liberalised, the European Commission is expecting an increasing number of Member States to adopt this funding mechanism.

To implement a compensation fund, the following questions need to be addressed.

- **How will the money for the fund be raised?** Funds can be obtained through levies on operators or directly on consumers. In relation to the former, charges can take the form of a:
  - lump-sum tax on service operators—ie, operators have to contribute a fixed sum independent of their size and whether they are the incumbent or the entrant;
  - a tax on the operators' revenues or profits, based on a predefined percentage;
  - a unit tax on the operators—eg, a tax on each mail unit (letter, parcel) carried and/or delivered.

  As for levies on the users of the universal services, they can take the form of proportional levies on the price of services.
- **How should the taxable base be defined?** After the source of the funds has been defined (ie, whether it is revenues, units or profits), the regulatory authority must still define the scope of these revenues, units or profits that will form part of the taxable base of the compensation fund mechanism. In other words, a decision must be taken as to:
  - *the services that will form part of the taxable base*—for example, if revenue tax is the source of funds, should the tax be imposed on the revenues of all postal services or only a sub-set of these? What criteria can be used to define which services are included in the taxable base, and which excluded from it?
  - *within a particular service, the proportion of revenues, units or profits that will be taxed*—for example, if the revenues of single-piece mail have been included as part of the taxable base, should the total revenues of this service be taxed or only those generated by operators in the low-cost, profitable areas of a country?

The appropriate tax base is one which is neither too narrow (in order to avoid a situation where insufficient funds are raised) nor too wide (which may risk distorting other markets or disproportionately taxing a player in the market). A number of options have been proposed to define the tax base:

- *tax on operators providing services which are substitutes of the USO services*—a key issue under this methodology would be to define exactly what products are substitutes for the relevant postal services;
- *tax on operators that make use of the USO*—under this option, all operators which make use of the USP's facilities should contribute to the fund;
- *tax the source of USO funds prior to liberalisation*—this option would include in the taxable base those services and geographic areas that were providing the main source of funding during the pre-liberalisation period. This would require a detailed specification of the services and geographic areas that were, or are, providing the profits necessary to finance the losses incurred in providing the USO.

This option of using the sources of funding in the pre-liberalisation period can be linked to that of taxing substitute services and products. For example, if an operator entered the market offering a substitute service that 'steals' market share from a service that was providing funding for the USO in the pre-liberalisation period, these revenues, units or profits could be included in the taxable base of the compensation fund.

To keep the analysis tractable in the numerical examples that follow, it is assumed that firms only offer a single product (single-piece mail), and therefore issues of how to define the taxable base are not addressed. Nevertheless, the examples do highlight the importance of defining whether the tax base should include all or just a proportion of revenues, units or profits of this single service, and what are the implications of different definitions of the tax base along this dimension.

- **Who should contribute?** In addition to deciding the source and taxable base, it is necessary to determine who should be contributing to the fund—ie, entrants, incumbents or both. As mentioned before, the answer would depend on whether the gross or net USO burden is financed. If gross costs are funded (ie, the avoidable costs of the USO) then both the incumbent USP and entrants should be contributing to the fund. By contrast, if the net costs are to be financed (ie, under the EP approach), only entrants should be contributing to the fund; otherwise, the incumbent USP would be taxed disproportionately.
- **How will the money be allocated to the USPs?** Subsidies can be allocated on a lump-sum or variable basis as a function of the profits, revenues or units delivered in the high-cost unprofitable areas.
- **How will the funds be administered?** Either an 'actual fund' can be administered by an independent third party, or a 'virtual fund' can be administered by the incumbent operator (if it is the only USP).

This section describes the mechanisms that can be used to raise the funds for a compensation fund. Information is also presented on how the fund is administered and how the funds are allocated. Each alternative way of raising the funds is then assessed against the criteria described in section 3.

6.1 Description of the mechanism and numerical examples

The ways in which funds for a compensation fund can be raised are examined below. The analysis starts with a general description of each mechanism based on the evidence provided by case studies (where available) and Oxera's review of the theoretical literature.

The description is followed by a numerical example illustrating how a compensation fund would work in the postal sector. The examples are constructed based on the assumptions presented in section 5.2.

6.1.1 Compensation fund funded with taxes on the revenues of operators

One of the most commonly used methods for raising funds is by obliging service providers (both incumbents and competing operators) to contribute to the compensation fund in proportion to their revenue—ie, a **revenue tax**. This type of fund has been set up in Australia, France, Canada, and the USA to finance universal service in the telecoms sector. Generally, the funds are distributed in the form of a lump-sum subsidy to the USP(s) and the fund is administered by a third party—usually the Ministry responsible for the oversight of the telecoms sector.

The case studies suggest that there are broadly two options in terms of the tax base from which the funds are raised:

– **option 1**: the tax is applied to a broad revenue base—this is the model used in Australia and France. In Australia a tax is imposed on the total revenues of licensed fixed-telephony *access* providers. In France, the tax applies to the revenues of all the operators providing telecommunication *services*, including fixed-line, mobile and Internet Service Providers (ISPs);

– **option 2**: the tax is applied to a specific part of the operators' revenues, usually those generated in the provision of highly profitable (or less costly) services. In the USA, all telephony service providers have to contribute to the fund. The contribution is based on the inter-state and international call revenues of operators, which are used to cross-subsidise the provision of telephony services to users in rural areas. Similarly, in Canada the revenues from international calls are used as the taxable base.[35]

Table 6.1 describes the main characteristics of the compensation funds that have been set up in these four countries. Further details are provided in the Appendix.

[35] In Canada, all ISPs, including cable and DSL providers, have to contribute to the fund, while in the USA only DSL ISPs are subject to USO contributions.

Table 6.1 Compensation fund based on taxes on the revenues of telecoms service providers in Australia, France, USA and Canada

	Australia	France	USA	Canada
Definition of the USO	The USO includes non-discriminatory, ubiquitous access to standard telephone services; payphones and prescribed carriage services at affordable prices	Access to standard telephony services, the provision of directory services, and the installation of public payphones. USO services shall be available on a non-discriminatory, ubiquitous basis	The USO includes ubiquitous access at affordable prices to fixed telephony services	The USO includes ubiquitous access at affordable prices to individual local service with touch-line dialling, emergency services, a long-distance network and a copy of the local telephony directory
Who contributes to the fund?	All fixed-line telecoms carriers are required to contribute a share of their total telecoms revenue to the fund	Fixed, mobile, Internet, cable and data transport service providers are required to contribute to the compensation fund. Each operator is required to pay a share (less than 0.5%) of its total telecoms revenue	All telephony service providers (fixed-line, mobile and DSL) have to contribute to the fund. Each contributor is required to pay a share (9–10%) of its revenues from inter-state and international calls. The contributions are often passed on directly to consumers	Mobile operators, international licensees, satellite service providers, ISPs, payphone providers, data and private line service providers are required to contribute to the compensation fund. Operators are required to pay a share of their revenues from long-distance calls. (In 2003/04, this amounted to 1.1%.)
How is the USP(s) chosen?	Regional tenders were held for contestability pilots and extended zones The regulator designated the only applicant, Telstra, to be the USP	There is a competitive tender and the regulator designates the USP based on technical and tariff conditions In 2005, the regulator designated the incumbent, France Telecom, to be the USP for the three USO components	Exogenously. The compensation fund is distributed to 1,700 eligible rural carriers	Competitive tender process
How is the money allocated?	The USP receives an annual lump-sum subsidy	The USP receives an annual lump-sum subsidy	Incumbent and new carriers are entitled to apply for the monthly lump-sum subsidy	Incumbents and new entrants are entitled to receive lump-sum payments. There are different USPs in each province
How is the fund administered?	The fund is jointly administered by the Australian Communication Authority and the Department of Communications, Information Technology and the Arts	The fund is administered by the Autorité de Régulation des Télécommunications (ART, now called ARCEP).	The fund is administered by the FCC. The Universal Service Administration Company, an independent administrative body, is responsible for data collection, support calculation and reimbursement	The fund is administered jointly by the Canadian Radio-television and Telecommunications Commission (CRTC) and an independent Central Fund Administrator

Source: Oxera based on *Australia*: Department of Communications, Information Technology and the Arts (2004); *France*: ART (2004), Part 5; *Canada*: OECD (2002), and Rural Task Force (2000); and *USA*: US GAO (2002), and CBO (2005).

It is of note that in most of the cases where taxes are imposed on operators, these are passed through to consumers. For example, this has been the case in the USA and France in the telecoms sector where, although the compensation fund is funded with taxes on the operators' revenues, these have been passed on through additional charges to users (OECD 2006, p. 19).[36] Hence, final customers either directly or indirectly contribute to the fund. The proportion of the tax burden that is borne by customers will vary depending on the structure of demand and the market.

How would a compensation fund funded with revenue taxes work in the case of the postal sector? Following the evidence of the case studies, there are two main options in terms of the tax base from which the funds will be raised. As noted above, the numerical examples assume that postal operators offer a single product and, therefore, the problem of defining the tax base simplifies to the decision of taxing all or just a proportion of revenues:

– **option 1**: a tax on total revenues—in the example below, this includes revenues from USO (high-cost) and non-USO (low-cost) areas;
– **option 2**: a tax on a proportion of revenues and, in particular, on low-cost revenues—ie, revenues from non-USO areas only.

The level of the tax rate must be defined in advance, but it should take account of the USO costs that would need to be financed. In the example, the implicit tax rate has been calculated by dividing the USO cost (€150—estimated using the NAC approach) by the tax base. This gives a tax rate of 7.5% under option 1 (€150/€2000) and 50% under option 2 (€150/€300). The tax rate of 50% under option 2 would satisfy the properties of an ECPR tax.[37] Theoretically, an ECPR tax would impose a tax on entrants equal to the forgone profit margin of the incumbent. In this particular case, the profit margin per letter sent by customers in the low-cost area is precisely 50%—ie, (€1 – €0.50)/€1. Moreover, because the USO cost to be financed is assumed to be the gross USO cost (€150), the tax would applied on both the incumbent and the entrant.

Table 6.2 shows the results of this mechanism under options 1 and 2. In the example:

– under option 1, the incumbent would be unable to break even, even after the net subsidy from the compensation fund, while the entrant would be making positive profits;

– under option 2, both operators earn zero economic profits. In option 2, this result is obtained because of the ECPR nature of the tax rate. The entrant is taxed an amount equal to the profit margin it makes in the low-cost area, which is used to compensate the incumbent for this forgone profit.

Table 6.2 Compensation fund funded through a revenue tax

	Option 1: tax on total revenues		Option 2: tax on low-cost revenues	
	Incumbent	Entrant	Incumbent	Entrant
Profit before compensation fund	–45.00	45.00	–45.00	45.00
Contribution to compensation fund	–143.25	–6.75	–105.00	–45.00
Subsidy from compensation fund	150.00	0.00	150.00	0.00
Profit after compensation fund	**–38.25**	**38.25**	**0.00**	**0.00**
Tax rate (contribution/tax base)	*7.5%*	*7.5%*	*50%*	*50%*

Source: Oxera.

[36] OECD (2006), p. 19

[37] A similar approach has been adopted in the USA to determine the contribution of the relevant telecoms carriers to the federal fund. See Appendix for further details.

This example illustrates the importance of defining an appropriate tax base. In particular, if set too wide (option 1), the incumbent would be contributing a disproportionate amount to the compensation fund because the tax is covering not only the revenues where operators make profits (low-cost areas) but also those where the incumbent makes losses (high-cost areas). This problem is solved under option 2, where the tax base is defined as the revenues from profitable, low-cost areas.

In practice, there are not many instances where compensation funds with taxes on revenues have been used in the postal sector. One example is in Italy, where all service providers holding universal service licences transfer a percentage of the revenues generated by universal services to the fund. However, as shown in Box 6.1 and in the Appendix, the revenues of the compensation fund have not been enough to cover the USO burden.

In effect, according to information provided by Poste Italiane, in 2005 the compensation fund contribution represented only 0.04% of the certified USO burden after state compensation.

Box 6.1 Compensation fund in the Italian postal sector

The compensation fund was established by law in 1999. Subsequently, the Ministry of Communications required that the fund be based on the individual licence holder's revenue from universal services. The licence holder therefore has to maintain an audited separate accounting system, distinguishing between revenues from universal services and those from other services. Each year operators must provide the regulator with information on their universal service revenues.

The rate of contribution to the compensation fund is fixed yearly by the regulatory authority (within a maximum of 10% of the licensees' gross revenues from universal services). Until now, the Ministry has always set the percentage at 3%, significantly below the maximum allowed. For 2005, the individual licence holders declared gross revenue of approximately €3.7m. However, the USO burden borne by the USP (after state compensation) amounted to approximately €292m. This implied that the compensation fund contribution of other operators (ie, €111,000) represented around 0.04% of the certified USO burden.

Source: Poste Italiane.

6.1.2 Compensation fund funded with taxes on the profits of operators

Although the review of case studies indicates that taxes on profits do not seem to be used at present as a way of funding the compensation fund, this mechanism has been considered by a number of academics. As with compensation funds funded with revenue taxes, there are two options in terms of the tax base from which the funds will be raised:

- **option 1**: a tax on total profits—ie, profits from USO and non-USO areas;
- **option 2**: a tax on a proportion of profits—ie, profits generated in low-cost areas (from non-USO areas only).

Table 6.3 below summarises the results of applying both options for compensation funds funded with profit taxes. The table shows that option 1 may not guarantee that sufficient funds will be raised. The incumbent's total profits are negative and therefore cannot contribute to the compensation fund, while the entrant's total profits are €45, which is insufficient to cover the €150 required by the fund—a tax rate of 333% (€150/€45) would have to be imposed on the entrant, which is clearly not feasible.

Under option 2, a tax rate of 100% of profits in the low-cost area would achieve the same result as a 50% tax on low-cost revenues.

Table 6.3 Compensation fund funded through a profit tax

	Option 1: tax on total profits		Option 2: tax on low-cost profits	
	Incumbent	Entrant	Incumbent	Entrant
Profit before compensation fund	–45.00	45.00	–45.00	45.00
Contribution to compensation fund	0.00	–150.00	–105.00	–45.00
Subsidy from compensation fund	150.00	0.00	150.00	0.00
Profit after compensation fund	**105.00**	**–105.00**	**0.00**	**0.00**
Tax rate (contribution/tax base)	*0%*	*333%*	*100%*	*100%*

Source: Oxera.

6.1.3 Compensation fund funded with unit taxes

Compensation funds funded with unit taxes can take the form of:

- direct taxes on consumers—eg, in New Jersey (USA) high-income energy users pay a monthly per-unit tax on their electricity and gas consumption, which is then used to subsidise the energy consumption of low-income users; or
- taxes on operators that are passed on to final users in the form of unit taxes—eg, in France renewable energy generation is funded through unit taxes on industrial electricity producers, which is passed on to customers in the form of a levy per KWh used (see Box 6.2).

Box 6.2 Compensation fund funded through unit taxes on energy users: New Jersey (USA) and France

In New Jersey, the provision of electricity and gas services to low-income households is funded through a surcharge on the units of energy consumed by higher-income customers—ie, unit tax. In 2003, the New Jersey Board of Public Utilities adopted a charge of $0.002326 per therm and $0.000345 per kWh. Households participating in the programme receive a credit on their bills—the objective of the fund is that they should not pay more than 6% of their annual income for energy services. The programme administrator is the New Jersey Department of Health.

In France, renewable energy is partly financed through levies imposed on industrial energy consumers. Producers of wind power may, for example, sign 15-year contracts with the state-owned electricity generator, EDF, to maintain a certain price rate. The price differential is funded through a unit tax imposed on industrial electricity producers, which is passed on to customers in the form of a levy per KWh used. The Commission de Régulation de l'Energie (CRE) administers the current public service contribution of €0.045 per KWh, which adds approximately 4% to French industrial electricity billing.

Source: US Department of Health and Human Services (2006); State of New Jersey (2003); *Les Echo* (2000).

Table 6.4 below illustrates how a compensation fund funded through a unit tax on the operators' sales volumes would work. It is assumed that this would operate in the same way as a compensation fund funded through a revenue tax for both option 1 (tax on total units) and option 2 (tax on low-cost units), respectively. Moreover, the implicit tax rates are also the same—7.5% for option 1 (€150/2,000 units) and 50% for option 2 (€150/300 units), where the latter has the same ECPR properties as described above.

Table 6.4 Compensation fund funded through a unit tax

	Option 1: tax on total units		Option 2: tax on low-cost units	
	Incumbent	Entrant	Incumbent	Entrant
Profit before compensation fund	–45.00	45.00	–45.00	45.00
Contribution to compensation fund	–143.25	–6.75	–105.00	–45.00
Subsidy from compensation fund	150.00	0.00	150.00	0.00
Profit after compensation fund	**–38.25**	**38.25**	**0.00**	**0.00**
Tax rate (contribution/tax base)	*7.5%*	*7.5%*	*50%*	*50%*

Source: Oxera.

Similar issues with respect to the definition of the tax base discussed in the context of revenue taxes arise here. A wide tax base (option 1) would disproportionately tax the incumbent because the tax is covering units (mail items) in unprofitable, high-cost areas. As before, the problem is solved in option 2, where the tax base is defined as the units from profitable, low-cost areas.

6.1.4 Compensation fund funded with lump-sum taxes

Finally, the compensation fund can be funded through lump-sum taxes either on operators or directly on consumers. In practice, lump-sum taxes are fixed-amount levies imposed on an operator or user independently of its market share or consumption, respectively.

For instance, in Maryland (USA) residential electricity customers pay a flat fee of US$0.40 per month into a fund that is used to subsidise the consumption of low-income customers—and, in particular, their heating costs. Commercial and industrial customers also contribute to the fund. The programme is administered by the Maryland Department of Human Resources.[38]

Table 6.5 illustrates how a compensation fund funded through a lump-sum tax on operators would work. If properly designed, the outcome would be very similar to a compensation fund funded through a tax on profitable, low-cost revenues, profits or units—ie, both the incumbent and the entrant would break even. The difference would be that, instead of having to estimate an implicit tax rate, the regulator would have to establish the monetary value of the lump-sum tax ex ante. (In the example below, this would be 45 for the entrant, and, if the compensation fund is an 'actual' fund, the incumbent's contribution of 105).

Table 6.5 Compensation fund funded through a lump-sum tax

	Incumbent	Entrant
Profit before compensation fund	–45	45
Contribution to compensation fund	–105[1]	–45
Subsidy from compensation fund	150	0
Profit after compensation fund	**0**	**0**
Tax rate (contribution/tax base)	*100%*	*100%*

Notes: [1] The incumbent's lump-sum tax of 105 could be either 'actual', in the sense that it contributes to a fund administered by a third party and then receives the total subsidy of 150; or 'virtual', in the sense that it does not have to pay into a fund and it is only the entrant who contributes, with 45.
Source: Oxera.

[38] See Southern Maryland Electric Cooperative.

6.2 Assessment against criteria

The advantages and disadvantages of funding the USO through a compensation fund are assessed in detail below based on a review of academic literature and case studies. The analysis is undertaken against the criteria discussed in section 3.

6.2.1 Efficiency

Allocative efficiency

Allocative efficiency is achieved when prices reflect the cost of delivering the service in question. If the USP has to provide the USO at uniform prices, as explained in section 5.3.1 allocative inefficiencies will be created independently of the mechanism that is used to fund the USO.

Leaving the above issue aside, a number of authors have compared the allocative efficiency of compensation funds to other funding mechanisms, and in particular to:

– the reserved area; and
– access charge uplifts.

In relation to *the reserved area*, Cremer et al. (2001) point out that, although in the case of a compensation fund the taxable base is restricted to some users, the effect of this mechanism on efficiency is smaller than that of reserved areas. This is because, to the extent that the compensation fund is funded by all operators, potentially a larger number of customers would be assuming the USO burden than in the case of the reserved area, where only the low-cost users of the USP would be funding the net costs of providing the service to high-cost customers. This difference would be less clear in the case where the taxable base is defined according to the revenues, profits or units from low-cost areas.

Madet et al. (2004) compare the level of prices that would result from an *access charge uplift*, a compensation fund funded through a unit tax, and one funded through a lump-sum tax—the last two are combined with an access charge. (See the productive efficiency section below for an explanation of combining a compensation fund and access charges.) The authors show that the prices resulting from a compensation fund funded with a lump-sum tax would in effect be equal to, or lower than, those that would result from funding from a unit tax, as the cost increase from the lump-sum tax is not passed on to final consumers.[39]

In this regard, as explained in section 6.1, a compensation fund can take a variety of forms, including lump-sum, revenue, profit or unit taxes. When comparing these, it is widely recognised that funding mechanisms that do not affect consumers' or operators' marginal decisions would tend to be more allocative-efficient. Hence, lump-sum taxes would tend to be less distortionary than unit or revenue taxes.

Consider, for example, the case of a lump-sum tax imposed on all operators, including both the USP and other operators. Such a tax would increase the fixed costs of delivering the service. A profit-maximising operator would maintain the quantities of output delivered and, hence, the price charged for the service. As a result, the sole effect of the lump-sum tax would be to decrease the profits of both the USP and other operators. In contrast, a variable tax, such as a unit or revenue tax, would have the effect of increasing the marginal cost of

[39] The authors also show that if the entrant uses the incumbent's network to provide the services and there is no bypass, the entrant will pay the same taxes under access charge uplift or under access charge plus a compensation fund funded with a unit tax. They also show that the combination of lump-sum funding and access charges reduces the distortionary effects generated by access charges. This is because the access charge would be lower in the first case and, hence, it would be easier for an entrant to compete with the incumbent. If entry occurs, the incumbent's market power will be reduced. If the compensation fund is allocated in the form of a unit subsidy, this subsidy will encourage the incumbent to increase output (countering the output restriction imposed by a uniformity constraint).

the service in question. Hence, a variable tax would have greater allocative efficiency distortions than a lump-sum tax since customers would face higher prices than would have prevailed without the tax.

