

# Methodology for calculating the net cost of PTC's universal service obligation (USO) and the definition of an “excessive burden”

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Bad Honnef, 16 July 2008



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## 1 Introduction

The delivery of telecommunications services depends on customers being connected (or having access) to a network over which these services are being conveyed. There are generally two kinds of networks that can provide such services, the fixed and the mobile networks. It is for the fixed network that there exists a universal service obligation (USO) which may cause a net cost. This net cost would mainly arise because serving a customer requires a fixed link from one of the network's nodes to this customer (a subscriber line) which for some customers may cost substantially more than the net revenues that are generated by these customers.

This report describes the methodology of deriving the net cost of the USO. This is mostly the cost of customers connected to the fixed network whose business is not sufficient to cover the cost due to the fact that they are connected. Such customers will in this report be referred to as “uneconomic customers”. For data availability reasons the methodology differentiates between two types of such uneconomic customers, those that predominate in a particular area so that their numbers make the whole area uneconomic, and those that in an area are interspersed with economic customers so that the whole area remains profitable or economic. The former will henceforth be subsumed under the term “uneconomic areas”, the latter under “uneconomic customers in economic areas”. Both types will occasionally be referred to as “uneconomic customers” if there is not risk of confusion. Public payphones may also cause a net cost. They may be considered as a special type of uneconomic customer which, however, need to be considered separately. Further there may be a net cost of providing enquiry and directory services.

The methodology will be developed from the perspective of a regulatory authority that has to decide on whether such a USO net cost exists and whether this net cost is an “excess burden” and would thus warrant to be compensated. This perspective implies an approach mindful of the fact that any determination of a net cost and consequent decision to compensate the USO provider for this net cost means that some other parties (other operators, taxpayers), who themselves have not demanded universal service and have no voice in this decision to compensate, will have to pay (at least part of) this net cost. It will also be developed from the position of an agency that does not have immediate access to the relevant information and for obtaining it will need the active assistance of the USO provider and for this needs the power to instruct the USO provider to provide it with this information. It is an integral part of this methodology that the USO provider when requesting compensation of a USO net cost must be compelled to provide information to the regulatory authority in a form and structure as requested so that the latter is in a position to reliably determine this net cost.

Providing universal service may cause a direct net cost which is defined as

- the difference between, on the one hand, the cost of installing and maintaining links (subscriber lines) with uneconomic customers and servicing these customers and, on the other hand, the revenue received for providing this access (the rental and installation fees; none in the case of pay phones)
- minus the positive contributions from providing communications services over these links (mainly calls on a retail basis, but also leased lines, internet access, wholesale services and so on).

The above definition emphasizes the fact that it is installing, maintaining and servicing subscriber lines, and in case of pay phones besides the fixed links also the booths and corresponding installations, which cause the direct net costs, and that in general there are positive contributions from delivering services over these lines that have the effect of decreasing the deficit due to access. Net direct costs materialize when the positive contributions from all communications services delivered over these lines are not sufficient to cover the deficits in the cases where the costs of these lines are higher than the rentals.

Providing service to uneconomic customers not only causes direct net cost as sketched above, however, it also provides indirect benefits that need to be taken into account. To be the USO provider:

- is well regarded by the population in general which means that the overall reputation of the operator and its brand name are enhanced which tends to increase its business;
- provides access to a customer base that in several respects has value beyond the immediate business for which the access was initiated; and
- provides additional visibility in areas that would otherwise not be served (in terms of its public phones and its vehicles circulating there).

Very important is the aspect that having an ongoing business relationship with these customers helps in promoting business that does not necessarily depend on the subscriber line, where mobile services may be considered the prime example. It should be noted in this context right away that it is immaterial whether such benefits accrue to the regulated operator directly or whether they are reaped by an affiliated company, such as for example a sister company that is owned by the same mother company. In such cases the possible effect that both companies operate under the same logo should also be considered.

Whenever the net cost of the USO is at issue, the underlying reason for this is the request by the USO provider to be compensated for this net cost. Such compensation, if it proves to be justified, could be paid out of the state budget which, however, is rarely the actual arrangement. Usually it is considered that compensation should be realized

through a universal service fund with the provision that operators providing telecommunications services contribute to it. Given that in most cases the universal service provider is the former monopoly supplier which has still a dominant position in the market, the largest share of that compensation would have to be contributed by itself.