Productive efficiency

An additional aspect that needs to be considered is productive efficiency. An important policy concern with any subsidy scheme is that it could provide the USP with limited incentives to innovate and minimise costs. In effect, as PwC (2006, p. 167) argues, the recipients of such a subsidy might devote significant resources to protecting and increasing the subsidy, rather than seeking efficiency improvements from service innovations.

However, from a productive efficiency perspective, the fact that entrants have to contribute to the compensation fund may provide the incentives for them to put pressure on the USP (as well as those administering the fund, regulators and policy-makers) to provide universal services at the lowest possible cost and, hence, show that subsidies are kept to the minimum.

In terms of the ways in which the funds for a compensation fund can be raised, a compensation fund funded with lump-sum taxes, although the most efficient from an allocative point of view, might lead to productive and dynamic inefficiency if set too high. This is because taxes may affect the entry and expansion decisions of efficient operators (see section 6.3.2).

In contrast, a compensation fund funded with revenue and/or unit taxes would receive a higher score in terms of productive efficiency. An ECPR-type revenue or unit tax (eg, a tax in the profitable, low-cost area) would impose a tax on entrants equal to the profit margin that the USP has to forgo in order to deliver universal service—eg, 50%, as illustrated above. Only operators equally or more efficient than the entrant would enter the market, which would avoid inefficient cream-skimming in the low-cost area (ie, inefficient entry is prevented), and guarantee productive efficiency as the USO is assumed by the most efficient provider (ie, only efficient entry is promoted).

These arguments are supported by Armstrong (2001), who compares, on the one hand, the impact on productive efficiency of an access charge uplift, and, on the other, of a compensation fund funded through unit taxes on the low-cost area complemented with an access charge to cover network costs. The idea behind combining these two funding mechanisms is that retail instruments such as a compensation fund should be used to tackle distortions in retail markets (ie, a subsidy is used to counter distortion from the uniform-price constraint), while wholesale instruments should be used to tackle wholesale distortions (ie, access charges are used to recover the cost of providing network access in high-cost areas). Armstrong shows that the most efficient funding mechanism would be one where the access charges are equal to the network cost, and the unit tax is equal to the operators' profit margin, which is then allocated through a unit subsidy equal to the loss per user in the high-cost area. Such a funding mechanism would achieve a twofold objective:

– efficient entry would be promoted—an entrant would only enter if the cost of providing the service end-to-end is lower than that of the incumbent, or when its own network costs are lower than those it would have to pay the incumbent if the entrant wanted to provide the service using the incumbent's network;

– inefficient entry is prevented—since only operators that are more efficient than the incumbent will enter the market, relatively less efficient entrants will have to use the incumbent's network and inefficient cream-skimming entry will be avoided.

Dynamic efficiency

Compensation funds may create dynamic inefficiencies if the fund strengthens the position of the USP and the contributions to the fund reduce the incentives of more cost-effective operators to provide universal services and/or enter the high-cost market offering the service using more innovative methods of delivering it. For instance, in the context of the USO in the telecoms sector, OECD (2006, p. 21) noted that the fact that entrants have been contributing to a compensation fund can block the adoption of innovative technologies (eg, wireless) in high-cost areas that would be more productively efficient than those used by the USP. In the postal case, universal service subsidies might help to perpetuate the use of less efficient delivery technologies.

In the postal sector technological advances are not as obvious as in telecoms, given the relatively lower capital intensity in the postal sector. Hence, the extent of dynamic inefficiencies created by compensation funds and any other funding mechanism may be limited by the inherently low technological basis of postal services.

Additionally, while the use of ECPR-type taxes, as described above, has the property of allowing the incumbent to break even and induce entry of operators that are at least as efficient as the incumbent, they can score poorly in terms of dynamic efficiency because they essentially preserve the status quo level of the incumbent's profits. This, in turn, has the potential to reduce the incumbent's incentives to become more efficient.

In this sense, regulatory authorities in each Member State must assess the level of efficiency of incumbent operators and determine whether adjustments need to be made to ECPR-type taxes such that they take into account the scope for productivity improvements by the incumbents.

6.2.2 Competitive neutrality

As mentioned in section 4, the competitive neutrality criterion has two dimensions:

– it relates to the concept of productive efficiency, in that a funding mechanism should be designed such that the USO is provided by the most efficient operator;

– all market participants should contribute proportionately to the fund regardless of their identity—ie, contributions should be non-discriminatory.

Once a market has been liberalised, compensation funds do not impose undue barriers to efficient entry per se. As explained in section 6.2.1, the main risk arises from compensation funds funded with lump-sum taxes to the extent that tax rates could be set at excessively high levels. This is because, unlike other forms of taxation where the total contribution changes with the scale of operation, this might not be the case with a lump-sum tax. Therefore, if lump-sum taxes are set too high, entry into the market could be discouraged and competitive neutrality affected.

The case studies reviewed by Oxera in the context of this report suggest that compensation funds with revenue taxes could score highly in terms of competitive neutrality. For example, in the case of the compensation fund set up in the telecoms sector in Canada (see Table 6.1 above), the OECD (2002, p. 32) has highlighted that the revenue-based contribution scheme encouraged the market participants' willingness to compete on equal terms for providing the services because there have been fewer complaints by new market entrants about the regulatory framework and behaviour of the incumbents than in many other OECD countries.

Furthermore, Cremer et al. (2001) and Armstrong (2001) have pointed out that, depending on how the compensation fund is designed, the risk of cream-skimming entry from less efficient providers may be reduced. In particular, Armstrong shows that, in the context of compensation funds funded with ECPR-type unit taxes, only those entrants that are more efficient than the USP would be able to compete effectively with the incumbent.

In addition to raising funds through a tax on operators, a compensation fund could be funded with direct levies on consumers. In theory, this could take the form of a lump-sum surcharge or a unit tax. In the postal sector it is unlikely that a lump-sum tax on consumers would be practicable, but a unit tax may be implemented. Since operators would not have to contribute to the compensation fund, a unit tax on consumers would be the most competitively neutral form of compensation fund.

The second dimension of competitive neutrality—market participants should contribute on a non-discriminatory basis—raises the challenge of defining the taxable base such that competition in the main and any related markets is not distorted. The following three approaches to defining the taxable base have used in practice:

– all companies active in a sector contribute to the fund; or
– operators using the USP facilities should contribute to the fund; or
– operators providing services that can be regarded by users as a substitute for the universal service should contribute to the fund.

The first approach requires all operators providing services in a given sector (eg, telecoms) to contribute to the compensation fund. This approach has been adopted in France, where all suppliers of communications services (including fixed, mobile and cable operators) have to pay a revenue tax once their revenues exceed a threshold (see Table 6.1).

The second approach has been used in the telecoms sector in the USA (see Table 6.1). In this case, fixed, mobile and DSL providers of fixed telephony contribute to a fund that is used to finance the provision of ubiquitous telephony services at affordable prices. The rationale for this approach appears to be that all operators using the USP's facilities for terminating their calls should help to finance the net costs resulting from the USO. However, it has been argued that the contributions may affect competition in related markets. More specifically, the argument is that since DSL operators compete with cable providers in the market for the provision of Internet services, the compensation fund puts DSL operators at a competitive disadvantage and, hence, it distorts competition between both platforms (CBO 2005, p. 20).

Under the third approach providers offering services considered by consumers to be a substitute for the universal service would contribute to the compensation fund. Substitutability is defined in terms of 'the characteristics of the services, including value added features, and their intended use'. However, in order to be considered a substitute, 'the services do not necessarily have to cover all the features of the universal services, such as daily delivery or complete national coverage.'

As discussed in the introduction to the compensation fund mechanism, one option—which, at least in theory, could address the problem of defining the tax base on competitively neutral terms—would be to define the tax base as the services and geographic areas that provided the main source of funding during the pre-liberalisation period. In this sense, all postal operators (incumbents and/or entrants) providing services that fall within the scope of this definition would be required to contribute to the fund.

6.2.3 Social equity

The impact on equity of a compensation fund would depend mainly on the restrictions that the regulator imposes on the way prices are set. In particular, if it is established that the USO should be priced uniformly regardless of the location of the sender or receiver, the structure of the compensation fund per se should not affect the equity of the system.

If the concept of social equity is interpreted in a redistribution sense, compensation funds may in effect have an impact on how fairly income is distributed among the members of society. For instance, if the government were of the view that wealthier individuals should cross-subsidise the prices paid by individuals who are less well-off to enable the latter to

access universal services, a compensation fund funded through taxes levied directly on the second type of user would be preferred.

The compensation fund set up in New Jersey in the energy sector has the above underlying rationale (see Box 6.2). The consumption of energy and gas by low-income groups is cross-subsidised by applying a surcharge to the rates paid by higher-income groups. Hence, the programme has a strong redistribution rationale behind it. The programme appears to be achieving this objective. According to estimations by APPRISE (2006), the universal service fund credits have paid about 40% on average of the utility bills paid by the participants of the programme (ie, low-income households). In addition, the programme has eliminated about 90% of pre-programme arrears for USF customers.

Implementing a compensation fund in the postal sector that favours relatively less well-off individuals (measured by income) might not be possible as both high- and low-income users may be located in low-cost areas. In this case, compensation funds may be regressive in the sense that low-income customers located in a low-cost area may end up funding the services of high-cost users located in an area that is relatively expensive to serve. Nevertheless, the net social welfare effect might still be positive in countries where the majority of low-income users are located in rural or high-cost areas.

6.2.4 Compatibility with state aid rules

Since compensation funds are funded with levies on operators or directly on customers and hence do not rely on transfers of state resources, this funding mechanism is unlikely to raise concerns in relation to state aid rules.

6.2.5 Transparency and opposability

From a theoretical perspective, Cremer et al. (2001) assert that funding mechanisms that rely on levies on operators, such as compensation funds, are more transparent than access charges since financing the USO is clearly separated from the cost of access and financing the network's fixed costs.

However, case studies show that there have been some difficulties when implementing a compensation fund. One of the most contentious areas has been the degree of transparency in the information that is necessary to:

– estimate the USO burden—a problem common to other funding mechanisms;
– define the taxable base and the size of individual contributions.

On the first point, regulators have to rely on information provided by market participants and, more specifically, the USP in order to estimate the USO burden. In Australia, a recent report has established that the funding arrangements of the USO in the telecoms sector include a lack of access to, and scrutiny of, information used to determine USO costs and, hence, the burden that has to be assumed by undertakings. [40]

Another potentially problematic area is that authorities need to rely on information provided by the operators to determine who contributes to the fund, the size of the taxable base (eg, total taxable revenues), and the relative size of the individual contributions (eg, tax rate) necessary to cover the net costs of the USO.

In general, it is considered that using firms' revenues as the source of funds is more transparent than profits, which can be measured in a wide variety of ways. Nevertheless, as

[40] There have also been some criticisms about the lack of transparency in which the information has been administered by the institutions in charge of managing the compensation fund. In particular, the Australian Communications Authority has been criticised for not making public its subsidy advice to the Ministry of Communications in the last two years. Department of Communications, Information Technology and the Arts (2004), p. 116.

the rate of contribution is usually applied to eligible revenues, companies may have incentives to manipulate their accounts in order to reduce the proportion of revenue that is lost to the compensation fund. Manipulation of accounts can be limited by requiring firms to prepare independently audited accounts, although, in Australia, the Department of Communications, Information Technology and the Arts (2004) has highlighted that audits may impose an additional administrative burden on contributing carriers.

Where the compensation fund is funded via unit taxes (on operators or directly on customers), transparency issues may arise in sectors such as postal, where it might be difficult to have reliable estimates of the quantity of output. Information on postal traffic is generally estimated from sampling methods, which are not necessarily audited. This, together with the high volatility of traffic, makes it difficult to estimate the size of the funds that the USP would be receiving.

6.2.6 Practicability

There is mixed evidence on the practicability of compensation funds, especially in the postal sector, where they have only been implemented in Italy.

One of the main issues in terms of practicability appears to be the definition of the taxable base. As discussed in section 6.2.3, in practice a number of approaches can be adopted when determining who should contribute to the compensation fund. This can make it difficult to implement a compensation fund based on operators' taxes.

Direct taxes on consumers are easier to administer, and readily understood by customers. They also have the potential to raise a predictable amount of funds if the units sold are relatively stable over time. However, as explained in section 6.2.5, postal traffic tends to be uncertain and volatile. As a result, compensation funds funded with taxes on users will raise the same practicability, proportionality and certainty issues as compensation funds with levies on operators (see below).

6.2.7 Proportionality

As mentioned in section 4.7, proportionality has two main dimensions: a funding mechanism that is proportional is one that guarantees the viability of the USO in the short term; and one where the competitive position of the operators contributing to the funding is not put at risk because of the size of the cost imposed.

In certain cases, compensation funds have not been successful in guaranteeing sufficient resources to fund the USO. This may be explained by a lack of transparency in relation to the costs of providing the USO and the size of the contributions, especially when these are a function of partial revenue/profits—eg, eligible revenue.

For instance, in New Jersey (USA) the compensation fund in the energy sector illustrates the situation for compensation funds funded with direct taxes on users. Such a fund was under-funded in the first year as the programme cost more than twice the original estimated. As a result, utilities carried a balance against the federal government and interests had to be paid on those balances—around $500,000 in 2004/05, which represented around 0.5% of the total costs of the programme (APPRISE 2006, p. 157).

In the case of the postal sector in Italy, the funds that have been raised from operators have been considered insufficient to cover the USO burden. The state has had to intervene and provide subsidies to Poste Italiane. Over time, the funds coming from the compensation fund have fallen relative to the total cost of the USO. According to information provided by Poste Italiane, in 2005 they covered less than 1% of the USO burden (after state compensation). PwC (2006, p. 167) notes that:

> one explanation for this low value of these receipts was that operators declared only a very small fraction of their mail as being a 'USO' product. The Italian example illustrates

two problems with compensation funds. One is that they present difficulties in monitoring receipts and assuring that everyone pays their fair share. Second, the problem of assuring that the fund raises a specified amount of money to finance some targeted obligation is an additional challenge.

In the telecoms sector, there have been cases where the compensation fund has been proportional to the funding needs; for example, in France, where contributions to the fund have traditionally exceeded the actual USO-related cost, and in the US telecoms sector.

6.2.8 Certainty

As in the case of proportionality, compensation funds appear to score relatively low against the certainty criterion. This is mainly explained by the fact that the sources of the funding (be these revenue, unit or profit taxes) tend to be volatile over time. If tax rates are not adjusted to reflect such changes, the USPs might be under-funded.

In the case of compensation funds funded with levies on consumers, APPRISE has highlighted that the New Jersey compensation fund may continue to be under-funded owing to the uncertainty in terms of the growth in the number of households contributing to the programme, as well as those receiving the support. Similar problems are faced with funds financed by operators' contributions. In the case of the revenue-based compensation fund in the telecoms industry in Australia, the subsidy level for 2004/05 was the lowest since 1991–93. It has not been possible to determine whether this is because there is a general downward trend in the revenue of the operators contributing to the fund.[41] Furthermore, it is unclear whether the situation will improve in the Italian postal sector in the coming years.

Box 6.3 Tax rate in the USA

In the US telecoms sector, the contribution fund collects payments from all carriers that provide interstate and international telecoms services to subsidise access to fixed telephony in rural areas. Over the last few years, the revenue base has decreased, while there has been a continuous increase in USO-related costs.

In response, there has been a corresponding increase in the tax rate, which changes quarterly in order to maintain a balanced fund. The level of the tax rate has tripled within the last seven years. In 1998, only 3% of the revenue base had to be contributed, while more than 10% has to be contributed in 2007.

Source: Oxera based on Rural Task Force (2000).

In contrast, in the USA it has been highlighted that the current arrangement has been in use for nearly 20 years, guaranteeing the long-term availability of universal services. The predictable arrangement has been found to produce reasonable comparable outcomes throughout the USA (Rural Task Force 2000, p. 10). It has been pointed out that the contribution base has been unstable over the last few years, while the associated costs of delivering telephony services in high-cost areas have increased (CBO 2005, p. 20). However, the fact that the contribution factor is adjusted (quarterly) appears to be one of the factors that has helped to maintain a balanced budget.

6.2.9 Summary

Table 6.6 below presents a summary of the main findings of this section.

[41] Department of Communications, Information Technology and the Arts (2004).

Table 6.6 Summary of assessment of compensation fund

Criteria	Comments
Efficiency	**Allocative efficiency**—funding mechanisms that do not affect marginal incentives are the most allocatively efficient. Hence, lump-sum taxes may be more allocatively efficient than unit or revenue taxes, which may be expected to feed through to prices more directly **Productive efficiency**—lump-sum taxes may affect productive efficiency if they are set too high, as they may reduce the number of active operators and prevent the entry of otherwise efficient competitors An ECPR-type revenue or unit tax ('zonal tax') would result in productive efficiency since only operators as efficient as the incumbent would enter the market; although an ECPR-type tax might be 'too high' if it preserves the incumbency advantage and potential inefficiencies associated with this advantage Profit taxes may lead to productive inefficiency by increasing an entrant's cost of capital, and reducing the attractiveness of entry **Dynamic efficiency**—lump-sum taxes might affect dynamic efficiency if they prevent efficient entry and lead to a less competitive industry. ECPR-type revenue and unit taxes could have a similar effect only if they preserve inefficiencies by the incumbent and, therefore, are set 'too high'
Fair competition	See the potential impact of high lump-sum taxes on entry noted above. Correctly designed revenue or unit taxes (eg, ECPR-type tax) may prevent cream-skimming entry and ensure that only more efficient entry occurs, subject to the caveats mentioned above Taxes on consumers could be competitively neutral since operators would not have to contribute to the compensation fund Case studies (from the telecoms sector) show that, in general, all operators (including both the USP and providers of services in low-cost areas) contribute to the compensation fund. Care must be taken when deciding who should contribute. (There have been complaints in the US telecoms sector of contributions distorting competition)
Social equity	If equity is defined in terms of uniformity, compensation funds do not have an impact on equity (more related to how the USO is defined) If equity is defined in terms of redistribution, compensation funds funded with taxes on high-income users may be more equitable. However, this scheme may be difficult to implement in the postal sector as there is limited scope for differentiating between customer groups (eg, both high- and low-income customers may be living in low-cost areas)
Compatibility with state aid rules	Since compensation funds are funded with levies on operators or directly on customers and hence do not rely on transfers of state resources, this funding mechanism is unlikely to raise concerns in relation to state aid rules.
Transparency and opposability	Most mechanisms run the risk of transparency/opposability problems since they rely on information provided by market participants. To the extent that firms are required to prepare independently audited regulatory accounts, these problems could be minimised (but this would impose an additional cost on the operators). A profit-based compensation fund would be most likely to suffer from 'game-playing'—ie, using cost allocation to minimise liabilities. Nevertheless, similar 'gaming' problems might arise with revenue taxes (as the Italian postal case illustrates) and potentially with unit taxes (although Oxera's research has not been able to identify a case study to ascertain whether this is the case with unit taxes)
Practicability	A compensation fund based on revenue tax has not proven straightforward to implement, as it is difficult to identify the taxable revenue and monitor it. For instance, a tax based on partial revenues (eg, revenues derived from services within the scope of the USO) creates allocation problems as well as incentives to understate taxable revenue (eg, Poste Italiane). Similar issues could arise with unit taxes A tax based on total revenues (as opposed to a proportion of revenues as above) would avoid allocation problems and be easy to implement and monitor (eg, as per the current telecoms reform proposals in the USA). However, it is subject to problems of fair competition, proportionality and certainty because incumbents could be taxed disproportionately While it is the most efficient tax rate, an ECPR-type tax could be very difficult to implement, as it would require a different level of tax on a wide range of products based on measuring the profit margin on multiple services and geographic areas

Criteria	Comments
Proportionality	In some cases (ie, energy in the USA and Poste Italiane), the funds generated by compensation funds have not been enough to cover the USO burden; although this has not been the case elsewhere (ie, telecoms in France and the USA). It is therefore important to ensure that the tax base is defined appropriately and the scope for regulatory 'gaming' is kept to a minimum to avoid this problem. Having the option to adjust the tax rate or the tax base may guarantee proportionality (eg, US telecoms)
Certainty	Compensation funds based on profits, revenues or units sold by the operators or units consumed by users may be problematic if the source of the funding is volatile or tends to decrease over time (eg, energy in USA, telecoms in Australia). As in the case of proportionality, this could be mitigated by adjusting the tax rate or the tax base if insufficient funds are being raised

Source: Oxera.

6.3 Summary and applicability to the postal sector

Two practical issues often arise when setting up a compensation fund, which can have major implications for the analysis against the criteria:

– who should contribute to the fund and how should contribution rates be determined?
– how should the taxable base be defined so that sufficient funds are generated to cover the USO burden, while distortions in the main or any related markets are minimised?

On the first point, funds can be obtained through taxes on operators or directly on consumers. Compensation funds funded with taxes on operators can take a number of forms: a tax rate can be applied to the revenues, profits, or the number of units sold (eg, the number of mail items delivered) by companies; alternatively, operators can be required to contribute a fixed sum of money towards the fund (ie, lump-sum taxes). Despite the variety of alternative sources of funding, in practice compensation funds funded with taxes on operator revenues have been the most widely used across a number of industries and jurisdictions. This might be explained by the fact that they are easier to implement than other forms of compensation fund (see below).

Funds can also come from direct taxes on consumers in the form of levies on the units consumed (eg, a tax on mail items sent), or a lump-sum tax. However, the latter may have limited applicability in the postal sector where final consumers do not have to pay to access the network, unlike the case in the electricity sector, for example. When taxes are imposed on operators, these are usually passed through (to varying extents) to consumers. Hence, final customers contribute to the fund either directly or indirectly. The proportion of the tax burden borne by customers will vary depending on the structure of demand and other market characteristics.

In addition to deciding whether operators or consumers will contribute to the fund and the base of the contribution, it is necessary to determine whether non-USPs (ie, entrants) or both the USP and non-USPs (or their customers) should be contributing to the fund. As mentioned before, the answer would depend on whether the gross or net USO burden is financed. If gross costs are funded (the NAC approach), both the USP and non-USPs should be contributing to the fund. By contrast, if the net costs are to be financed (the EP approach), only non-USPs should be contributing to the fund; otherwise, the USP would be subject to 'double taxation'.

Once it has been decided who should contribute to the fund, it is necessary to establish the taxable base such that it is not:

– so narrow as to prevent sufficient funds being generated. A narrow tax base would affect the practicability, proportionality and certainty of the compensation fund, and could ultimately put at risk the viability of USO, especially in countries where the USO burden is likely to be relatively large. Although one way to generate additional resources with a narrowly defined taxable base would be to impose a high tax rate on entrants, this could make it more difficult for companies (as efficient as the USP or more efficient) to enter the market. This could therefore lead to productive and dynamic inefficiencies;

– too wide, which may risk distorting other (related) markets and tax some operators disproportionately. As the previous discussion has shown, a wide tax base (eg, a tax on all revenues of a particular service) could risk taxing incumbents disproportionately, particularly if the proportion of areas where incumbents make losses is relatively large. Moreover, entrants could be affected by a tax on total revenues if they offer many services that, in principle, should be outside the scope of the compensation fund's tax base.

In terms of the definition of the tax base, and in particular, which operators should contribute to the fund, a number of options could be considered, including:

– companies that provide services that can be regarded as direct substitutes to the postal service contribute to the fund;
– companies in the postal sector, including those providing domestic mail, international mail and express mail, contribute to the fund;
– only those postal operators that benefit in some way from having the USO in place contribute to the fund.

A key issue relates to the idea of substitutability of services. One possible definition of substitutability would refer to products which have similar characteristics in terms of value added features and intended use. This definition preclude providers of services such as email (ie, ISPs) in the taxable base, which, although allowing consumers to communicate in writing with other users, do not share other features with post and hence may not necessarily be considered substitutes for post.

In addition, to the extent that it can be argued that ISPs do not derive any benefit from the existence of the postal USO, it would not be reasonable to require them to contribute to the fund, as this would introduce distortions into an unrelated market. This logic also suggests that including companies that provide express mail services in the taxable base would, arguably, not be reasonable if, as in the case of ISPs, in order to offer their services, they do not necessarily use or benefit from the USP's network.

One option—which, at least in theory, addresses the issues identified above—might be to include in the taxable base services and geographic areas that provided the main source of funding during the pre-liberalisation period. This would mean that, for example, the revenues (or profits or units sold) that the USP and the entrants obtain from providing low-cost/high-margin services (eg, large-scale customers that send mail to low-cost routes) could be included in the taxable base and used to fund the costs of providing high-cost/low-margin universal services.

Moreover, this option can be linked to the option identified above of taxing substitute services and products. For example, if an operator entered the market offering a substitute service which gains market share at the expense of a service that was providing funding for the USO in the pre-liberalisation period, the revenues, units or profits of the substitute service could be included in the taxable base (depending on the type of compensation fund in place).

However, the above approach to defining the taxable base may face practical difficulties that should not be ignored, including the potential complications in defining the boundaries of which profitable services should be included in the taxable base. Similarly, it could lead to problems of certainty if the size of the tax base falls over time, for example because of

competition from services outside the postal industry (eg, email, electronic billing), which cannot be taxed directly by the postal regulator.

The ways in which the funds for the compensation fund can be raised are assessed below against the criteria established earlier.

6.3.1 Compensation funds with revenue taxes on operators

As mentioned previously, operators' revenues have often been used as the source of funds for compensation funds, particularly in the context of the USO in the telecoms sector (eg, in Australia, France, the USA and Canada).

In terms of the assessment criteria, if the taxable base is not defined too narrowly, revenue taxes may score highly in terms of allocative, productive and dynamic efficiency, as well as competitive neutrality. This is because the tax burden that each operator has to assume would be relatively small, and therefore distortions to operators' costs—and, hence, pricing decisions—are minimised. Moreover, provided that the taxable base is wide enough, revenue taxes might generate sufficient funds to cover the costs of the USO, and, hence, they may score highly in terms of proportionality and certainty.

If the revenue tax rate satisfies the properties of an ECPR-type tax, which would set the tax at a rate equal to the forgone profit margin caused by entry, only operators as efficient as the entrant would be in a position to enter the market. As mentioned above, however, regulators should be careful in designing ECPR-type taxes when there is scope for efficiency improvements from the incumbent. An ECPR tax that did not take these improvements into account would be 'locking-in' existing inefficiencies and potentially taxing entrants disproportionately.

Revenue taxes could face problems in terms of practicability. It may not be easy to identify the operators that will contribute to the fund (eg, those offering low-cost services). Moreover, the revenues generated from the services included in the taxable base might not be easily monitored, particularly in countries where the regulator does not have strong powers, or where the costs of monitoring and ensuring that revenues are measured reasonably are high. There could also be practicability problems when defining the boundaries of the profitable segment that would be required to contribute.

Indeed, evidence from the case studies suggests that when implementing revenue taxes further challenges may arise. For instance, the Italian case illustrates the problems of using a narrow revenue tax base. Although all the postal operators should contribute to the compensation fund, monitoring the eligible revenues has proved to be a challenging task.

There is not an easy way to tackle the above problem identified above. Some alternatives are as follows.

– Adjust the tax rate—this approach has been adopted in the case of the compensation fund funded with revenue taxes used in the USA telecoms sector, where the contribution factor is adjusted quarterly to guarantee that the compensation fund generates enough funds to cover the net costs of the USO. Although this solution may guarantee the certainty of the funding, it may generate transparency and opposability issues. Furthermore, it could increase the costs of administering the fund and would require the political willingness to negotiate and make the necessary adjustments.

– Include all the revenues of the operators providing universal services—this would make the system easier to implement, increase its practicability and potentially the allocative efficiency. This alternative has been explored by FCC in the USA but has not been implemented yet (GAO 2002). However, issues of proportionality may arise as it is not clear why services that were not providing funding for the USO in the pre-liberalisation

period may contribute to its funding—such a contribution could distort competition in related markets.

6.3.2 Compensation fund with profit taxes on operators

As in the case of revenue taxes, taxes on profits may score highly on a number of criteria (including efficiency and competitive neutrality) if the taxable base is not too narrowly defined. The practicability problems that may arise in relation to compensation funds funded with revenues taxes might be more serious in the case of profit taxes.

A profit tax approach might be more likely to be subject to uncertainty, in the sense that the use of profit taxes may lead to difficulties in allocating the funding requirements across operators due to the risk of inconsistent accounting policies being adopted. This problem is not as prevalent under alternative funding mechanisms.

6.3.3 Compensation fund with lump-sum taxes on operators

Although lump-sum taxes would score relatively highly in terms of allocative efficiency, since they would tend to be less distortionary than revenue, profit and unit taxes, they may face problems in relation to other criteria. Such problems result from the difficulty in identifying ex ante the number of operators that would be included in the taxable base (especially, of entrants) and, hence, individual contributions. Moreover, unlike other forms of taxes, where the total contribution changes with the scale of operation, this may not be the case with a lump-sum tax.[42] Therefore, if entrants' lump sum-taxes are set too high, entry into the market could be discouraged and productive efficiency affected.

As a result, lump-sum taxes may receive a relatively low score in terms of practicability, proportionality and certainty. In the course of the research, Oxera did not identify any cases where lump-sum taxes on operators are used to fund the USO burden, which may be an indication of the serious practicability problems that are associated with this funding mechanism.

6.3.4 Compensation fund with unit taxes on operators

The USO has been funded through unit taxes in a number of cases, especially in the US energy sector. In practice, unit taxes have taken the form of surcharges per unit of electricity (or gas) consumed by customers.

As with revenue taxes, unit taxes may score highly in terms of productive and dynamic efficiency if they satisfy the properties of an ECPR tax and maintain a level playing field between operators.

However, unit taxes may be challenging to implement, especially in countries where precise data on postal traffic is not available. This problem can be overcome if adequate statistical methods for estimating volumes are employed. In addition, as with other types of compensation fund, the regulator would need to have the legal powers and capacity to provide adequate monitoring of postal traffic and the funds going into the compensation fund in order to ensure the necessary funding in both the short and long term—ie, to meet the criteria of proportionality and certainty.

If volumes can be measured relatively easily, the use of unit taxes is less likely to be problematic. The exception would be countries with few letters per person, where a higher unit tax is likely to be required than in countries where the scale is larger. This could compromise the affordability of the USO and the proportionality of compensation funds funded with unit taxes.

[42] In the case of revenue, profit or unit taxes, for example, an entrant with a small amount of mail volume would pay, in absolute terms, less tax than another entrant with higher mail volumes.

7 State funding

7.1 Description of the mechanism

Under this mechanism, the burden of the USO is funded through a direct or indirect transfer from the government.

The use of government subsidies to fund universal services is demonstrated in a number of sectors, as shown in Table 7.1 and in the Appendix. For example, state subsidies have been used in the airline industry in the USA and Norway. In the USA, air carriers that provide services to small communities receive subsidies from the government. Air services are tendered in case no air carrier is willing or able to profitably provide air service in small communities without a subsidy. In Norway, the government has been offering subsidies for several years to airlines providing services to the most remote areas.

Government subsidies have been also used to fund services in the postal sector. For instance, in the UK the rural post office network is subsidised by the government. State subsidies have also been used to partly finance the provision of universal services in the postal sector in Italy (see the Appendix).

Table 7.1 USO funded with state subsidies

	Norway (aviation)	USA (aviation)	UK (post offices)
Definition of the USO	Commercial air service in remote areas of the country	Commercial air service in small communities	The USO includes points of access to Royal Mail's postal universal services. In particular, it has been established that 95% of users or potential users of postal services shall be within 5km of such an access point
Who contributes to the fund?	The Ministry of Transport and Communications funds the state subsidy	The Department of Transportation provides state subsidy	The subsidy is funded through Royal Mail's reserves. Royal Mail Holding is 100% government-owned
How is the USP(s) chosen?	Endogenously. There has been a competitive tender process since 1998. The incumbent, Winderoe, has received 80% of the subsidy for 2004–06	Endogenously. There has been a competitive tender. Various air carriers receive subsidies to provide service to more than 150 small communities	Exogenously. Post Office Ltd, a subsidiary of Royal Mail Holding, is the only recipient of the subsidy
How is the money allocated?	The USP receives an annual lump-sum subsidy	The USP receives an annual lump-sum subsidy	The USP receives an annual lump-sum subsidy
How is the fund administered?	The fund is administered by the Ministry of Transport and Communications	The fund is administered by the Department of Transportation	The fund is administered by the Department of Trade and Industry

Source: OECD (2003a); OECD (2004), Box 1, p. 35; US GAO (2006); and Postcomm (2006).

7.2 Numerical example

The numerical example previously set out demonstrated that, as a result of liberalisation, the incumbent loses market share in the profitable business segment and is no longer able to fund losses in the high-cost business area. In the case of state funding, subsidies can be used to fund:

– **option 1**: the totality of the losses incurred by the USP for providing universal services in the high-cost area—following the assumptions of the example in section 6.1, this would be equivalent to granting a subsidy of €150. If this is the case, as shown in Table 7.1, the profits of the USP would be €105 (-45 + 150);

– **option 2**: the net loss incurred by the USP for providing the USO in the high-cost area—ie, the government transfers a subsidy of €45.

Whether the subsidy should compensate for the €150 or for the €45 only is likely to depend on how the cost/burden of the USO is defined. In principle, only the net losses are required to be reimbursed in order to ensure that the incumbent remains in financial balance. However, if a net loss approach is assumed, it would be important over time to take account of the impact of entry on the profitable market leading to a reduced scope for 'internal' funding of the USO via cross-subsidies. This may require the level of compensation to the USP to be updated over time, suggesting that, in the long term, the direct losses in the unprofitable area may need to be compensated for.

Table 7.2 USO funded through state funding

	Subsidy is equal to the losses in the high-cost area	Subsidy is equal to the net losses
Profit before state funding	–45	–45
Subsidy from state funding	150	45
Profit after state funding	**105**	**0**

Source: Oxera.

7.3 Assessment against criteria

7.3.1 Efficiency

Allocative efficiency

From an allocative efficiency perspective, there are a number of arguments in favour of state funding and, in particular, general taxation. As the providers of universal service do not have to contribute directly to funding the USO, the pricing decisions are unlikely to be affected and, hence, any allocative efficiency effect on the sector is likely to be limited.

Another positive feature of funding the USO through general taxation is that, as the total size of the USO burden is spread through a larger number of individuals (those using the universal services and those not using it), the marginal tax rate assumed by each individual would be minimised—and, as a result, the negative impact on consumer welfare would be low. Indeed, theory suggests that, from a given tax revenue, the welfare loss will be smaller if many products are taxed at a low rate than if few products are taxed at a high rate (ie, the larger the taxable base, the smaller the welfare loss).

However, some authors have pointed out that in sectors subject to 'network externalities', such as postal and telecoms, the users of the service should be assuming the net costs of the USO instead of the whole society. This would be the case if the USO were funded via

direct levies on the industry (either the operators or consumers).[43] For instance, OECD (2004, p. 41) notes that:

> a tax on customers would be the most appropriate because the users are the ones who benefit the most from other people joining the network (and people outside the network would not perceive a benefit). In contrast, when there are no network effects, but broad social effects, general taxes would be preferred since the gains are society-wide.

Furthermore, as discussed in section 5.3, the assessment against this criterion would need to consider the efficiency of the taxation system of a country. If the tax regime is inefficient, the allocative inefficiencies associated with general taxation would be an important consideration when selecting the most appropriate USO funding mechanism.

Productive and dynamic efficiency

As mentioned before, any subsidy may reduce the USP's incentives for cost-minimisation and innovation. In particular, if the USP perceives that all losses will be offset by government subsidies, it would have fewer incentives to improve productive efficiency and to invest in developing innovative methods for delivering services.

A counterargument is that, as PwC (2006, p. 167) points out, if the USO burden is funded through general taxation, the USP may come under pressure to show that the subsidies are essential for providing the universal service, which may in turn create incentives to reduce costs.

7.3.2 Competitive neutrality

Once a market has been liberalised, there are no a priori reasons to suggest that a state funding per se would prevent entry into the postal market of operators that are more efficient than the USP. More specifically, general taxation would be relatively neutral as operators would not have to assume directly the USO burden. However, the funding received by the USP should not be so great as to give it the financial strength to prevent entry by other more efficient providers (eg, in the low-cost area or in non-USO services). This, indeed, would be a requirement under EC case law (ie, the *Altmark* conditions under which public service compensation does not constitute state aid).

7.3.3 Social equity

If social equity is defined in terms of the ability of the funding mechanism to redistribute resources from wealthy to poor consumers, state subsidies may be equitable. In particular, if an ample proportion of the population benefits from the postal service, it is highly likely that redistribution from general taxation will involve transfers from wealthy to less well-off members of society. Under such circumstances, government transfers will score highly as a mechanism for funding USO.

7.3.4 Compatibility with state aid rules

State aid rules are particularly relevant when the USO is funded through government subsidies.

State subsidy must comply with state aid rules, as defined by the EC Treaty and EC case law (ie, state subsidy must meet the four criteria established in the *Altmark* case or should obtain an ad hoc clearance from the European Commission).

[43] Network externalities arise because consumers' willingness to pay for using the services offered by the network increases the greater the number of actual or potential users the network has.

In this context the way in which the USP is selected is important. If the USP is not chosen through a competitive tender process, the government subsidies should be scrutinised by the Commission under state aid rules (see the fourth criterion of those specified in *Altmark*). This was the case, for example, in *Poste Italiane*.[44] The Commission assessed whether the funds transferred by the government to the USP could be considered state aid since Poste Italiane had not been through a public procurement procedure. The Commission found that such funds did, in effect, constitute state aid, but they were deemed to be compatible with the Common Market, as they did not over-compensate the USP.

Similarly, in the case of the UK Post Office Ltd network, the European Commission considered that the government rural network support funding to POL constituted state aid because it was not awarded as a result of an open public procedure. The financial support for postal offices in rural areas is funded through reserves from Royal Mail Holding, which is 100% government-owned. The Commission found that the fund might provide an economic advantage to the beneficiary of the fund. However, the Department of Trade and Industry received state aid clearance in February 2006, because the fund was considered to be necessary for the provision of SGEI (CEC 2005a).

7.3.5 Transparency and opposability

The fact that the USP is receiving state funding may create governance problems if the government plays a dual role of investor and monitoring body of the USP. For instance, the fact that the government effectively may own the USP could influence the political and institutional willingness to make effective decisions in relation to creating adequate incentives for the operator to provide universal services in a cost-effective fashion. Furthermore, opposability problems may arise as other non-USPs may find it difficult to obtain clear and transparent information about the way the USO burden has been calculated, and, therefore, whether the amount of funds is proportional to the financing needs.

However, under EC law, the transparency of any public service compensation is required to receive clearance from the European Commission that any compensation granted is legal.

7.3.6 Practicability

General taxation would remove the administrative costs raised by the need to identify which operators should contribute to the fund, and to audit their accounts to ensure that the taxable base has been reported correctly.

However, its practicability would be conditional on the political and institutional framework of a given country. State funding could be politically unfeasible either if the government favours industry-based funding, or if it would imply raising taxes in order to fund the provision of universal services. Additional practicability concerns may arise in countries where exogenous fiscal constraints apply (eg, in relation to the level of fiscal deficit). Some countries may face limits on their ability to increase deficits.

Furthermore, some costs may be imposed by the need to demonstrate that the level of compensation, which may be raised by new entrants, is not leading in breach of state aid regulation.

7.3.7 Proportionality

In relation to the proportionality criterion, a key issue that arises is to obtain an overall level of compensation that is in effect proportional to the level of additional costs borne by the USP as a result of the USO and that is not over-compensating the USP. This, indeed, would be necessary to comply with the EC state aid rules.

[44] The Commission found that since the transfers had not exceeded the costs incurred by the operator in providing the USO, the state aid was compatible with the Common Market. See European Commission (2006a).

In principle, direct government compensation paid to the incumbent may restrict competition for the provision of universal services. This may be perceived as too stringent relative to an endogenous selection method, although, as demonstrated in section 10 on competitive tendering, there are a number of challenges to this approach.

7.3.8 Certainty

General taxation may generate problems of certainty as the political will to fund the USO from the Treasury may not be guaranteed, as mentioned above. For example, in the case of the airline services in the USA (see Table 7.1), it has been noted that it is uncertain whether the programme will receive further funds in the long term—it has been reported that no funding has been granted by the Congress for 2007 yet, although the House and Senate Appropriations Committees proposed further funding (US GAO 2006). In addition, it has been recommended that there be:

> a fundamental and periodic re-examination of the budget of the government because the federal government's financial conditions and long-term fiscal outlook might challenge the contributions to the fund (US GAO 2006, p. 16).

7.3.9 Summary

Table 7.3 presents a summary of the main findings of this section.

Table 7.3 Summary of assessment of state funding

Criteria	Comments
Efficiency	**Allocative efficiency** Depending on the efficiency of a country's taxation system, state funding could score highly in terms of allocative efficiency. However, in sectors subject to network externalities (and where people outside the network would not perceive a benefit), taxes on the users of the network could be more allocatively efficient than general taxation **Productive/dynamic efficiency** Funding the USO burden through general taxation could impose pressure on the USP and require it to show that subsidies are essential for providing the universal service at the lowest cost. However, there could also be a risk that the USP would not have sufficient incentives to reduce costs if it perceives that all losses will be offset by state subsidies
Fair competition	As general taxation does not require direct funding by entrants, it could be argued to be a competitively neutral funding approach, so long as the net impact on the incumbent of bearing the USO burden is offset precisely by government assistance. This would be a requirement under EC case law
Social equity	In terms of redistribution, government subsidies funded via taxes on high-income users would be more socially fair
Compatibility with state aid rules	Particularly relevant for government funding. Under EC law, in the case of SGEI, state funding has to satisfy the four criteria established by the CFI in the Altmark case Government funding has been investigated on a number of occasions in the postal sector
Transparency and opposability	Governance problems may arise because of the dual role of the government as investor and monitoring body of the USP. Opposability problems may arise as other non-USPs find it difficult to obtain clear and transparent information about the way the USO burden is calculated. However, transparency of the compensation is a requirement under EC law in order for state funding to be cleared
Practicability	A general tax would remove the administrative costs that are incurred when preparing the eligible tax base, but may be politically unfeasible (especially if government favours industry-based funding, or if taxes could not be further increased and/or if fiscal constraints apply). Furthermore, it could result in state aid.