The argument in favour of compensation is based on the presupposition that the USO provider faces vigorous competition in profitable segments so that it would be hard pressed by having to serve uneconomic areas and customers while being challenged regarding the business with profitable customers. The situation is, however, different in those cases where such competition does not yet exist or is weak and, because of that fact, the USO provider is price regulated in a way that it cannot abuse of its market position but also in a way that all its costs are covered. If the latter were the case there would actually be no grounds to pay any compensation, there would even hardly be a rationale for carrying out the net cost determination exercise. Economic customers of the USO provider then pay more than the cost of the services they consume and thus provide already for the extra revenue to cover the deficit (internal cross subsidisation). There may, however, be cases in between, i.e. that regulated prices are sufficient to cover the largest part of the net cost of uneconomic customers but not one hundred per cent of it. Since this case cannot be ruled out, a net cost determination should be carried out irrespective of what the competitive situation appears to be. The methodology should then be designed to also reveal what part of the USO net cost is already recovered by the USO provider under the prevailing price regulation regime. Essentially this requires that the USO provider's costs and revenues for all services delivered over subscriber lines and public pay phones be presented but sorted according to whether they are caused by economic or uneconomic customers. Given that PTC is considered dominant and is price regulated but may nevertheless have a USO net cost, this is the approach that will be developed in this report.

In determining the direct net cost of the USO, the focus is on avoidable costs and forgone revenues if relevant areas and customers are left without service. The cost information needed for this exercise will have to be obtained from PTC's cost accounting records, on an annual basis and in the form and structure as presented in the regulatory accounts. As a complement to avoidable costs, unavoidable costs will also be identified and classified as having to be carried by economic customers. The methodology will thus in the end represent PTC's total costs (and revenues) due to providing services over its fixed network to all of its customers.

It is understood that PTC's cost accounting records are on a historical cost basis and that ANACOM has in the past accepted such costs to determine, for example, the charges for interconnection services and the unbundled local loop. Therefore it appears to be consistent that also the direct net cost of the USO be determined on a historical cost basis, and the methodology developed below proceeds accordingly. Nevertheless it needs to be pointed out that this does not correspond to the costing methodology

which is generally accepted as best practice, i.e. current cost accounting (CCA). Costs recorded on this basis reflect the current value of the resources used up for providing the services, as would be faced by competitors newly entering the market, and thus signal the true costs of service provision also to the USO provider.

This report is organized by considering the various determinants of the USO net cost in order. Section 2 discusses uneconomic areas, Section 3 uneconomic customers in economic areas, Section 4 public pay phones, and Section 5 enquiry services and directories. Section 6 puts the components of the direct net costs of the USO in the context of PTC's total costs, and Section 7 discusses the impact of indirect benefits. The question of “excessive burden” is taken up in Section 8, and Section 9 discusses the practice of USO net cost determination in EU member states.

## 2 Uneconomic areas

### 2.1 General procedure

The definition of the area to be considered in this methodology is the area served by a main distribution frame (MDF). This is consistent with the view that it is access that causes the USO net cost, at least in the case of uneconomic areas, and given that it is at the MDF that the subscriber line ends and beyond that point non-access services start to cause their own specific costs.

Notwithstanding the choice of the MDF area as the basic unit of analysis, it may turn out that the result of specific MDF areas should be considered within the context of larger areas. If according to the direct net cost calculation there is, for example, an MDF area that is surrounded exclusively by economic areas, it would be difficult to argue on the part of PTC that it would have known before connecting the area that it would turn out uneconomic and therefore may have desisted from connecting it. It is also difficult to see that PTC would now find it advantageous to disconnect such an area as any such area, on the basis of a life cycle analysis, could well turn out to be economic in the future. In such a case ANACOM may determine that it is justified not to consider this area as uneconomic and discard the relevant amount from the total of net direct costs of uneconomic areas.

For all MDF areas served by PTC the objective is to determine the difference between avoidable costs and forgone revenues due to providing access in them and delivering communications services over this access and identify the areas for which this difference is negative. For short this difference will in the following also be called the net result of the area which is in particular appropriate in cases where this result may either be positive or negative.

There exists a methodological difference between, on the one hand, calculating the net result of providing access and, on the other hand, calculating the net result of delivering services over this access.

As regards access, since its cost varies substantially from area to area, depending on size of the area, density of users and geographical features, it has to be individually determined for each area. Depending on the degree of detail of PTC's cost accounting records, this may constitute a challenge (the procedure to follow in the possible constellations of data availability will be presented in Section 2.3). Revenues from access (rentals) have also to be determined for each area. This requirement should be relatively easy to fulfil as there is a uniform price which assures that annual access revenue for each area is a rather close linear function of the number of lines in the area and that price. In any case PTC should have no problem in providing this information.