Criteria	Comments
Proportionality	It is necessary to guarantee that the level of funding is in effect equal to the USO burden and is not over-compensating the USP
Certainty	General taxation may create problems of certainty as the political will of the Treasury to fund USO may not be guaranteed (see, for example, the case of the US aviation sector)

Source: Oxera.

7.4 Applicability to the postal sector

State funding would be particularly suited to countries where the USO burden is high compared with the funds that could be raised, for example, from taxes imposed on operators or their customers.

Depending on the efficiency of a country's taxation system, state funding can score highly in terms of efficiency and competitive neutrality. By funding the USO with general taxes—effectively spreading the tax burden over a wider base—the welfare loss would be lower than if the taxes were levied on postal operators or their consumers only. Moreover, competition in the market is unlikely to be distorted since firms do not have to assume (directly) the USO burden. Finally, if government subsidies are funded via progressive taxes, this funding mechanism could be more socially fair and equitable.

However, care needs to be taken when estimating the net costs borne by the USP as a result of the USO. If, for instance, the USP is over-compensated, state funding might create a negative impact on competition in the markets where the USP is active—the operator might use the extra revenues to subsidise the prices of certain services.[45] Moreover, as the government may play the dual role of investor and supervisory body, state funding may raise transparency and opposability issues in relation to the way costs are calculated and funds are administered.

Any transfer of state resources may lead to a state aid investigation. To comply with state aid regulations, state funding would need to satisfy the four criteria established in the *Altmark* case.[46] In effect, state funding has been investigated on a number of occasions in the postal sector.[47]

Furthermore, while state funding of the USO may remove the costs of identifying which operators or consumers of postal services should contribute and what their level of contribution should be, it might nevertheless be subject to discretionary political decisions. Indeed, it may be the case that the implied requirement to raise taxes and the government's fiscal position lead to state funding of the USO being politically infeasible.

[45] See, for example, the UFEX case. CEC (1998), p. 37; and CFI (2006).

[46] Case C-280/00 *Altmark Trans GmbH and Regierungspräsidium Magdeburg v Nahverkehrsgesellschaft Altmark GmbH* [2003] ECR I-7747.

[47] This includes, for example, the cases of UFEX (CEC 1998), UK Post Office Ltd (CEC 2005a), and Poste Italiane (CEC 2006a).

8 Pay-or-play

8.1 Description of the mechanism

The idea of a pay-or-play approach to funding the USO has the same starting point as a compensation fund: in order to fund the supply of the product to the high-cost areas at an affordable (and most often) geographically averaged price, those who only deliver in low-cost areas need to pay into some form of compensation fund. However, in contrast to a standard compensation fund, where there is only one defined (normally exogenously determined) USP, under a pay-or-play mechanism, more than one company can decide to 'play' in the high-cost area. As a result of 'playing', the requirement on the company to 'pay' into the fund is then reduced/eliminated (or, more accurately, its net payments are reduced, as it begins to receive funds from the compensation fund). In other words, entrants are given a choice as to whether they wish to participate in the USO market, rather than contributing financially to compensate other operators for doing so.

Two versions of this funding mechanism can be envisaged:

– a dichotomous or 'discrete' version, in which the choice of whether to pay or play is absolute; if entrants decide to play, they must play entirely, in the sense that they must deliver mail to every high-cost region in the country; or

– a more 'continuous' version of the model, in which the extent to which an entrant decides to play in the high-cost areas alters the extent to which it is required to 'pay' into the fund.

A more sophisticated—but also more complex version of this funding mechanism—which would attempt to configure the general idea into the specifics of the postal sector, would involve recognising that the provision of USO services in the postal sector is multi-faceted. This approach is explained in greater detail in section 8.4, where the postal specificities of the pay-or-play mechanism are analysed in more detail.

A further USO funding mechanism that could be seen as a variant of the pay-or-play mechanism would be a mechanism that 'forced' any new entrant to enter high-cost areas to the same extent as it entered low-cost areas. However, this mechanism is not considered in detail in this report—it would effectively represent an approach where the USO is imposed on all market participants.

Box 8.1 provides an example of a version of pay-or-play in the postal sector, which bears some resemblance with a 'continuous' version of the mechanism

Box 8.1 Pay-or-play in the postal sector (Finland)

In Finland, a version of pay-or-play is being used in the postal sector, Under the scheme, the 'pay' element entails postal service providers without USO being liable to pay a fee to the tax office. The fee applies to new entrants with a restricted licence that provide postal services in areas where the average population density is above a given threshold.

The tax fee varies in relation to the population density in their concession area. The percentage fee is derived by dividing actual population density by 50, although the fee is subject to a maximum of 20% of turnover and to a minimum of 5%. No charges apply if the average population density is below 250 persons per km^2.

If the operator decides to play, it will not be obliged to pay a fee, and will be entitled to receive government funds.

The intention of the legal framework is ensure the provision of postal services in more remote areas. The fee collected from operators is not directly used to subsidise the costs of providing universal services in remote areas; instead, the fee enters the government's budget as tax revenue.

So far, the incumbent operator, Finland Post Corporation, has been the only USP providing services in remote areas. In this respect, the OECD has pointed out that the legal framework 'can be seen to further its objective by raising a special barrier to entry that is limited to population dense areas'.

Source: OECD (2003b); Finland Post Corporation (2005 and 2006).

In addition, Box 8.2 presents an example of pay-or-play that has been considered for the case of the telecoms sector in Argentina. Further details are provided in the Appendix.

Box 8.2 Pay-or-play in the telecoms sector (Argentina)

The universal service regulatory framework of the telecoms sector in Argentina contemplates a pay-or-play mechanism which requires operators that receive revenues from telecoms services to contribute 1% of these revenues to the universal service fund.

Payment of contributions required to be made by the operators may be substituted with the provisions of services, in accordance with any one of a number of programmes that may be approved by the Application Authority.

The regulatory framework establishes a formula for calculating the subsidy for the provision of universal services, which takes into account the cost of providing this service and any forgone revenues. The mechanism contemplates exemptions from contribution for some operators, which combines loss of revenues and market shares.

However, material regulations to implement the mechanism are still pending.

Source: Reglamento General del Servicio Universal, Decreto 764/2000 Anexo III, Secretaría de Comunicaciones.

8.2 Numerical example

The numerical example developed below illustrates how the continuous version of the pay-or-play model might work, but with the USO just considered along one dimension. The assumptions in the numerical example are the same as the general assumptions used in the previous numerical examples. That is:

- a new operator has entered the low-cost market and has achieved a 30% market share;
- in addition, it is assumed that, because of the pay-or-play mechanism, the entrant has incentives to enter the high-cost area where it has been able to obtain a 20% market share;[48]
- the tax rate in the low-cost area has been set at one-third of low-cost profit, one-sixth of low-cost revenue.

[48] This assumption is made to illustrate how the pay-or-play mechanism would work if the entrant adopted this strategy. Whether this is indeed the entrant's profit-maximising strategy is not examined.

Table 8.1 shows the new financial position of the incumbent and the entrant, before the 'balancing' achieved by the compensation fund/pay-or-play mechanism. The main difference with respect to the situation depicted in Table 5.3 is how the units, revenues, costs and profits are distributed between the incumbent and the entrant in the high-cost area. Because of the entry into the high-cost area, the incumbent now makes a smaller loss in the high-cost area, of €120 (instead of €150), while its total losses are now €15 (instead of €45). The entrant, however, incurs losses of €30 in the high-cost area and its overall profits are therefore down to €15 (from €45). Note that a simplifying assumption in the example is that the costs in the high-cost area are avoidable, rather than being fixed.[49]

Table 8.1 Financial position of incumbent and entrant after cream-skimming entry at 30% scale and a play level of 20%

Consumer type	Units/revenues (€)	Costs (€)	Profit (€)
Incumbent			
High-cost	80	200	–120
Average-cost	1,600	1,600	0
Low-cost	210	105	105
Total	**1,890**	**1,905**	**–15**
Entrant			
High-cost	20	50	–30
Average-cost	0	0	0
Low-cost	90	45	45
Total	**110**	**95**	**15**

Source: Oxera.

The final financial outcomes differ from these results as a result of the operation of the pay-or-play mechanism, as shown in Table 8.2 below. In this example, the outcome of the pay-or-play mechanism is the same as the outcome obtained under a compensation fund with a tax on low-cost revenues—both the entrant and the incumbent make zero economic profits (see Table 6.2, option 2). However, the flow of money in the pay-or-play mechanism is different—while the contribution to the compensation fund for both the incumbent (€105) and the entrant (€45) is the same as in the compensation fund with a tax on low-cost revenues, the subsidy that each firm receives has changed. The incumbent receives €120 (instead of the full €150) while the entrant receives €30 by virtue of playing in the USO area.

Table 8.2 Pay-or-play mechanisms

	Incumbent	Entrant
Profit before compensation fund	–15.0	15.0
Contribution to compensation fund	–105.0	–45.0
Contribution from compensation fund	120.0	30.0
Profit after compensation fund	**0.0**	**0.0**
Tax rate (contribution/tax base)	*50%*	*50%*

Note: All pay-or-play mechanisms described are assume to operate under a compensation fund with a tax on low-cost revenues.
Source: Oxera.

[49] This assumption has been adopted mainly to simplify the illustration of the mechanism. In practice, this assumption may not always hold, as the USP may be constrained (eg, by regulatory requirements) from withdrawing in those areas where an alterative operator is providing USO.

8.3 Assessment against criteria

As illustrated by the previous example, the pay-or-play mechanism (both 'discrete' and 'continuous' versions) can be thought of as a special case of a compensation fund in which there is an option for new entrants not to make (as great a) contribution to the compensation fund if they decide to accept USO responsibilities. The assessment against the criteria below therefore restricts itself to the impact of this additional feature of 'optionality' to the compensation fund mechanism. Much of the discussion regarding compensation funds also remains relevant for assessing the pay-or-play mechanism (for instance, the benefits, costs and feasibility of different means of paying into the fund in the pay option are adopted) but to avoid repetition, this is excluded. Table 8.3 summarises the assessment of the performance of pay-or-play against the criteria discussed in section 4.

Table 8.3 Summary of assessment of pay-or-play

Criteria	
Efficiency	Pay-or-play allows competition in the provision of services to high-cost areas. If correctly designed, it could enhance productive efficiency. However, inefficient duplication of the network might arise if the incumbent's costs in the high-cost areas are unavoidable.
Fair competition/ competitive neutrality	It allows entrants to choose whether to compete in higher-cost areas. If correctly designed (eg, the tax rate is set at an appropriate level), pay-or-play scores well against this criterion. The impact on competitive neutrality may be different depending on whether a discrete or continuous version is adopted
Social equity	It could lead to social equity improvements if consumers making use of services in high-cost areas are primarily from low-income groups
Compatibility with state aid rules	Unclear whether pay-or-play would score better or worse than other forms of compensation funds
Transparency and opposability	The complexities surrounding the determination of the adequate tax rate may lead to some concerns of transparency and opposability
Proportionality	Pay-or-play has the potential to score well against this criterion. The extent to which it is likely to be proportional depends on the degree of the complexity envisaged in setting the appropriate tax rate and the scope of play
Practicability	Pay-or-play would need to address a number of issues, including the choice of the tax rate, the scope of play and interoperability between operators. The relative sophistication of the mechanism means that it may not score very well against this criterion
Certainty	Problems of sustainability might arise if pay-or-play leads to entrants choosing to play at inefficiently high levels. The reduction in available funds to compensate the incumbent might be higher than the reduction in the incumbent's USO costs

Source: Oxera.

8.3.1 Efficiency

The single largest potential advantage of the pay-or-play mechanism (both the discrete and the continuous versions and simple and complex versions) over a conventional compensation fund is that it raises the possibility of introducing competition into the provision of services to high-cost areas, and the associated productive efficiency benefits that would be expected to materialise from this.

This benefit has been noted and examined in the academic literature. The results of the model developed by Chone et al. (2001) compare pay-or-play mechanisms with conventional compensation funds. The results of their analysis (when the USO is defined as consisting only of a ubiquity constraint, but excluding a non-discrimination or uniformity constraint) accords with the intuition above: the pay-or-play mechanism, because of the additional competition it allows for in the high-cost market, increases productive efficiency. The authors note:

> The virtue of pay-or-play regulation, compared to restricted entry regulation, is that it allows assigning the market for high cost consumers to firm E [the entrant] in situations where it is more efficient. It follows that pay-or-play regulation offers an additional possibility for the allocation of users compared to the restricted-entry one. It thus enhances productive efficiency.

However, the authors also show that this result does not necessarily follow when the non-discrimination aspect of the USO is also introduced. In this case, the authors find that the pay-or-play mechanism may not be preferable to a conventional compensation fund. For example, they show that if the tax rate for the contribution fund is set too high, the entrant may decide to play when it would be more efficient, from a societal perspective, to pay. This bears some resemblance to the discussion on access charges, where one of the risks of using an access charge uplift to fund the USO is that it may encourage inefficient bypass by the entrant (as discussed more fully below).

Overall, pay-or-play is likely to have largest benefits where the costs of providing service in the high-cost area are avoidable if the incumbent's market share in this area is reduced. If the costs are primarily fixed, however, enabling competition via pay-or-play could lessen productive efficiency due, for example, to inefficient duplication of fixed costs.

8.3.2 Fair competition/competitive neutrality

The first incremental impact of pay-or-play over conventional forms of compensation fund is the fact that, as discussed above, it introduces the possibility for competition in high-cost areas. As such, this mechanism would appear to score well against this criterion. It may also increase the perception of fairness for competitors, in that they are given the choice of whether to compete in this market.

However, the fact that pay-or-play scores well against the criterion of fair competition is conditioned on the fact that the tax rate which determines whether or not the entrant plays is set at an appropriate level. For instance, if the tax rate is set 'inappropriately' high then even if a new entrant is less efficient than the incumbent, it may be incentivise to play as a result of the level of the tax. From this competitive neutrality standpoint, it would appear that the tax rate would need to be set at the level which made the incumbent itself indifferent between paying or playing: in this case, any more efficient new entrant would find it more attractive to play (as the cost it would incur in supplying the high-cost area would be lower than the amount it would save by not having to play) and any less efficient operator would find it more attractive to pay. However, to work out this tax rate would require detailed and accurate estimation of the incremental costs caused by the obligation that the incumbent has to play. Given the difficulties that have been acknowledged in incremental cost estimation in the postal sector,[50] accurately setting the appropriate tax rate (from a competitive neutrality standpoint) may not be straightforward.

The effect on competitive neutrality of the discrete versus continuous pay-or-play mechanisms are likely to be different. To the extent that the discrete version requires the full USO to be provided to avoid paying into the compensation fund, it might well be expected to create a barrier to entry in relation to the high-cost market, as alternative operators may find that paying the tax would be a less expensive alternative. (Although, given that, without the pay-or-play mechanism, prices in the high-cost areas would be much lower than costs, a considerable barrier to entry in this area would in any case be created.) The discrete pay-or-play would then effectively become a compensation fund that is funded within the industry. The continuous version, by contrast, could result in relatively lower entry barriers, retaining the advantage of enabling more flexibility in the entry of efficient operators and resulting in the possibility of actual competition in the high-cost market.

[50] Crew and Kleindorfer 2000.

8.3.3 Social equity

The incremental impact of the pay-or-play mechanism is that it introduces the possibility of competition in the delivery of mail to high-cost areas and hence the possibility of lower prices for the provision of this service. If users of this service are primarily from low-income groups, this might be thought to improve social equity.

8.3.4 Compatibility with state aid rules

Relative to the conventional compensation fund—in which the funds come from other market participants—it would not appear that the pay-or-play mechanism scores any better or worse in terms of its compatibility with EC state aid rules.

8.3.5 Transparency/opposability

The important issue regarding the pay-or-play mechanism with regard to this criterion is the potential ambiguity surrounding the determination of the appropriate tax rate. To a large extent this is very similar to the problems associated with the transparency surrounding the setting of the contribution rate in an industry-funded compensation fund. However, the decision on the tax rate is arguably more important in the pay-or-play mechanism as, in contrast to the normal compensation fund, this decision determines the long-run dynamic entry and investment patterns.

This suggests that, for a pay-or-play mechanism to send the right signals to make efficient choices, adequate procedures would need to be in place to monitor the play option.

8.3.6 Proportionality

The extent to which the pay-or-play mechanism is likely to be proportional depends on the how difficult it is to set the appropriate tax rate and the scope of play. Indeed, this scope (ie, the definition of the conditions under which expenditure would constitute play) may have significant implications for the extent to which the mechanism would generate sufficient funds to safeguard the provision of the USO. If the standard of services required for expenditure to qualify as play are low or not clearly specified, entrants will be more likely to find it easier to evade their obligations by providing low-quality services in those high-cost areas, or to exploit 'arbitrage' opportunities by serving the lower-cost customers in those areas. If this were the case, there would be a greater risk that sufficient funds would be available to ensure the provision of the USO.

At the very least, relatively limited actual experience of the implementation of the method would be available to regulatory bodies to build on. However, if these problems were relatively easy to overcome, this mechanism is likely to score well on this criterion.

8.3.7 Practicability

In terms of practicability, the lack of many clear-cut examples of the existence of a pay-or-play mechanism (with the partial exception of Finland) suggests that there may be some practical problems to be overcome. These would appear to relate to the following issues:

– the choice of the tax rate and the scope of play—setting the tax rate would be a non-trivial exercise, in particular for the continuous version and/or for the menu-based approach (see below). If the tax rate were to be set on the basis of the USP costs net of the contributions of the entrants then determining what could be the extent of play in the continuous model may not be straightforward. This would suggest that an alternative approach may need to be explored (eg, setting the tax rate on the basis of the unit cost incurred by a hypothetically efficient USP);

– the possibility that pay-or-play will lead to more than one USP—in which case, the quality standards and other dimensions of the USO would need to be assessed for more than one company, potentially increasing regulatory monitoring costs.

– having more than one provider of USO services may also raise issues regarding operability between operators playing in the provision of the USO.

8.3.8 Certainty

In principle, the certainty properties of the pay-or-play mechanism should not be any different from the underlying compensation fund on which the mechanism is based. However, there could be problems of sustainability if the design of the pay-or-play mechanism (particularly the more complex 'menu' approach discussed below) leads to entrants choosing to play at inefficiently high levels. This might mean that the reduction in available funds to compensate the incumbent (due to the reduction in the net contribution of entrants that choose to play) might be higher than the reduction in the incumbent's USO costs.

8.4 Applicability to the postal sector

Much of the discussion on the positive and negative aspects of applying the pay-or-play mechanism more generally applies in exactly the same way to the postal sector. As such, the advantages of the mechanism would appear to be the option it creates for greater competition in the high-cost area and the fact that, correctly designed, it has appealing competitive neutrality aspects.

However, one additional issue related to the application of the pay-or-play mechanism in the postal sector is the potential problems in monitoring any entrant that decides to 'play'. The nature of the postal sector means that while a company may state that, legally, it is prepared to 'play' in the high-cost areas, the company could continue to direct its marketing and customer acquisition strategy in such a way that, in reality, it continues to play substantially (or even entirely) in the low-cost area. This would limit the costs incurred by the company which was ostensibly playing in the high-cost area, while potentially allowing it to avoid having to make a contribution to the compensation fund.

This concern could potentially be mitigated by an ex post mechanism that ensured that the extent of payment into the compensation fund was determined by the actual extent of playing in the high-cost area. However, as discussed in section 2, there could be a number of disadvantages from the use of an ex post approach, especially from the perspective of incentives for efficiency. However, in this case, an ex post assessment may actually have positive incentive properties since it would encourage the new entrants to provide 'real' as opposed to 'notional' services in the USO areas.

Another important related issue is the definition of the scope of play. As mentioned before, the definition of play is likely to influence the long-run entry and investment decisions of potential entrants. If entry and investment decisions are based on a narrow definition of play, expanding the scope ex post could potentially undermine the entrants' business plans. This suggests that it might be preferable to set up the mechanism having a broader scope of play and then eventually reduce it over time, if a narrower definition is justified by the particular circumstances of a postal market.

As mentioned above in the description of the pay-or-play mechanism, a further factor with regard to the applicability of this mechanism to the postal sector would be the need to take into account the multi-faceted nature of USO service provision.

The 'full USO' covers a wide range of products, across all geographical areas of the country, and includes requirements on collection and delivery frequency. The more sophisticated version of the pay-or-play model would involve devising a 'menu' of different payments, with

new entrants receiving a rebate to the basic contribution amount, depending on the extent to which they play across all these dimensions. The many dimensions would include:

– provision of different USO services/products—eg, single-piece mail (letters, parcels);

– service standards—eg, the number of collection and delivery services per week;

– geographical coverage—eg, the proportion of rural/urban areas covered.

For instance, an operator that decided to offer services to 50% of high-cost regions and delivered four days a week would be required to make a different (higher) payment than a company that offered a full USO service.

The more complicated menu-based approach could also lead to a form of cream-skimming in the elements of the USO that firms decided to play on. For instance, a firm that had to compete head on with the incumbent could be less efficient than the incumbent. However, if it were able to deploy its resources in such a way as to be more efficient than the incumbent at, for example, collection and delivery, but only as a result of limiting its coverage in the high-cost area,[51] it could take advantage of this mechanism. In particular, it could play at USO collection and delivery and provide the full five- or six-day service, and take considerable revenues from the incumbent in relation to this dimension of the USO service. At the same time, it could pay—at a much lower rate than its costs—rather than extend its coverage to the full USO area. Such an approach could jeopardise the funding of the USO.

An additional factor that would have particular relevance for the postal sector would be definition of the tax rate, and how it would need to be adjusted for entrants that decided to play (eg, a sliding-scale mechanism similar to that used in Finland). This sliding-scale mechanism bears some similarity with the continuous pay-or-play mechanism described in Table 8.2 above.

The idea would be that, starting from a tax rate on low-cost revenues of 50% (when the entrant is still not playing), the tax rate would be progressively reduced by a fixed factor (f) for every additional percentage of rural area coverage by the entrant. The challenge for the regulator would be to estimate this factor (f) such that the mechanism can achieve the dual objective of raising sufficient funds to compensate the incumbent and provides the right incentives to the entrant to play when it is more efficient, from a societal perspective, for it to do so.

Moreover, given the importance that is attached to the correct setting of the tax rate, this also has potential implication in terms of the competitive neutrality of the ‘simple’ scheme versus the more complex ‘menu’ approach. Under the menu approach, the amount of payment paid by any new entrants would potentially differ along a range of dimensions. As such, to estimate the appropriate tax rate along all the different dimensions would become increasingly difficult and subject to the possibility of error.

It is clear that the potential administrative burden in designing the pay-or-play mechanism may be significant—ie, the need to estimate the appropriate tax rate, and the monitoring costs that would be incurred in ensuring that, if there were formally more than one USP, this was also reflected in reality. This implies that the pay-or-play mechanism is more likely to be appropriate when two factors are present in a particular national postal market.

– **The size of the USO burden is substantial**. Given the significant administrative costs associated with the pay-or-play mechanism, it is unlikely that it would be worthwhile incurring these costs if the actual USO burden were relatively small (as has been estimated to be the case in the telecoms sector in a number of countries). However, the

[51] In other words, within the high-cost area, the focus was on those areas that were relatively low-cost.

cost–benefit analysis may well be very different if the underlying USO burden were significantly greater as, in these circumstances, the (largely fixed) monitoring/administrative cost could well be considered proportionate given the benefits that may result from the potential for competition in USO provision.

– **Regulatory capacity is high**. As has been discussed above, given the potential for 'gaming' in the pay-or-play mechanism, efficient regulatory monitoring is important. As such, a country in which there is a proven record that the regulator is effective—ie, where interventions are limited to cases where it is necessary, but when justified, the regulator has already demonstrated a capacity to act efficiently to ensure that the desired outcome is achieved—is likely to be a more appropriate country in which to implement the pay-or-play mechanism than one where the regulatory authority has not demonstrated a capacity to act in such a way.

8.5 Summary

The pay-or-play mechanism is one of the more sophisticated approaches available for funding universal service. It is a mechanism that combines the question of 'how should the USO be funded?' with the allocation question of 'who should be the USP?'

The attraction of the mechanism derives largely from the fact that it allows the possibility of allowing competition for 'high-cost' USO customers. Hence, correctly designed, it is a mechanism which scores well against the criteria of (productive) efficiency and fair competition. Furthermore, relative to other funding mechanisms that also attempt to introduce the 'allocation' question into the USO funding approach (namely, auctions/tenders), the introduction of this mechanism into the postal market appears plausible. (For an evaluation of competitive tendering as a means of funding USO obligations in the postal market, see section 10.)

Nonetheless, the relative sophistication of the approach means that it might receive a relatively low score in terms of practicability. In addition, concerns may be expressed about the transparency of the mechanism, as well as its certainty. This is arguably reflected in the fact that Oxera's research was unable to uncover an example where the pay-or-play mechanism had been implemented in (close to) the pure forms discussed above.[52] In particular, the determination of the tax rate(s) within the approach is likely to be particularly important and challenging, given that the choice determines not only the extent of USO funding provided by entrants, but also the decision of entrants to compete in the high-cost area.

Given these trade-offs, the pay-or-play mechanism has some merit in contributing to the mechanisms for funding the USO in the postal sector. Its appropriateness is likely to depend on the specific country characteristics. In particular, pay-or-play is more likely to be a viable USO funding option in countries where:

– the size of the USO is large—and hence where the benefits from introducing the potential of competition in the high-cost area are likely to outweigh the possibility of high monitoring/administrative costs;

– the regulatory capacity has previously been demonstrated to be high—and hence incumbents and entrants can be confident that the relatively 'complicated' pay-or-play rules would be monitored and enforced where necessary.

[52] The example of Finland discussed above is not a 'pure' case of pay-or-play because the funds derived from paying are not used to fund the USO.

9 Access charges uplift

This mechanism works by imposing a tax on the access charge that entrants would pay the incumbent for using its network to deliver mail. In practice, the access charge would be increased or uplifted by an amount or percentage (u), the proceeds of which would be used to finance the USO costs incurred by the USP.

There are two possibilities with respect to the access regime that the regulator could establish. The analysis below clearly distinguishes between these two scenarios.

– **Bypass of the incumbent's network is prohibited**— this access regime can be seen as a special case of a reserved area for delivery, allowing the incumbent to continue delivering mail using its existing postal network. The entrant would have to insert all of its mail back into the incumbent's network (similar to the US case). Access revenues are therefore likely to be higher, reducing the burden of the USO on the incumbent.

– **Bypass is allowed**—competition in delivery is allowed, in which case the entrant will decide, comparing the level of the access charge and its own network costs, for which routes it will use the incumbent's network and where will it provide end-to-end services. Because of this, as will be shown below, when competition in delivery (ie, bypass) is allowed, the access charge uplift mechanism may fail to raise sufficient funds to compensate the USP.

Moreover, the uplift (u) can be imposed on two types of access charges.

– **Uniform access charge (ā)—**the same access charge is imposed for delivery in all regions. Typically estimated as the single-piece uniform price minus a discount for avoided upstream costs.

– **Zonal access charge (z)—**regional access charges are imposed based on the delivery costs of each region. The access charge in the high-cost regions, however, must be capped at the single-piece price because if the access charge were higher, an entrant would always have the option of inserting mail into the incumbent's network at the single-piece rate.[53]

9.1 Numerical example

An illustration of how the access charge uplift mechanism would work under these two scenarios (bypass allowed and prohibited) for the two types of access charge is presented below. Before going into the details of how the mechanism works, it is necessary to make some assumptions about the cost structure of each mail route and postal network element, and the level of access charges that potential entrants would face.[54]

For this numerical example, the two types of access charge, before the USO uplift, are assumed to be:

[53] This description of a zonal access charge is based on Crew and Kleindorfer's proposal for delivery area access prices for downstream access to the postal network. For further details, see Crew and Kleindorfer (2001 and 2003).

[54] The purpose of this exercise is to show how the access charge uplift mechanism would work. The precise distribution of costs between mail routes and network components is not of fundamental importance.

– **uniform access charge (ā)—**equal to €0.46/letter in all delivery areas;[55]
– **zonal access charge (z)—**equal to the actual delivery costs in the low- and average-cost areas (assumed to be €0.30/letter and €0.40/letter, respectively), and capped at €1 in the high-cost area (the actual delivery cost being higher).[56]

Tables 9.1 (uniform access charge) and 9.2 (zonal access charge) illustrate the financial position of the incumbent and the entrant in the case where competition in delivery (bypass) is prohibited. Highlighted in the tables are the access revenues that the incumbent would obtain under each of the two regimes. Given that zonal charges involve setting cost-oriented access charges, and that, by assumption, the uniform access charge is above the actual delivery costs in the low-cost area, access revenues are higher under the uniform charges (€40.9) than under the zonal charges (€35.6).[57]

Table 9.1 Financial position of incumbent and entrant after cream-skimming entry at 30% and uniform access charge (ā), competition in delivery (bypass) prohibited

	Revenues (€)			Costs (€)			
	Retail	Access	Total	Upstream	Downstream	Total	Profit (€)
Incumbent							
High-cost	100.0	0.0	100.0	204.5	45.5	250.0	–150.0
Average-cost	1,600.0	0.0	1600.0	872.0	728.0	1,600.0	0.0
Low-cost	210.0	40.9	250.9	9.5	136.5	146.0	105.0
Total	**1,910.0**	**40.9**	**1950.9**	**1,086.0**	**910.0**	**1,996.0**	**–45.0**
Entrant							
High-cost	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average-cost	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Low-cost	90.0	0.0	90.0	4.1	40.9	45.0	45.0
Total	**90.0**	**0.0**	**90.0**	**4.1**	**40.9**	**45.0**	**45.0**

Source: Oxera.

Table 9.2 Financial position of incumbent and entrant after cream-skimming entry at 30% and zonal access charge (z), competition in delivery (bypass) prohibited[1]

	Revenues (€)			Costs (€)			
	Retail	Access	Total	Upstream	Downstream	Total	Profit (€)
Incumbent							
Low-cost	210.0	35.6	245.6	9.5	136.5	146.0	99.6
Total	**1,910.0**	**35.6**	**1,945.6**	**1,086.0**	**910.0**	**1,996.0**	**–50.4**
Entrant							
Low-cost	90.0	0.0	90.0	4.1	35.6	39.6	50.4
Total	**90.0**	**0.0**	**90.0**	**4.1**	**35.6**	**39.6**	**50.4**

Note: [1] The financial results in the high- and average-cost areas results are the same as in Table 9.1 and are therefore not shown here.
Source: Oxera.

[55] Calculated as the single-piece price €1 minus a discount for avoided upstream collection, sortation and transport costs of €0.54.
[56] An access charge higher than €1 would not be binding given that the entrant always has the choice of inserting mail at any point in the incumbent's network at the single-piece price of €1.
[57] Moreover, this difference is exacerbated by that fact that the high-cost access charge in the case of zonal charges is capped at €1 (ie, below the actual delivery cost).

Table 9.3 shows how the access charge uplift mechanism would work, given the financial situation depicted in Tables 9.2 and 9.3. It shows that an uplift of 110% on the uniform access charge (ā) would allow both the incumbent and the entrant to break even. Such uplift would take the final access charge in the low-cost area to €0.96. It is worth noting that the outcome of this uplift—the break-even position of the incumbent and the entrant—could have been achieved by designing an access charge regime based on the ECPR principle, which states that the incumbent should be compensated for the forgone profit caused by entry. To see this, note that the final access charge of €0.96 can be obtained by adding €0.50 (the forgone profit of the incumbent in the low-cost area) to the uniform access charge of €0.46.[58]

Table 9.3 Access charge uplift, competition in delivery (bypass) prohibited

	Uniform access charge (ā)	
	Incumbent	**Entrant**
Profit before compensation fund	–45.0	45.0
Contribution to compensation fund	0.0	–45.0
Subsidy from compensation fund	45.0	0.0
Profit after compensation fund	**0.0**	**0.0**
Uplift on uniform access charge		*110%*

Note: the amount to be financed has been set to be the incumbent's net losses.
Source: Oxera.

Where competition in delivery (bypass) is allowed, an important difference is that the entrant is assumed to cream-skim with respect to the customers they target (ie, the 30% of low-cost customers), the proportion of mail from these customers that is delivered end to end and the proportion that is inserted back into the incumbent's network.

Indeed, entrants will probably deliver on an end-to-end basis the mail destined to delivery to the low-cost area (ie, the low–low mail route), but they will now insert back into the incumbent's network the mail destined to delivery in the high-cost area (ie, the low–high mail route) and, depending on whether the type of access charge in place is higher or lower than their own delivery costs, possibly the low–average mail route as well.

In particular, the results presented below assume that when a uniform access charge (ā) is in place, the incumbent will deliver the low–low and low–average mail routes on an end-to-end basis,[59] and will insert the low–high mail back into the incumbent's network (paying the access charge of €0.46). However, when a zonal access charge (z) is in place, the entrant is assumed to provide an end-to-end service for the low-low mail only, using the incumbent's network for the low-average and low-high mail routes.[60]

The key message is that, when bypass is allowed, uniform access charges may lead to inefficient bypass (ie, excessive end-to-end provision) compared with cost-based zonal access charges.

Given these assumptions, Tables 9.4 and 9.5 below (showing uniform and zonal charges respectively) summarise the financial position of the incumbent and the entrant when competition in delivery (bypass) is allowed. The key points that these results highlight are:

[58] Alternatively, the final access charge of €0.96 can be obtained by subtracting the upstream costs (including transport) in the low-cost area of €0.04 to the single-piece price of €1.

[59] For the low–average mail, this occurs because the uniform access charge of €0.71 is much higher than the entrant's delivery cost in this area, which is assumed to be equal to that of the incumbent.

[60] In principle, if the entrant has the same downstream cost as the incumbent for the average-cost area, it should be indifferent between providing the end-to-end service or using the incumbent's network at cost for the low-average mail route. However, if providing an end-to-end service has other associated (fixed) costs, it may be less attractive than the access option.

– *access revenues under the zonal access charge (z) are likely to be higher than under the uniform access charge (ā)*—this can be seen by comparing the €18.0 in Table 9.5 with the €4.12 in Table 9.4. As explained above, this occurs because the entrant bypasses the incumbent more often in the presence of a uniform access charge that is out of line with costs;

– *incumbent's profits under zonal access charges are likely to be higher than under uniform access charges*—this is because zonal charges induce less bypass and because the incumbent is being paid a higher access charge for delivery in rural areas under zonal charges than under uniform charges.

Table 9.4 Financial position of incumbent and entrant after cream-skimming entry at 30% and uniform access charge (ā), competition in delivery (bypass) allowed[1]

	Revenues (€)			Costs (€)			
	Retail	Access	Total	Upstream	Downstream	Total	Profit (€)
Incumbent							
Low-cost	210.0	4.1	214.1	9.5	110.0	119.4	94.7
Total	**1,910.0**	**4.1**	**1,914.1**	**1,086.0**	**883.5**	**1,969.4**	**–55.3**
Entrant							
Low-cost	90.0	0.0	90.0	4.1	30.6	34.7	55.3
Total	**90.0**	**0.0**	**90.0**	**4.1**	**30.6**	**34.7**	**55.3**

Note: [1] The financial results in the high- and average-cost areas are the same as in Table 9.1 and are therefore not shown here
Source: Oxera.

Table 9.5 Financial position of incumbent and entrant after cream-skimming entry at 30% and zonal access charge (z), competition in delivery (bypass) allowed

	Revenues (€)			Costs (€)			
	Retail	Access	Total	Upstream	Downstream	Total	Profit (€)
Incumbent							
Low-cost	210.0	18.0	228.0	9.5	119.0	128.4	99.6
Total	**1910.0**	**18.0**	**1928.0**	**1,086.0**	**892.5**	**1978.4**	**–50.4**
Entrant							
Low-cost	90.0	0.0	90.0	4.1	35.6	39.6	50.4
Total	**90.0**	**0.0**	**90.0**	**4.1**	**35.6**	**39.6**	**50.4**

Source: Oxera.

The financial position of the incumbent (and the entrant) under zonal charges (€50.4) is the same whether bypass is allowed or not. In this particular example, this occurs because when access charges are set at cost (as is the case with zonal charges), the incumbent is indifferent between the following:

– obtaining less access revenue when the entrant bypasses it (thus avoiding the associated costs downstream);
– incurring these downstream costs and recovering them through the cost-based zonal access charges.

With the presence of fixed common costs, however, this will no longer be the case and the incumbent will always prefer the situation where the entrant does pays access charges, since this will help it recover some of these fixed common costs.

Table 9.6 illustrates how the access charge uplift would operate given the financial position of the operators illustrated in Tables 9.4 and 9.5. Because of the lower access revenues raised when bypass is allowed, an uplift of 110% would no longer be sufficient to raise enough funds to allow the incumbent to break even. The break-even uplifts under uniform and zonal charges would be, respectively, 1,351% and 280%. These high uplifts (particularly for the case of uniform access charges) are the result of the assumption that access charges above actual delivery costs will lead to excessive end-to-end entry. In practice, the exact level of the break-even uplift will depend on the characteristics of each market: the larger the scope for end-to-end entry, the smaller the tax base and therefore the larger the required uplift.

Table 9.6 Access charge uplift, competition in delivery (bypass) allowed

	Uniform access charge (ā)		Zonal access charge (z)	
	Incumbent	Entrant	Incumbent	Entrant
Profit before compensation fund	–55.31	55.31	–50.40	50.40
Contribution to compensation fund	0.00	-4.50	0.00	–19.78
Subsidy from compensation fund	4.50	0.00	19.78	0.00
Profit after compensation fund	**–50.81**	**50.80**	**–30.62**	**30.62**
Uplift		*110%*		*110%*

Source: Oxera.

9.2 Assessment against criteria with specific application to the postal sector

Table 9.7 below summarises the assessment of the performance of the access charge uplift mechanism against the set of criteria discussed in section 3. Access charge uplifts can be a relatively simple and transparent mechanism to implement in the postal sector only if an access charge regime is already in place. However, it can have severe certainty problems if the tax base (ie, the access revenues) is too small, which is likely to be the case in markets where competition in delivery (bypass of the incumbent's network) is allowed, and end-to-end mail service is the strategy most likely to be adopted by potential entrants.

Moreover, by making the access charge (after the uplift) deviate significantly from the underlying costs of delivery, if bypass is allowed this mechanism might lead to inefficient end-to-end entry decisions. This is not only productively inefficient, but will also exacerbate the certainty problems identified above.

These certainty problems would seem to be of less concern where competition in delivery is prohibited. However, this benefit needs to be balanced with the potential introduction of additional distortions in terms of productive inefficiency (if efficient end-to-end entry) is blocked and dynamic efficiency due to a less competitive industry.

Table 9.7 Summary of assessment of access charge uplift

Criterion	
Efficiency	**Allocative efficiency**—the uplift would have distortive effects similar to the unit tax compensation fund since it has an impact on marginal incentives **Productive efficiency**—affected by both uplift/no uplift and zonal/uniform decisions. Because the access charge uplift and uniform access charges are out of line with costs, they induce more (potentially inefficient) bypass entry (where bypass is allowed). Prohibiting bypass (reserved area in delivery) might not score well against this criterion when it prevents potentially efficient end-to-end entry **Dynamic efficiency**—the impact depends on the size of the uplift, and on whether bypass is allowed (potentially greater dynamic efficiency)
Fair competition	The absence of essential facilities in postal services means that access charges that are out of line with costs will distort bypass decisions, affecting the competitive dynamics of the industry
Social equity	Access charge uplift may be passed through to entrant's customers, who would be worse off. Moreover, if the access charge uplift faced problems of certainty, alternative measures (eg, raising the single-piece price) might be required. This can affect the affordability of the USO
Compatibility with state aid doctrine	Unlikely to create any issues of illegal state aid
Transparency and opposability	To the extent that providers are required to comply with audited regulatory accounts, the mechanism would be transparent. However, combining two aims (network access pricing and USO funding) in one mechanism may reduce transparency
Proportionality	If access charge uplift induces excessive bypass, the incumbent's ability to finance the USO might be severely affected Alternatively, when bypass is prohibited, financing of the USO is more likely to be guaranteed but, potentially, at the expense of productive and dynamic efficiency
Practicability	Relatively easy to implement—if access charges are already in place—since it only requires the level of the uplift to be defined. Transaction costs may be lower than obtaining the equivalent result through a compensation fund scheme
Certainty	Can have severe problem of certainty if the tax base is too small and/or uplift results in high levels of end-to-end entry (which reduce the tax base even further) Certainty problems, however, are less likely to arise when bypass is prohibited

Source: Oxera.

9.2.1 Efficiency

Allocative efficiency

Imposing an uplift above the level of the access charge (uniform or zonal) would have distortive effects similar to those created by a unit tax compensation fund, since it would affect the marginal costs of the entrant. Indeed, the academic literature suggests that access charge uplifts are likely to have identical allocative effects when firms compete in linear prices (ie, a retail price per mail item only) and bypass is not allowed.[61]

When bypass is allowed, however, the uplift only applies to the proportion of mail that actually makes use of the incumbent's network. Therefore, when bypass is a possibility, the allocative distortions introduced by the access charge uplift will be different than under a compensation fund financed through a unit tax. This is because the uplift would affect a smaller proportion of the entrant's costs.

The 'no bypass' assumption is therefore crucial for the result that unit taxes and access charges have the same allocative effect, as shown in the literature. When bypass is not

[61] See Mirabel and Poudou (2004).

allowed, the access charge uplift essentially works as a tax on *all* the mail carried by the entrant. Nevertheless, because access charges are out of line with underlying costs (particularly the uniform charge ā), the equivalence of the allocative effect between the uplift and the unit tax may not hold.

In particular, an uplift imposed on top of a uniform access charge (ā + u) is likely to be less allocatively efficient than either a zonal charge uplift (z + u) or a unit tax, when bypass is not allowed—because the uniform charge (ā) is less cost-oriented than the zonal charge (z), it is already creating distortions before the imposition of the uplift, and, hence, the uplift would be adding another distortion.

Similarly, when bypass is allowed, the access charge uplift (uniform or zonal) is likely to be less allocatively efficient than a compensation fund financed through a unit tax. This is because the uplift would be applied to a smaller proportion of the entrant's mail and therefore the tax rate would need to be set at a very high level in order for the incumbent to break even.

Productive efficiency

When competition in delivery (bypass) is allowed, cost-oriented zonal access charges (z) score highly on productive efficiency because they send the right 'build-or-buy' signals to potential entrants. In other words, entrants will only decide to bypass the incumbent when they are more cost-efficient—ie, when their own costs are below the access charge they would otherwise face. Therefore, uniform access charges (ā) can lead to inefficiently high levels of bypass if they are significantly out of line with underlying costs.

The problems associated with excessive bypass are not only that insufficient access revenues could be raised and financing the USO might not be guaranteed, but also that there could be an unnecessary duplication of fixed costs in the areas where the entrant is active. This higher level of total industry costs would be productively inefficient.

Moreover, because of the strong link between cost-orientation and productive efficiency, the presence of an uplift could lead to inefficient outcomes if the uplift is too high, which could be the case if the tax base—ie, access revenues—is small and a high uplift is needed to raise sufficient funds to finance the USO.

Therefore, in terms of productive efficiency, the zonal access charge uplift (z + u) is likely to be more efficient than the uniform access charge uplift (ā + u). The reason for this is twofold—zonal access charges:

– provide efficient 'build-or-buy' incentives because they are cost-oriented;
– induce less end-to-end entry, so access revenues are likely to be higher and, therefore, the required uplift lower.

However, when competition in delivery (bypass) is prohibited, productive efficiency could be affected if the entry of efficient operators is blocked. In that sense, prohibiting bypass is likely to be an attractive option in countries where the type of entry that is expected is mainly cream-skimming inefficient entry (with respect to both customers and end-to-end decisions). As mentioned before, these conditions are similar to those where a reserved area is likely to be an attractive mechanism. The result is perhaps not unexpected, given that prohibiting bypass is essentially a special case of a reserved area in delivery.

Dynamic efficiency

Because a zonal access charge (z) provides the right incentives for efficient entry, it would also improve the prospects for dynamic efficiency in the market. The uplift, however, might reduce the potential gains of dynamic efficiency if it leads to high levels of inefficient end-to-end entry, when bypass allowed.

Moreover, as in the case of productive efficiency, the option of prohibiting bypass is not likely to score highly on this criterion if it blocks efficient entry and leads to a less competitive industry.

9.2.2 Competitive neutrality

Because of the absence of essential facilities in postal services, access charges that are out of line with costs will distort bypass decisions (when competition in delivery is allowed) affecting the competitive dynamics of the industry. Hence, uniform access charges (ā) and USO uplifts (u)—both of which represent deviations from cost-based charges—will generate:

– a short-run gain for the incumbent (either by delaying bypass entry for some time or because it generates additional revenue from existing competitors that are yet to bypass the incumbent);

– a long-run loss due to an increase in end-to-end entry from both existing and potential competitors—this effect can be very large and is likely to dominate the short-run gain.

Therefore, an access charge uplift might place the incumbent at a competitive disadvantage relative to entrants due to the risk of excessive end-to-end entry, which reduces the profits used by the incumbent to finance the USO. The result is that a large uplift would be required, leading to even more end-to-end entry and larger funding deficits.

When competition in delivery (bypass) is not allowed, the distortion to competitive neutrality operates in a different way. In this case, it is entrants that might be placed at a competitive disadvantage since bypassing the incumbent's network has essentially been ruled out as an entry strategy.

9.2.3 Social equity

An access charge uplift may be passed through to the entrant's customers, who would be worse-off—although this effect would be no different to that identified for compensation funds financed from within-industry taxes.

Moreover, if the access charge uplift faced problems of certainty (which is highly likely, as the discussion so far has highlighted), alternative measures might be required, such as raising the single-piece price. This will affect the affordability of the USO.

9.2.4 Transparency/opposability

To the extent that providers are required to comply with audited regulatory accounts, the mechanism would be transparent. However, combining two aims (network access pricing and USO funding) into one mechanism may reduce transparency.

9.2.5 Proportionality

Problems of proportionality might arise if:

– the access charge uplift leads to inefficiently high end-to-end entry;
– the level of the uplift that restores the USP's financial viability is so high that it induces even more inefficient end-to-end entry.

As the preceding discussion has highlighted, when bypass is a possibility, the tax base could be too small and a high uplift would be required. This high uplift, however, can lead to inefficient end-to-end entry decisions, which can in turn result in an inefficiently high level of total industry costs, and, in the long term, lead to under-funding problems. In other words, when bypass is allowed and end-to-end mail provision is a feasible strategy likely to be pursued by potential entrants, this mechanism runs the risk of creating an even greater problem than the one it intended to solve, and so might not be a proportional measure.

When bypass is not allowed, the proportionality problem is that, even though the USO financing can in principle be guaranteed, this could be achieved at the expense of distortions to competition (by preventing efficient end-to-end entry), and to productive and dynamic efficiency.

9.2.6 Practicability

Relatively easy to implement—if access charges are already in place—since it only requires the level of the uplift to be defined. Transaction costs may be lower than obtaining the equivalent result through a compensation fund scheme.

9.2.7 Certainty

As the preceding discussion has shown, this mechanism can have severe problems of certainty in the long run if uplift results in high levels of end-to-end entry and/or insufficient access revenues from which to raise funds. This problem is likely to be worse in markets where end-to-end entry is easier and/or where postal scale is small (which might result in a higher uplift and therefore more end-to-end entry).

The certainty problem, however, can be minimised if bypass is not allowed.

9.3 Summary of mechanism

This mechanism works by imposing a tax on the access charge that entrants would pay the incumbent in order to use its network to deliver mail. In practice, the access charge would be increased or uplifted by an amount or percentage (u), the proceeds of which would be used to finance the USO costs faced by the USP.

There are two possibilities with respect to the access regime that the regulator could establish:

– **bypass of the incumbent's network is prohibited**—this access regime can be seen as a special case of a reserved area for delivery, allowing the incumbent to continue delivering mail using its existing postal network;

– **bypass is allowed**—competition in delivery is allowed, in which case the entrant will decide, having compared the level of the access charge and its own network costs, for which routes it will use the incumbent's network and where it will provide end-to-end services.

Moreover, the uplift (u) can be imposed on two types of access charges:

– **uniform access charge (ā)**—the same access charge is used for delivery in all regions. This is typically estimated as the single-piece uniform price minus a discount for avoided upstream costs;

– **zonal access charge (z)**—regional access charges are based on the delivery costs of each region. The access charge in the high-cost regions, however, must be capped at the single-piece price because, if the access charge were higher, an entrant would always have the option of inserting mail into the incumbent's network at the single-piece rate.

Regardless of the type of access regime and the specific type of access charge in place, access charge uplifts can be a relatively simple and transparent USO funding mechanism to implement in the postal sector if an access charge regime already exists. The assessment of this mechanism against other criteria, however, depends on the particular type of regime and access charge that is in place.

In particular, the distinction between the case where bypass is allowed and where it is prohibited (such as in the USA postal market, in the latter case) has important implications. Where bypass is prohibited, it would be possible to find an access charge uplift that allows the full recovery of the USO cost—either entrants will pay this new, higher access charge, or they will exit (or not enter) the market, in which case the incumbent's original source of USO funding would be less affected. Prohibiting bypass would therefore seem to score highly against the certainty criteria, although this needs to be balanced against the possible introduction of other distortions, such as productive inefficiencies (eg, preventing entry of efficient operators) and dynamic inefficiency due to a less competitive industry.

In this respect, the similarities between the reserved area funding mechanism (section 5) and access charge uplift with prohibited bypass are noteworthy. Prohibiting bypass would be equivalent to imposing a reserved area in delivery. Therefore, as mentioned above in the case of the reserved area, this funding mechanism is likely to be more appropriate in countries where the scope for efficient entry is limited. That said, a reserved area in delivery still allows competition to take place in the upstream segment of the market and is therefore likely to score better in terms of productive and dynamic efficiency, as well as competitive neutrality, than a standard reserved area.

Where bypass is allowed, however, severe certainty problems could arise if the tax base (ie, the access revenues) is too small, which is likely to be the case when uplifted access charges make end-to-end entry more attractive. In that sense, in countries where bypass is possible and entrants are more likely to adopt end-to-end provision as an entry strategy, access charge uplift would not be an appropriate USO funding mechanism.

An additional consideration is the type of access charge (uniform or zonal access charges).

Given that the zonal charge involves setting cost-oriented access charges, and that, by assumption, the uniform access charge is above the actual delivery costs in the low-cost, profitable areas (where entry is more likely), access revenues are likely to be higher with uniform charges compared with zonal charges when bypass is prohibited.

However, when bypass is allowed, uniform access charges may lead to inefficient bypass (ie, excessive end-to-end provision) compared with cost-based zonal access charges because they would send the wrong 'build-or-buy' signals to potential entrants—observing relatively high uniform access charges (the 'buy' option), potential entrants might be induced to invest in their own network (the 'build' option) in order to provide end-to-end services, even when they are less efficient than the incumbent. Not only would this result in productive inefficiency, but also in access revenues (the tax base to fund the USO) would be more likely to decrease.

10 Competitive tendering

10.1 Description of mechanism

With the exception of pay-or-play, in all the funding mechanisms described above, the designation of the USP is determined exogenously by a regulatory authority and is separate from the analysis of the instruments to finance the universal service.

An alternative policy where the designation of the USP becomes part of the funding mechanism is competitive tendering or franchise bidding.[62] Under this model, the choice of the operators becomes endogenous—that is, the USP is selected on the basis of the minimum subsidy (or price) arising from a competitive tender.

Competitive tendering is commonly used by governments and private firms to procure products and services from the most efficient supplier. Auctions have also been regularly employed to assign rights to government-held resources (eg, oil deposits, radio spectrum).[63] The provision of universal services could be seen as a procurement process, such that the regulatory authority defines the USO and organises the tender for its provision. Indeed, in the context of the USO, the idea of competitive tendering or franchise bidding has been discussed and trialled in a number of sectors and jurisdictions for over ten years, including, for example, aviation (USA, Norway) (see Box 10.1), railways (UK) and telecoms (France, Australia) (see Box 10.2 below). In the postal sector, there are some cases of franchises having been used (eg, New Zealand).[64]

Box 10.1 Competitive tender in aviation (USA)

In the USA, the provision of commercial air services in small communities has been tendered. In practice, the mechanism has worked as follows. Air services are tendered for different small communities. Regional air carriers may apply for the Essential Air Service (EAS) programme. Only one carrier per small community is entitled to receive a subsidy. The service is tendered for one year, during which each carrier receives an annual lump-sum subsidy from the US Department of Transportation.

The selection criteria are based on the fulfilment of minimum standards, such as the pricing structure, the size of aircraft, the frequency of services, the number of seats in the aircraft and the number of projected passengers.

In 2006, 28 regional air carriers provided services to 152 small communities within continental USA, Alaska, Hawaii and Puerto Rico. The number of subsidised communities increased by nearly 50% (from 95 to 152) over the last ten years.

Source: US GAO (2006).

[62] Throughout this report the terms ‘franchise bidding’, ‘competitive tendering’ and ‘auction’ are used interchangeably.
[63] See Weller (1999).
[64] See, for example, Milgrom (1996), and Laffont and Tirole (2000).

Box 10.2 Competitive tender in telecoms (France)

In France, universal services in fixed telephony are broken down into three components:

– standard telephony services;
– the provision of directory enquiry services; and
– the installation of public payphones.

Each component is tendered separately, and all fixed-line telecoms providers may apply for the tenders. Each component has to be provided nationwide, and only one carrier per component is entitled to provide the universal service, although a carrier may provide more than one component.

The criteria for selecting the provider of each component is based on technical and tariff conditions.

The winner of each component is entitled to receive payments via a compensation fund (The funding of the compensation fund is discussed in section 6 and in the Appendix.)

In March 2005, the incumbent, France Telecom, was designated to be the USP for all three components.

Source: ART (2004).

Economic literature establishes that a competitive tender mechanism could be useful in instances of asymmetric information—ie, where the owner of the property rights (eg, the regulator) is the less informed agent regarding important variables such as value or cost of provision associated with the service in question.[65] In the context of universal service provision, it could be argued that the operators would be better informed than the regulatory authority on the costs associated with the provision of universal services. In such circumstances, competitive tendering could be used to test what the cost of USO would be for an efficient operator, as the winning bid would reveal the actual cost of providing the USO. Indeed, it has been argued that, potentially, competitive tendering for areas could provide a means of testing whether the costs of providing universal services in uneconomic areas and new services would be offset by benefits. As stated by Oftel (now Ofcom), the UK communications regulator:

> If a net universal service cost could be demonstrated in a truly *competitive* auction, then it would have been demonstrated that a net cost exists and setting up a universal service funding mechanism would be justified. It is, however, an important caveat that the true value would only be revealed if there were a genuinely competitive auction and no operator, especially the incumbent, held an advantage that was unrelated to greater efficiency. (Oftel 1997, Chapter 7.)

Competitive tenders could be designed:

– as ‘reverse auctions’, which would entail potential operators submitting a bid for the subsidy they would require to fulfil the USO, such that the winner is the operator asking for the lowest subsidy. If the USP status conveys benefits in economic areas, the bidder should be prepared to pay for the privilege of being the USP, rather than claiming a subsidy;

[65] See, for example, Nett (1999) and Sorana (2000).

– the auctioneer defines the amount of subsidy to be given, and the operators compete on the extent of universal service provision for that subsidy, such that the winner is the operator bidding for the maximum USO provision.

Where a competitive tender for the provision of universal service allocates exclusive rights, it may be considered to be related to the reserved area model. For example, a regional franchise that grants exclusivity rights to provide services both in high- and low-cost areas of the franchise could be considered as an instance of a 'reduced' reserved area. This reduced reserved area could allow internal cross-subsidies (from profits in the low-cost areas), which could then be used to reduce the size of the subsidy required to finance the provision of services in high-cost areas. In addition, competitive tendering as a funding mechanism might still require the creation of some kind of compensation fund from which the subsidies would be assigned.

10.1.1 Issues to consider when choosing competitive tendering

If the regulatory authority chooses an auction mechanism, the auction would need to be designed to ensure that it achieves the maximum. For example, depending on the services being tendered, the regulatory authority may need to decide whether to auction a single or multiple franchises. In the first case, a franchise would be granted such that the winning bidder has exclusive rights in the provision of services (ie, the winner would not face competition from other operators in the more profitable areas of the franchise). This approach would be consistent with the franchise auction design in Demsetz (1968), and would be an instance of *competition for the market*. Alternatively, the tender mechanism could be thought of as an auction where one or more operators are selected, with the number of operators being determined endogenously as part of the tender process. This approach would allow *competition in the market* as well as *competition for the market*.[66]

The appropriate design of the bidding process would depend on the general conditions of the universal service and on the characteristics of the sector in question (eg, technology, number of potential actors, etc). As such, the appropriate design of universal service auction is beyond the scope of this report.

If there are likely to be relatively few bidders in any particular tender, and/or collusive behaviour among bidders cannot be ruled out, competitive tender would become less attractive as a mechanism that ensures efficient USO provision. Whether this problem is likely to arise would depend both on the sector/industry characteristics and on the particular type of auction used (eg, whether the auction is single- or multiple-round, and open or sealed-bid).[67]

Therefore, it would be essential that the auction process should seek to minimise the opportunities for strategic or collusive behaviour. A potential solution to the problem of strategic behaviour is the use of a reservation price, which could be based on an estimated universal service cost of the area to the current USP. However, the specification of the reservation price is not without potential problems, including the fact that the regulatory authority may again face the problem of evaluating the costs of the USO.[68]

In addition to these issues on auctions design, there are a number of aspects that would need to be addressed by the regulator, as follows.[69]

– *Defining the areas (either services or geographic areas) that are to be tendered*—the regulator must specify the areas that are to be tendered, as well as any aspect of the

[66] See, for example, Sorana (2000).

[67] See, for example, Klemperer (2004).

[68] See, for example, Cremer et al. (2001).

[69] See, for example, Oftel (1997) and Weller (1999).

services that the regulator wishes the USPs to provide in return for the subsidy. This could include, for example, minimum technical standards and other features of the services to be included. If the bidding entails the definition of exclusive geographic areas, the regulator would need to define an appropriate geographic size for the franchise. Small areas could reduce entry barriers (by making the requirements to provide services less onerous) and could minimise the heterogeneity of consumers within the area. This, in turn, could allow the bidder to value more precisely the level of compensation required. If multiple USPs are selected across the various geographic franchises, the extent of incumbency advantage upon franchise re-tendering would be reduced. However, too small an area could make it a less attractive business proposition, and the subsidies required are likely to be higher than for larger areas. Furthermore, tendering a large amount of small areas would increase the administrative complexity of the mechanism.

– *Duration of the contract*—too short a contract period could deter investment, by reducing the potential time over which the benefits of universal service provision could be earned, and could be less than the economic life of the assets invested. However, too long a period could deter new operators from taking on the obligation, since the cost and benefits would not be known with certainty.

– *Contingency arrangements*—if the winning franchisee were to fail, the regulator would need to have contingency arrangements in place to ensure that customers were not left without services. This could include, for instance, mechanisms for the smooth transfer of licences to alternative providers.

– *Monitoring and penalty arrangements*—this would include defining the regulatory controls that may be needed to ensure that the contracts terms are being met, and that action would be taken if the required standards of services were not met adequately.

These auction design and process aspects are likely to influence the assessment of this mechanism against the set of criteria. This assessment is considered below.

10.2 Assessment against criteria

Table 10.1 summarises the assessment of the performance of competitive tendering mechanisms against the set of criteria. Competitive tendering mechanisms are often justified in terms of their efficiency and competitive neutrality properties. However, these potential benefits are highly dependent on a number of aspects, including the auction design and market characteristics. A detailed discussion of each criterion is presented below.

Table 10.1 Summary of assessment of competitive tendering

Criteria	
Efficiency	Competitive tendering could ensure that the USO is assumed by the most efficient operator. As such, it could help reduce the amount of funds required to ensure USO provision. However, the efficiency benefits are contingent on a number of aspects, including the presence of incumbency advantages and the risk of collusive bidding. Competitive tendering could also result in inefficiencies in the presence of irreversible costs
Fair competition	This mechanism has the potential to be competitive neutral, but this would depend on how the tender is designed and on the market characteristics. If there are few bidders and collusion among them cannot be ruled out, competitive tendering may not ensure fair competition. Furthermore, if asymmetric information cannot be overcome, the mechanism may result in no entry or in the winner's curse (see section 10.2.2)
Social equity	This mechanism has the potential to score well against this criterion. From a redistribution point of view, fulfilment of social equity is an empirical question, which would depend on several aspects, including the approach adopted to competitive tendering, and the distribution of low- /higher-income customers across the different tendered areas
Compatibility with state aid rules	Unlikely to create any issues of illegal state aid
Transparency and opposability	This mechanism has the potential to be very transparent in terms of levels and beneficiaries of the funds. Opposability problems might arise if the level of subsidies is set administratively, and if the USP were required to disclose commercially sensitive information
Proportionality	This mechanism could be proportional, provided that the winning bid reveals the true cost of providing the USO. However, compatibility with this criterion is likely to depend on a number of aspects, including whether information asymmetries among bidders can be overcome and on the definition of the tender (eg, size of area, subsidy level)
Practicability	This mechanism could avoid information requirements for determining the costs of the USO. However, the applicability of this mechanism would be conditional on market structure, industry characteristics, and legal requirements (eg, whether exclusivity rights could be granted)
Certainty	A well-designed auction could guarantee the long-run financeability of the USO. However, under a number of circumstances, competitive tendering could not ensure, on its own, the long-term availability of necessary funds (eg, if no bidder emerges)

Source: Oxera.

10.2.1 Efficiency

In principle, a competitive tendering model could ensure that the USO is assumed by the most efficient operator to be at or close to the minimum efficient cost. As such, it can reduce the amount of subsidy required to ensure USO provision. In other words, competitive tendering has the potential to ensure productive efficiency in the provision of universal services.[70]

Furthermore, where competitive tendering provides exclusive rights and obligations to a single operator to provide universal services, this mechanism has the potential to reduce the distortions commonly associated with cross-subsidies (eg, cream-skimming and inefficient bypass).

The efficiency of the model is, however, contingent on some important features in the market.

– **Information asymmetries**—where the potential cost of supplying the USO in a given area is difficult to estimate, the bidding process may not necessarily lead to the most efficient outcome. In this case, there is a risk that the franchise will be won by the bidder

[70] See, for example, Cremer et al. (2001) and Weller (1999).

with the most (unduly) optimistic expectations regarding the likely costs. However, it may be argued that, provided that the balance of risk associated with the franchise is clear from the outset, this issue should not necessarily be of direct concern, as customers would be protected against the outcome of negative shocks.

– **Incumbency advantages**—an efficient outcome will only materialise where each of the bidders perceives a real risk of losing the franchise should they fail to bid at (or very near) their true expected valuation. If the likely costs of USO provision are significantly higher for new entrants, the incumbent may use this opportunity to bid up the price of the franchise while facing limited risk of losing.

– **Risk of collusive bidding**—this would undermine the competitive threat and lead to higher USO costs. Such risks are generally greatest where there are few potential bidders, or where the design of the auction process itself enables bidders to learn about which franchises other bidders are targeting. Careful design of the auction is therefore a necessary (but not sufficient) condition for this risk to be avoided.

Competitive tendering may also result in productive inefficiencies. Cremer et al. (2001) suggest that if investment in assets is necessary to provide the USO, the time-limited nature of a typical franchise might discourage operators from either bidding or carrying out the necessary investments. In such a case, adequate compensation could be required if the concession is not renewed. However, if the regulator cannot commit to an appropriate compensation scheme, the mechanism could lead to underinvestment in anticipation of the risk of 'expropriation' at the end of the franchise. In such circumstances, competitive bidding could lead to productive inefficiency.

A related problem is the presence of transaction-specific, irreversible costs, which could create an advantage for the incumbent USP over potential new bidders. This is because potential rivals may need to consider their future profits as well as the required irreversible costs, whereas the incumbent would not need to consider these sunk costs. It has been suggested in the literature that this aspect could lead to a number of inefficiencies in addition to the under-investment problem mentioned above.[71] Incurring sunk cost in every bidding round would be socially wasteful. Furthermore, the presence of sunk costs may prevent the entry of operators that would be more efficient than the incumbent. That is, because of the sunk costs, the incumbent could outbid its rivals, despite its being less productively efficient.

10.2.2 Competitive neutrality

As mentioned in section 4, competitive neutrality would require two elements: that the mechanism allows for a non-discriminatory contribution by operators to the USO burden, and that it does not deter efficient entry, or promote inefficient entry.

With regard to the first element, a competitive tender may, if well designed, award property rights obligations to those bidders with the highest willingness to pay (or, alternatively, the least requirement for subsidy). In this regard, the burden associated with the USO would be internalised in the franchise price, leaving the winner at least indifferent in financial terms. The funds could come from the government or from entrants' revenues in the profitable part of the market. If the funds are provided by government, neutrality would be achieved since the USP would not rely on internal cross-subsidies from the profitable segment of the market, leaving the USP free to compete on a level playing field with new entrants. If the new entrants were required to contribute to the fund, it would be important to ensure that such contributions are proportional to the activity of all the players (including the winner of the USO tender) in the profitable segment of the market.

[71] See, for example, Neeman and Orosel (2004),

With regard to the second element (efficient entry), as mentioned above, competitive bidding has the potential to be competitively neutral, by promoting the provision of the USO at the minimum possible costs. Rivalry among bidders could, in principle, be a more effective means of ensuring that universal service payments are minimised with respect to other mechanisms where the costs are estimated by the regulator. Inefficient firms, if they bid at all, would be unlikely to win the tender. However, as mentioned before, this effect on efficient entry is likely to depend on how the competitive tender is designed and on the specific market characteristics.

Indeed, if there are few bidders and collusion among them cannot be ruled out, competitive tendering may not ensure fair competition. Furthermore, if information asymmetry (about the actual net cost of providing the USO in the franchised area) favouring the incumbent is difficult to overcome, competitive tendering would not result in entry and the incumbent may be able to bid at a premium. A related informational problem is the *winner's curse*, which could result from asymmetric information between bidders on the costs of servicing some given areas. Because the incumbent has an informational advantage, a competitor would only win the tender at a subsidy that would be insufficient to cover the net costs of providing the USO.

In this regard, the case of competitive tender of Norway's regional airline services is illustrative. As further explained in the Appendix, the public service obligations were provided by the incumbent operator and funded through a state subsidy until 1998, when the provision of the service was tendered. Since then, three auction rounds have taken place. In all three, the incumbent won most of the concessions, and during the second round, it was reported to have engaged in selective bidding (making lower bids for potentially competitive routes and higher bids for those routes where the company knew it had a strategic advantage).

In addition, if the competitive tender has been designed such that the regulatory authority offers a given level of subsidy to provide the USO, and if the subsidy were considered to be too low, competitive entry might not result, as Australia's experience with competitive tendering in the provision of universal services in the telecoms sector appears to indicate (see Box 10.3).

Box 10.3 Australia's contestability arrangements

In 2000, the Australian government introduced 'contestable arrangements', with the aim of encouraging telecoms carriers other than the incumbent (Telstra) to compete for the USO funds. This was stated as an issue of 'competitive neutrality'. Previously, Telstra had been the only provider of USO services.

The government announced contestability pilots and an extended zones tender at the same time. The extended zones tender covered the largest part of the country, whereas the contestability pilots covered only two areas.

For the extended zones tender, the government chose a single-provider, tender-based model because the market circumstances in the extended zones were not considered suitable for implementing multi-provider USO arrangements. A successful bidder was required to fulfil the USO in extended areas, and the level of the subsidies was set administratively. Significant carrier investment was also required above the subsidy.

For the contestability pilots, the intention of the government was to test whether competitive provision of the USO (ie, multi-carrier contestable arrangements) could work in practice, before implementing the contestability arrangements more widely. A predetermined level of industry-funded USO subsidies, previously paid solely to the incumbent, was made available in the pilot areas. The level of subsidy available was considered a prime determinant of the attractiveness of entry.

The contestability arrangements resulted in no competitive entry. An official review of the operation of the universal service attributed the lack of interest from competing operators to several factors, including the fact that most carriers considered the subsidies to be too low, and that Telstra's substantial economies of scale were seen as an additional entry barrier in the pilot areas.

Source: Department of Communications, Information Technology and the Arts (2004).

10.2.3 Social equity

Competitive tendering could help preserve the affordability requirement of the USO by allowing high-cost/low-income consumers to benefit from the provision of universal services, at least compared with a situation of pure competition, where this type of consumer would not see the full benefits of competition (as entrants would tend to focus on low-cost/higher-income groups). As such, competitive tendering has the potential to score well against this criterion.

However, if social equity is understood in the redistribution sense, whether a particular mechanism of competitive tendering would fulfil the social equity criterion is an empirical question, which will depend on a number of aspects, including:

– the approach adopted for the tender mechanism—eg, areas to be tendered, source of funding any subsidy required;
– the (geographical) distribution of high- and low-income consumers in the relevant tendered areas.

For example, if the tendered area includes both low- and high-cost areas and allows the winning bidder to cross-subsidise high-cost areas with profits from the low-cost areas, the extent to which low-income customers would benefit would depend largely on how low- and high-income groups are distributed within the low- and high-cost areas. Alternatively, if the competitive mechanism entails providing services in high-cost areas in exchange for a subsidy, the effects on social equity will depend to an extent on how the subsidy funds are collected (eg, from general taxation, contributions from within the industry, direct contributions from consumers).

10.2.4 Compatibility with state aid rules

The use of competitive tendering as a mechanism to select the USP and fund the USO is unlikely to result in illegal state aid. Under the European Court of Justice's four-criterion test, state funding would be considered state aid only if these criteria are not met. State aid would only be potentially relevant for cases where the bid is for a subsidy, which is set administratively. If the competitive tendering is appropriately designed, these criteria are likely to be met. In particular:

– the regulator would have specified the areas to be tendered as well as any aspect of the service that the regulator wishes the USP to perform in return for the subsidy;
– the basis on which the subsidy would be granted is likely to be clearly established before the auction takes place;
– if the tender is designed such that the bid consist of a price that the USP would charge the regulatory authority in order to provide the USO then competitive tendering is likely to be proportional, in that the compensation received would not exceed the cost of providing the USO. Where the subsidy is set administratively beforehand, the regulator would need to ensure that the subsidy offered does not significantly exceed the costs of the USO, although this could be problematic if the regulator does not have sufficient information about such costs;
– the last criterion is met by definition, as it relates to the beneficiary of the funds being chosen through a public procurement process.

10.2.5 Transparency

As discussed in section 4.5, for a mechanism to be transparent, it should allow market participants and other stakeholders to understand how the funding for the provision of the service is set. Competitive tendering has the potential to be very transparent, as the level of funding may be determined by the auction process, and the beneficiaries of the funds will become clear. Furthermore, if the auction is well-designed the winning bidders will reveal the actual cost of providing the USO. This has the benefit that it would avoid the regulator having to estimate what such costs would be (unless the regulator has to impose a reserve price to reduce the possibility of collusive behaviour).

However, if competitive tendering entails bidding for a subsidy that is set administratively, there could be some opposability problems as it may be difficult to assess whether the subsidy made available would be adequate to the financing needs.

Further opposability problems could arise if commercially sensitive information submitted by the winning USP to the regulator, as part of its bid, were required to be disclosed.

10.2.6 Practicability

Competitive tendering, at least in principle, could avoid the regulator determining the costs associated with the provision of the universal service. In this respect, compared with other mechanisms, such as compensation funds, it could be less demanding (eg, fewer information requirements).

However, as mentioned before, the market structure and industry characteristics may limit the practicability of this mechanism (eg, if there is small number of expected bidders and/or collusion between bidders cannot be easily ruled out).[72] If the mechanism requires a reservation price to be set to avoid collusive outcomes, a prior cost estimation procedure would be required, which, preferably, would be avoided in competitive tendering. Similarly, a regulatory authority seeking to avoid the winner's curse, which would result from asymmetries of information, might need to provide the bidders with a large amount of disaggregated information on costs and revenues.[73]

In addition, the applicability of competitive tendering may be limited by legal/regulatory requirements. In particular, where the regulatory framework prohibits the granting if exclusive or special rights for the establishment and provision of universal services, then some forms of competitive tendering might not be possible—in particular, those that rely solely on competition for the market.

As discussed in section 10.1, in addition to designing an adequate auction, the regulatory authority would need to define a number of frequently non-trivial aspects, including:

– the areas to be tendered and service standards;
– the duration of contracts;
– contingency arrangements.

In addition, competitive tendering might still require the regulator to incur administrative costs related to the monitoring of standards of service and quality levels.

10.2.7 Proportionality

In principle, competitive tendering could be proportional, as the winning bid would have revealed its true costs of providing the USO. However, fulfilment of the proportionality criterion is likely to depend on several aspects, including:

[72] See, for example, Cremer et al. (2000).
[73] See, for example, Oftel (1997), op. cit.

– whether there are significant information asymmetries between bidders—as mentioned before, the presence of information asymmetries between the incumbent provider and competing bidders could result in the incumbent being able to bid at a premium, or in a competitor winning with a subsidy level that would not be enough to cover the net costs of providing the service (ie, winner's curse);

– the definition of the tender—if the mechanism and the areas to be tendered are defined such that only a limited number of reduced geographic areas would be awarded, the mechanism may not ensure full financeability of the USO. Furthermore, if the amount of funds available is determined by the regulatory authority before the tender, the mechanism may not necessarily be able to fulfil the criterion. This was shown by Australia's contestability arrangements in telecoms, where the level of funds available was considered insufficient to stimulate competing operators to tender for the provision of universal services.

10.2.8 Certainty

Well-designed auctions[74] have the potential to generate incentives to contain costs, and reveal the actual cost of delivering universal service, and thus can help to minimise the subsidy required. In such circumstances, competitive tendering could safeguard the provision of tendered services.

However, there are a number of circumstances under which competitive tendering might not necessarily provide certainty in terms of the funds that would be necessary to ensure the long-term viability of the USO. For example, if the mechanism is designed such that no bidders emerge (possibly as a result of the subsidy being too low), and if the incumbent USP has to act as provider of last resort, the issue of funding the USO would remain unsolved. Furthermore, consider the case where the franchise bidding is defined by tendering the provision of services in rural and remote areas, such that a series of separate franchises is created to cover all the USO. If only some of the franchises are granted, the longer-term sustainability of the USO may not be ensured solely by this mechanism. Additional sources of funding (eg, subsidy) would be required to finance USO provision in areas where no franchise has been granted.

A related certainty issue would emerge if the franchisee has to invest in assets in order to provide the USO. This would raise the question of how to compensate the USP for these investments, particularly if the franchise would not be renewed at the end of the franchise period. In such case, the uncertainly about an appropriate return on the invested assets could lead to productive inefficiency, as mentioned in section 10.2.1.

10.3 Applicability to the postal sector

The analysis of the previous sections shows that competitive tendering can take several forms, including tendering the provision of universal services on a national, local or regional basis. Furthermore, it is shown that, under certain circumstances, auctions could generate adequate incentives to provide services at minimum cost, and could therefore be a feasible and effective way to provide universal services in a number of sectors.

The models of competitive tendering of USO-type services have been applied notably in the telecoms and transport sectors and have been discussed in the context of these sectors. However, as stated by Klemperer (2004):

[74] For example, a well-designed auction adequately addresses any potentially collusive behaviour and informational asymmetries between bidders, and takes into account the specific local circumstances of the market/sector where the tender takes place. See, for example, Klemperer (2004) for further details.

> The most important features of an auction are its robustness against collusion and its attractiveness to potential bidders. Failure to attend to these issues can lead to disaster. And anyone setting up an auction would be foolish to blindly follow past successful designs: auction design is *not* 'one size fits all'…In the practical design of auctions, local circumstances matter and the devil is in the details.

Therefore, this poses the question as to how and/or whether competitive tendering would be applicable to the postal sector, and suggests that caution should be taken in assuming that the general principles will necessarily apply in the context of any particular market.

The remaining of this section explores the applicability of a number of potential models of competitive tendering to the postal sector. The models considered below abstract from the issue of optimal design of the tender process.

10.3.1 Models of competitive tendering

The applicability of the following potential models to the postal sector is explored.

- **Model 1 (contracting out)**—operators would bid for the provision of collection and delivery services in local (rural) areas, which would be tendered by the USP. This model enables outsourcing by the USP rather than imposing additional regulatory requirements.

- **Model 2 (regional franchise without exclusivity)**—under this model, the country is split into a number of franchised regions, which may include both high- and low-cost areas. Within each franchise, the winning bidder is the sole provider of the USO, but other operators (including winning bidders of other regions) are allowed to compete with the USP—that is, end-to-end bypass is possible

- **Model 3 (national tender)**—under this model, operators compete for the national provision of the USO. In addition, operators are allowed to compete with the winning USP for some areas of the market.

These are not the only models that could be considered. For example, another possibility would be to tender a number of franchised regions—including both high- and low-cost areas—within which the winning franchisee has exclusive rights (ie, no competition is allowed within the region). This model would be consistent with the policy objectives of promoting *competition for the market*, but would not be consistent with a regulatory regime that prohibits the granting of exclusive or special rights for the provision of the universal service.

Each of these models is further considered below.

10.3.2 Model 1: Contracting out

Under this model, the regulatory authority (or the incumbent USP) would set up a franchise for the joint collection and delivery of mail in a particular remote/rural area (or for post office counters in small towns), which could be awarded at regular intervals. Potentially, all remote/rural areas would be contracted out. This model bears some similarities with New Zealand Post's Rural Post scheme (see Box 10.4).

Box 10.4 Contracting out in postal services (New Zealand)

In the mid-1990s, New Zealand Post introduced Rural Post, a franchised system, to manage the company's rural delivery network. Rural Post currently provides a delivery service to about 206,000 customers, covering around 11% of New Zealand Post's total delivery points. Rural Post employs 535 rural delivery contractors, some of which operate multiple contracts to form a single business activity.

Under the arrangements, mail is transported by New Zealand Post to the delivery base and sorted to the individual contractor by New Zealand Post. The mail is further sorted into delivery order by the contractor (typically in New Zealand Post's premises) and is then delivered by the contractor.

Contracts are granted by way of public tender, which may not necessarily be awarded to the lowest bidder. The contractor receives a payment from New Zealand Post for providing rural delivery. Furthermore, contractors are not required to provide delivery services on an exclusivity basis. Indeed, contractors are allowed to generate income from non-postal activities (eg, newspaper sales and delivery). This non-mail revenue can be particularly significant in cases where the Rural Post contract is small (eg, less than five hours a day). Contracts are initially awarded for a three-year period, but may be rolled over for another three years, after which services should be re-tendered.

The contracts do not grant exclusivity, but, due to economic and technical reasons, Rural Post has developed the network to ensure that only one contractor is responsible for servicing an area.

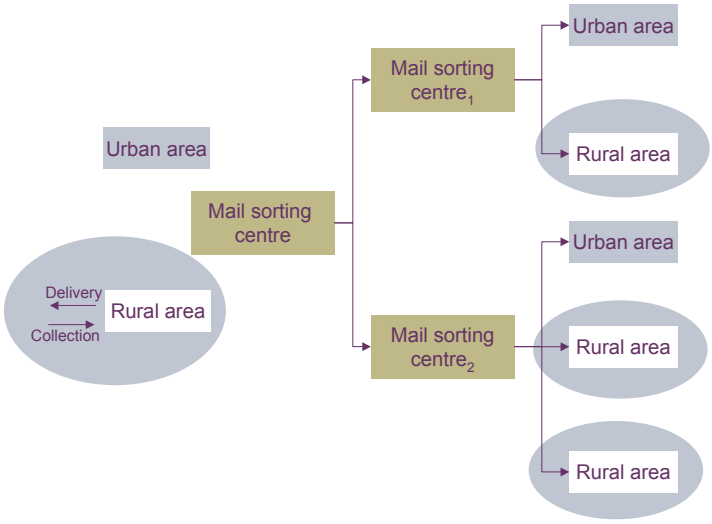
Source: Information provided by New Zealand Post; Ministry of Economic Development (2006).

Franchise bidding would only apply to activities of the postal chain that are likely to be characterised by scale economies and moderate sunk costs. This is because of the presence of sunk costs and/or scope economies which would make then less likely to be included as part of the tender. Borrmann (2004) argues that sortation (both outward and inward) exhibits significant sunk costs and should not be included in the tender to avoid bidding asymmetries. Furthermore, these two activities are considered to exhibit scope economies. Similarly, sortation and delivery in urban areas exhibit scope economies. A separation of the final sortation and walk sequencing of mail for delivery would become less clear, and in the case of automatic walk sequencing made by the incumbent, delivery would arguably be less costly if it were undertaken by the integrated incumbent than if the franchisee has to do the final sortation to walk sequence using its own equipment.

Under this approach, bidders could submit a price for collecting and delivering mail within the area. The franchise could include the provision of final sortation by the contractor (eg, at the incumbent's premises), as in the case of New Zealand's Rural Post. An upper price limit could be established, and, if no bidder is willing to submit a bid satisfying this limit, the incumbent operator would act as supplier of last resort. In addition, consumers pay a uniform end-to-end price, independently on whether the mail originates in or is destined to rural areas.

The approach to this model of franchising is illustrated in Figure 10.1, where the franchised areas are represented by the shaded area.

Figure 10.1 Contracting out



Source: Oxera.

Mail originated in a rural (franchised) area would be collected by the franchisee, while mail originated in an urban area would be collected by the incumbent (or by a competitor). The collected mail is then sent to the relevant (outward) mail sorting centre. In this example, the mail is sorted by the incumbent operator, which also transports the mail to the relevant (inward) mail sorting centres for further sortation to the level of the relevant area.

Final sortation and delivery of mail destined to urban areas would be made by the incumbent. Final sortation of mail destined to rural (franchised) areas could be done either by the incumbent or, as in New Zealand, by the franchisee. Delivery to rural areas is done by the franchisee.

Assessment of Model 1

Taking into account the setting of the model and the more general assessment of competitive tendering, this section analyses the main distinctive features of this model against the set of criteria presented in section 4.

Efficiency

This model of competitive tendering could help reduce the costs of providing the USO, by awarding franchises to contractors that could provide rural collection and delivery services at a lower cost than the incumbent (ie, it could promote productive efficiency).

Furthermore, since it would not focus on postal activities that would involve significant levels of irreversible costs, it could be less subject to underinvestment problems and therefore more likely to result in dynamic efficiencies, as mentioned in section 10.2.1.

Competitive neutrality/fair competition

Since it would be the incumbent who would tender the provision of rural services, any incumbency advantage that could be present when tendering the provision of the USO would be avoided.

Social equity

This model of franchise could lead to social equity improvements, as a larger number of consumers in rural areas would be able to have access to services, possibly at a lower price

than if they were provided directly by the incumbent operator. Furthermore, since the model has the potential to reduce the financial burden for the USP, it could reduce the burden for low-cost customers, who may have to cross-subsidise the provision of USO in rural/high-cost areas.

Compatibility with state aid

It is unlikely that this model would result in illegal state aid, provided that the conditions established in the Altmark case are fulfilled.

Transparency and opposability

This mechanism could be transparent, provided that potential contractors are in a position to understand the way in which the funding to provide rural services is set, as well as the minimum requirements that potential contractors would need to be met in order to have access to the funds. However, the transparency of the mechanism may be conditional on the source of funding. This would depend on whether the source of funds to pay for the services that are contracted out are revenues from other parts of the USP's business or from a compensation fund. If funds are directly paid by, say, general tax to partly support the contracting out, then opposability problems may arise, as have been discussed previously in section 7.

Proportionality

From the incumbent USP's perspective, the contracting out is not a funding mechanism in itself, but rather it could be considered as an endogenous allocation mechanism whose purpose is to find the most efficient provider. In principle, it does not reduce the 'funding' problem of the USP, rather it may help reduce the likely size of it.

Whether this model could help reduce the funding problem of the USP would be conditional on a number of aspects, including:

– *the extent to which the rural/high-cost areas are contracted out*—arguably, if only a limited number of franchises are awarded, the problem of funding the USO for the remaining areas that would have to be provided directly by the USP would remain unsolved;
– *the specific market characteristics*—for example, if the funds used by the incumbent USP to pay for the contracted services were based on revenues from other (profitable) parts of the USP's business, the proportionality of this model would be conditional on the exposure of the USP to competitive entry. Arguably, if the market is characterised by a high proportion of rural customers then losing a limited market share in the low-cost/ urban area would imply that a significant proportion of the source of funding would not be available. Therefore, the source of funding to pay for rural services contracts may be reduced, and could eventually become insufficient to cover the obligations with the rural mail contractors.

Practicability

The model would need to address a number of practical aspects for it to be applicable to the postal sector.

This model of franchising would require not only the areas/routes to be tendered to be defined, but also detailed specifications to allow for the adequate interface between collection, sortation and delivery. Moreover, a detailed contract (or some kind of access code) would need to be in place to ensure that service standards are maintained. This could result in non-trivial discussions between the franchisee and the USP. Furthermore, if the bidding takes place over the price of the service, monitoring the required quality level would become very important; this might add to the administrative costs implied by this mechanism.

From a legal perspective, the applicability of this mechanism may be limited if the regulatory framework prohibits the granting of exclusive special rights to the USP. For example, if the mechanism requires that, because of economic or technical reasons, only one contractor be appointed to serve a given route. However, the applicability of this franchising model could be limited should any future regulatory regime rule out the granting of exclusive rights for the establishment and provision of postal services.[75]

Certainty

The extent to which this model of competitive tendering ensures the long-run sustainability of the USO is an empirical question. A priori, it is not clear whether local auctions of this kind would allow the incumbent to fully finance the cost of the USO. As mentioned above, this franchising model is not a funding mechanism in itself, and as such cannot guarantee that, in the long run, sufficient funds would be available to ensure USO provision in the franchised areas.

10.3.3 Model 2: regional franchises without exclusivity

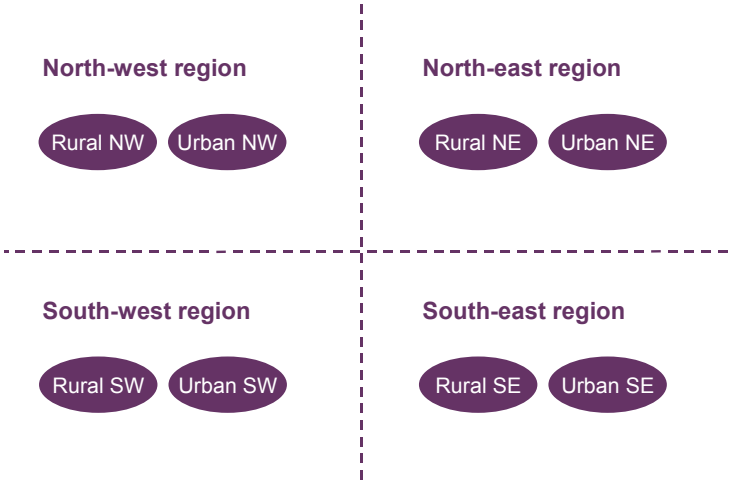
Under this model, the country is split into a number of franchised regions, which may include both high- and low-cost areas. Within each franchise, the winning bidder is the sole provider of the USO, but other operators (including winning bidders of other regions) are allowed to compete with the USP—for example, by bypassing the regional USP in urban areas.

The model could assume that potential operators either bid for the lowest subsidy required to provide the USO in a given region, or the regulator sets the level of the subsidy administratively, based on some estimates of the costs of providing the USO in each region.

In addition, it is assumed that all USPs are required to charge a uniform end-to-end price within their franchised area, for mail both originated in and destined to the same region (intra-regional mail), as well as for mail originated in one region and destined to another region (inter-regional mail).

Figure 10.2 illustrates this model of franchising, where the provision of universal services in a given country has been split into four regional franchises: north-west, north-east, south-west, and south-east.

Figure 10.2 Regional franchises



Source: Oxera.

[75] For a number of reasons, the USP may need to ensure that only one contractor is responsible for servicing an area. Indeed, the scale of business on a given route may not support having more than one contractor. In addition, from the bidder's perspective, the possibility of having to compete in a given area with additional contractors could create additional risk, which the bidder will seek to internalise if it decides to tender for the contract. Furthermore, having more than one contractor traversing the same road could create technical difficulties (eg, from a customer service/performance management perspective).

All the regions are assumed to contain urban (low-cost) and rural (high-cost) areas. Unlike model 1, each franchisee collects, sorts, transports and delivers intra-regional mail (both in rural and urban areas). Each franchisee could also collect, sort, transport and delivery mail that is destined to other regions where it also operates (ie, mainly urban areas).

Where franchisees do not provide national coverage, they would need to make arrangements between themselves for delivering mail, including any payment required in order to deliver mail originated in the other region. Within each region, the franchisee would be able, in principle, to cross-subsidise rural intra-regional mail from revenues derived from other parts of the business.

Assessment of Model 2

Efficiency

This model of competitive tendering has the potential to help ensure that the franchisees chosen in each region are the operators that can most efficiently provide the USO. That is, it might score well in terms of achieving productive efficiency. As with any competitive tender mechanism, this would depend on whether the tenders have been designed such that collusive behaviour has been avoided and incumbency advantages have been addressed.

In principle, the model could help ensure that the USP is not excessively compensated, and hence lead to allocative efficiencies. However, this would depend, at least in part, on the number of bidders.

Competitive neutrality/fair competition

Competitive neutrality would not be ensured if there are only few bidders in the market and if there are incumbency advantages. In the case of the postal sector, this could be particularly relevant, as the incumbent operator is likely to have better knowledge than entrants of the cost of providing the USO in the different regions that are up for tender.

Although it might be argued that, once the regions have been re-tendered a number of times, the incumbency advantages are likely to become irrelevant, during the initial stages, it is unclear how they might be dealt by this model without generating efficiency distortions. Depending on how the tender has been designed and how the regions defined, this model could create incentives for the incumbent to engage in selective bidding. Moreover, it could lead to the winner's curse, where the incumbent, knowing that the funds available would not be sufficient to cover the costs of the USO in that region would let other bidders (with less knowledge about the cost of providing the USO) win the regional franchise.

Social equity

Whether this model would fulfil this criterion is an empirical question.

Compatibility with state aid

If the subsidy is state-funded, this model is likely to comply with the four criteria required by EC case law for it to be compatible with the EC Treaty.

Transparency and opposability

Although the allocation of the franchises and the funds has the potential to be transparent, the mechanism would not score particularly well in terms of accountability for ensuring that a given level of quality of service is met. From a customer's perspective, it may not become obvious where responsibility for failing to achieve the specified service standard falls, either on the originating operator or on the terminating operator;

Proportionality

A necessary requirement for this model to work as a funding mechanism is that the low-cost revenues would need to be sufficient to cover the cost of providing services in the high-cost areas. This might be problematic if other operators competing for the provision of services to customers in urban areas capture a significant proportion of this market segment. If this were the case, the USP would be left unable to fund the USO in its region, unless additional funding—possibly in the form of an additional government subsidy—becomes available. In this context, the definition of the boundaries of the regional franchises would become relevant in limiting the possibility that a franchisee would be more vulnerable to (cream-skimming) entry than other regional franchisees.

Practicability

The previous analysis suggests that this method of franchise would require a number of non-trivial issues to be addressed, including:

– defining the regional areas such that, for example, imbalances between regions are minimised;
– ensuring interoperability of services between franchisees;
– establishing how a franchisee would be compensated for delivering mail originated outside its franchise area.

As mentioned above, the definition of the boundaries of the franchised areas would be important to avoid creating regions that would be more prone to cream-skimming entry than others. If, for example, the south-east region in Figure 10.2 is defined such that it includes a relatively large proportion of rural routes, while the north-east region is characterised by a relatively large proportion of urban routes/population, the USP in the south-east region might be more exposed to cream-skimming entry than the north-east USP. This might require the level of funding available to the south-east operator to fund the provision of the USO to be revised. In turn, this could entail a renegotiation of the subsidy levels and/or expanding the operations into other regions.

An access code is likely to be required to ensure adequate interoperability. Indeed, several technical issues would need to be agreed with the other franchisees and/or the regulatory authority, including sortation requirements, points at which mail could be injected into the other franchisee's facilities, times at which mail could be injected, requirements for interface with information systems.

Furthermore, it is unclear whether quality of service standards could be easily maintained in the presence of several franchise areas. This would largely depend on how the interoperability aspects are defined. However, it remains unclear whether the provision of a D+1 inland service would be technically feasible. Although in a different context, the experience of downstream access in the UK suggests that the possibilities of offering a D+1 service would be limited. Furthermore, the example of longer delivery times for international mail reflects the complexity of transferring mail between operators.

In addition to the technical aspects to ensure interoperability and the maintenance of a given service standard, some monetary-related issues would need to be agreed—in particular:

– compensation arrangements for failing to deliver according to the specifications;
– the downstream access charge for delivering mail originated in another franchise area.

Indeed, compensation payments for not complying with the standard of service agreed between operators would need to be determined as part of the negotiation of the terms of access to other operators' networks.

The determination of the access charges would be one crucial aspect of the model that would need to be addressed—in particular, to be able to deliver mail to regions and areas

where a franchisee is not present.[76] In addition, the access charge could play an important role in informing the operators' decisions as to whether to enter other regions, either by building their own network (ie, bypass) or by buying downstream access to the regional franchisee's network. However, the practicability aspects of this model could become problematic, as the decision to bid for a given region might be influenced by what the required access charges would be. Nevertheless, these charges, unless they are set in advance by the regulator, are unlikely to be determined until the different parties negotiate the charges.

Furthermore, there are a number of forms that such charges could take, including cost-based charges, ECPR-type (end-to-end price minus avoided costs) charges, reciprocal charges, and asymmetric charges. The choice of access would be particularly relevant in cases where the mail traffic between the different regional franchises is not balanced (ie, where one region is a net receiver or a net sender of mail).

Another possible problem in implementing this model is whether uniform pricing could be consistent with regional franchises. Cremer et al. (2001) consider that franchising different areas may not result in uniform pricing. Indeed, they state that:

> While uniform pricing within a given area can be imposed as part of the franchising contract, it appears to be much more difficult to ensure the uniformity of prices throughout an entire country. Consequently, it may not be the appropriate solution when...public authorities intend to avoid geographical price differentials. (p. 34)

In urban areas, where demand would be sufficiently high, there could be more room for competing operators. Although the price could be part of the franchise contract, it would be difficult to predict how prices in the competitive areas are likely to evolve, and prices could differ between these areas (Cremer et al. 2000, pp. 65–66). The example in Box 10.5 illustrates this point.

Box 10.5 Price uniformity under a regional franchise model

Consider the case where all the four winning franchisees are required to charge a uniform price for any mail items originated in their regional area and destined to any point in the country. That is, for any mail originated in the north-west region, and destined either within the same region or for other regions (eg, south-east), the regional USP (NW) would be required to charge a price of, say, €0.40.

Since competition from other operators is allowed, NW also provides mail services (without USO constraints) in the urban areas of the south-east region (Urban SE). Similarly, the USP of the south-east region (SE) competes with NW in the urban areas of the north-west region (Urban NW).

In this case, NW would be able to provide end-to-end services at €0.40, without requiring access to SE's downstream network for all mail originated in the north-west region and destined either to the same region, or for Urban SE. However, for mail destined to Rural SE, NW would require access to SE's network. This would require an access charge to be agreed such that it still allows NW to offer the uniform price of €0.40. However, setting this charge may not be straightforward.

Even if such access charge were determined, the uniformity of prices may still not be guaranteed. This is because SE is only required to charge the uniform price, p = €0.40, for mail originated in its region, but not for mail originated in other areas where it competes with the regional USP. For example, if SE competes with NW in the provision of mail services in

[76] It might be reasonable to assume that the use of access would be particularly relevant for the delivery of mail to rural/higher-cost areas in other regions of the country.

Urban NW, SE might be able to offer customers in Urban NW sending mail to the south-east region a price below €0.40. This would put NW at a disadvantage because the uniformity constraint would not allow NW to match the price of SE. Therefore, under this model, it might not be possible for a regulatory authority to ensure geographically uniform prices.

A further implication is that, depending on the regional imbalances (in terms of traffic flows, proportion of urban routes and proportion of remote areas), and on the extent to which operators would be able to enter other regions, this model of competitive tendering could lead to uncertainty about the long-run availability of funds to ensure USO provision.

The example suggests that this model would not be able to ensure uniformity of prices across regions unless it is imposed as a requirement for every item of mail collected and sent by an operator both within and outside its franchised region. However, this would, in effect, be tantamount to imposing a national USO requirement on all operators.[77]

Certainty

As Box 10.5 suggests, it is unclear whether this model would be able to ensure that, in the long run, sufficient funds would be available to provide the USO. Furthermore, certainty problems might arise if a given franchisee is more exposed than others to significant entry, which may limit the extent of internal cross-subsidisation that the franchisee would be able to undertake without requiring additional subsidies. This problem could be mitigated if the market is characterised by either a high mail scale of volumes, and/or by a relatively high proportion of urban routes/low proportion of geographical areas that are difficult to access.

If additional subsidies were required to account for the loss of revenues in the most profitable areas of the franchise, the franchisee would be exposed to the political will to increase state funding further.

10.3.4 Model 3: National tender

The last model of competitive tendering considered in this report is where operators compete for the national provision of the USO. In addition, the franchisee (USP) would compete with other operators mainly in the provision of services to the more profitable customers (eg, customers in urban areas).

In this case, the tender would be run by the government, who would auction the provision of USO, taking into account the technical and financial terms offered by the different bidders.

The tender could be devised, for example, as a 'reversed auction', where the different operators bid for the lowest subsidy to be received from the government or from a compensation fund.

In defining the level of subsidy required, bidders may need to consider their expectations in terms of the amount of the low-cost market that would be captured by competitors, as this would determine, at least in part, the extent of internal cross-subsidy that the USP would be able to make, and therefore the level of subsidy.

Alternatively, the government could set administratively the level of subsidy and let the different operators compete in terms of service provision and service standards.

[77] A similar issue is likely to arise if the affordability constraint is extended to all areas where an operator provides services (in either the franchised region or in other regions).

Assessment of Model 3

Efficiency

If the provision of the USO is re-tendered after a given period, the model could suffer from the problem that the USP would underinvest in anticipation of the risk of expropriation at the end of the franchise period. This could result in productive inefficiencies.

Furthermore, if the provision of the USO requires the winning bid to incur a significant level of transaction-specific costs that are sunk, at least to an extent (eg, building up additional sortation offices or delivery centres), the model could also be subject to further inefficiencies as incurring sunk costs in every bidding round would be socially wasteful (provided that there is a change of USP).

Competitive neutrality/fair competition

It is unclear whether this model would result in a franchisee other than the incumbent winning the franchise to provide the USO. As noted earlier, the incumbency advantages may be difficult to overcome at the stage of designing the competitive tender. As shown by the experience in other sectors where the USO has been tendered, the incumbent has tended to be awarded the majority of tenders.

This incumbency advantage is likely to be more problematic in a market characterised by large regional cost differences than in a country where the cost differences across regions are less marked. If regional differences are not significant (eg, there is a relatively low proportion of areas that are remote or difficult to access), an operator providing services in certain regions of the country might not be placed at such a significant disadvantage relative to the incumbent USP, as there is likely to be less uncertainty surrounding the actual cost of providing services to different areas of the country.

Social equity

Whether this model fulfils this criterion is an empirical question.

Compatibility with state aid rules

If the model involves bidding for a government subsidy, it would be important to ensure that the subsidy does not exceed what it needs to cover (ie, the subsidy should be proportional). This could be particularly important in cases where there are significant incumbency advantages, such that the incumbent is able to bid at a premium.

Transparency

This model has the potential to be transparent, in that it would be clear who is the beneficiary of the funding, and what the requirements for accessing the funds are. However, opposability problems might arise if stakeholders (other than the regulatory authorities auctioning the provision of the universal service) wishing to assess the financial gains of the winning USP were to require the regulator to disclose commercially sensitive information submitted by the winning USP.

Practicability

In addition to the general practical aspects of establishing a well-designed tender mechanism, there are some issues that would need to be defined in advance of the tendering process, including:

– the areas of the USO to be tendered;
– whether, when a new USP is appointed, they are to take over the existing network that has been deployed by the previous USP;
– designing contingency plans to avoid potential disruptions to USO provision if a different operator is the winner.

Furthermore, under this model, it would be necessary to determine whether different subsidy arrangements would be required if the market conditions under which the subsidy was originally granted have changed significantly.

Proportionality

Whether this model complies with this criterion would depend on whether the design of the tender has adequately addressed any informational asymmetries between bidders, such that, for example, any incumbency advantages which may have led to the incumbent bidding at a premium have been minimised.

Certainty

It is unclear whether the mechanism would be able to ensure the long-term financial viability of the USP. If the market assumptions used to determine the required level of funding change significantly (eg, if the level of entry in the low-cost/profitable areas has been significantly higher than expected at the time of the tender), the winning USP may not necessarily be able to support the USO provision, especially if the subsidy level was determined under the assumptions of the USP being able to use internal cross-subsidies to partly finance the USO. The extent to which this may happen is likely to be influenced by the specific characteristics of the market. That is, uncertainty is likely to be higher for a market that is more exposed to the potential of cream-skimming entry (eg, a country with a low degree of urbanisation which is confronted with a uniformity constraint).

10.3.5 Summary

The three models considered would need to overcome a number of significant practical issues for them to be applicable to the postal sector. For example, the regional franchise model would raise significant non-trivial practical issues, including:

– forming an adequate definition of the regional areas, such that imbalances between regions are minimised;
– ensuring interoperability of services between regions;
– establishing how a franchisee would be compensated for delivering mail originated outside its franchise area (ie, access charges);

Furthermore, the regional franchise model would not be able to ensure uniformity of prices across regions.[78] As such, this model may not be appropriate if the regulatory authorities intend to avoid geographical price differentials.

[78] Unless price uniformity is imposed as a requirement for every item of mail collected and sent by an operator both within and outside of its franchised region, which would effectively mean imposing the USO nationally on all franchisees.

The national tender model would share features similar to those mentioned above, Relative to the other two models considered, the problem of incumbency advantages is likely to be more significant in this model. Indeed, it is unclear whether, as a result of these advantages, this model would result in a franchisee other than the existing incumbent winning the franchise to provide the USO. Overcoming these advantages is likely to be more difficult the larger the cost differences are across regions, as potential competitors would be less likely to have detailed knowledge of those cost differences.

A feature common to all three models is that they could score well in terms of efficiency. However, as with all forms of competitive tendering, this would depend on whether the tenders have been designed such that collusive behaviour between the bidders has been avoided, and incumbency advantages have also been adequately addressed. This aspect is likely to be particularly relevant for the application of this model to the postal sector.

Furthermore, none of the three models is a funding mechanism in itself, and as such cannot guarantee that, in the long run, sufficient funds would be available to safeguard USO provision. At best, they could help reduce the 'size' of the funding problem.

11 Concluding remarks

In the context of further market liberalisation in the postal sector, the issue of compatibility between competition and the provision of universal services raises a number of regulatory policy questions that need to be addressed before the market is further liberalised. In particular, key issues include how to define and measure the cost of the universal service, how it should be financed, and a quantitative analysis of the financing needs by country.

This study assesses several mechanisms that could be used to fund the USO. Many of the mechanisms considered have been adopted in other sectors and jurisdictions with universal service-type obligations, and have been proposed by the European Commission as alternatives to the reserved area for the postal sector in order to finance any required net cost of the USO.

However, as demonstrated by the analysis in this report, the fact that some funding mechanisms have worked adequately in other sectors—including those proposed by the Commission as alternative options to the reserved area—does not mean that they would be equally adequate when applied to the postal sectors. Not only might the specificities of the postal sector condition the applicability of a given mechanism, but also the characteristics of a given national market could further influence the relevance of a mechanism as a means to safeguard universal service provision.

In addition to the market-specific characteristics, the overall balance of a given mechanism would be conditional on the specific objectives of the regulatory authority. As discussed in the report, the relevance of a given mechanism would require the different criteria to be weighted by taking into account the statutory duties and objectives of the government/ regulatory authorities. Taking this into account, a number of high-level conclusions can be made.

– Some regulators whose main duty is the promotion of competition may place more weight on the performance of a mechanism against the criteria of efficiency and competitive neutrality, while a regulator whose main duty is to preserve the financial viability of the USP may place more weight on the proportionality and certainty criteria.

– To the extent that the promotion of fair competition and efficiency are the main concerns of the regulator, a number of funding mechanisms could in principle ensure neutrality, although, in practice, this will be significantly influenced by the overall size of the funding mechanism. Subject to this, mechanisms, such as compensation funds funded by lump-sum taxes or some forms of revenue and unit taxes, as well as pay-or-play mechanisms, could, in principle, meet the requirement for competitive neutrality and efficiency. However, the reserved area and access charges with prohibited bypass are less likely to be an attractive solution where promotion of entry is a priority for the authorities.

– The analysis in this report shows that if regulatory authorities value certainty above any other consideration, the reserved area is likely to score particularly highly, while mechanisms such as compensation funds funded with profit taxes, uniform access with allowed bypass, and forms of competitive tendering that auction the provision of the USO on a regional or national basis are likely to receive a low score.

– Moreover, if practicability is a key consideration of the authorities, the reserved area, access charges—and, to a certain extent, state funding—could provide an attractive solution. Similarly, compensation funds funded with revenue taxes also have the potential to score well against this criterion, depending on how the tax base is defined.

By contrast, mechanisms such as competitive tendering are unlikely to score well against this criterion.

Therefore, the question of which mechanism is the most relevant to the postal sector is empirical, and one that may differ from country to country.

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