In contrast, as regards the communications services delivered over these lines and over PTC's whole fixed network, the challenge posed is the one of determining for each of the areas the quantities of services delivered and the revenues earned from them which would be forgone if services ceased. Once the quantities of delivered services are known, their costs in turn can be calculated by using per unit costs (costs per minute, costs per leased line, etc.) to obtain the net result. These unit costs will hold for the whole territory served and thus need to be determined only one time.

Thus in a first round, the net result for each individual MDF area is

Revenue from rentals and installation
<i>minus</i> Avoidable cost of providing access
<i>equals</i> Net result from providing access

As mentioned, this result may be positive or negative, and when it is negative this means that the area in question is a candidate for an uneconomic area.

To be added to the net result from providing access is the net contribution from delivering services:

Revenues from communications services
= $\Sigma$ of revenues from all services delivered
= $\Sigma$ over all services of (quantity x unit price)
<i>minus</i> Avoidable cost of providing these services
= $\Sigma$ over all services of (quantity x unit cost)
<i>equals</i> Contribution from delivering communications services

Adding the results from both exercises leads to the net contribution or deficit for each area considering only the revenues and costs of services initiated by the subscribers in the given area:

Net result of providing access
<i>plus</i> Contribution from delivering communications services
<i>equals</i> Net results due to access and communications services initiated by subscribers in the area

The list of these results for all areas, suitably ordered according to the size of the contribution (from the largest positive amount to the largest negative amount), provides a first identification of uneconomic areas (all those with a negative net contribution), and the summation over the negative amounts a first estimate of the size of the direct net cost of the USO due to uneconomic areas.

Further to be taken into account are the contributions from so-called incoming calls which are also revenues that will be forgone, and corresponding costs that would be avoided, if service to uneconomic areas is discontinued. These are calls initiated in economic areas that go to uneconomic areas that cannot be made any more when service to these areas is discontinued. The corresponding revenues forgone and costs avoided will therefore have to be reclassified as being forgone/avoided in the uneconomic areas and not as realized in economic areas where they were initiated.

The operation of taking the contribution from incoming calls into account increases the direct net cost of uneconomic areas. It also tends to increase the number of uneconomic areas as areas that were positive at the margin will due to forgone margins from incoming calls turn uneconomic. It will usually need some iteration before arriving at the correct number of uneconomic areas and the corresponding amount of the direct net cost from serving these areas.

The reclassifications of forgone revenues and avoidable costs due to incoming calls from economic to uneconomic areas, as discussed above, will not change the totals of revenues and avoidable cost when summed over all areas. This is consistent with the claim that in the USO direct net cost exercise the costs and revenues of PTC’s fixed network operations will be presented in their entirety. What has so far not been addressed, however, is the fact that avoidable costs will not cover all costs of PTC’s fixed network operations (as may already have been become apparent through the use of the term “avoidable”). The determination of what avoidable and non-avoidable costs are will be discussed in Section 2.3. Here we note that to arrive at the overall net result of PTC’s fixed network operations these non-avoidable costs will be included as part of the costs to be borne by economic customers:

	Net results arising from access and communications services demanded by subscribers
<i>plus</i>	Costs identified as non-avoidable
<i>equals</i>	Overall net results of fixed network operations

One point still to be mentioned is that of “replacement calls” which have played a certain role in earlier USO net cost methodologies. These are calls that will be made by former subscribers left without a fixed telephone when universal service is discontinued, by using telephones that they alternatively have access to in economic areas (at work, at the homes of friends, over public pay phones, and so on). The margins from such calls will reduce the forgone margins of calls made from and to the lines that will now be discontinued and thus tend to increase the net cost. Replacement calls were of importance at the time when mobile phones were not yet as prevalent as they are at present. Given that by now the number of mobile phones is larger than that of fixed telephones, it can safely be assumed that the predominant number of replacement calls

would actually be made over mobile networks, market in which TMN – a sister company of PTC – has roughly 50% market share.<sup>1</sup>

## 2.2 Forgone revenues

Revenues from all services that PTC delivers to customers over subscriber lines are to be taken into account in the determination of the net results of areas. It is convenient to differentiate between retail services and wholesale services. The format in which the information is to be provided, i.e. showing the quantity, the unit price and the resulting revenue, is shown in Tables 1 and 2. The information in the two tables is to be compiled for each of PTC's MDF areas.<sup>2</sup> The complete list of services are shown in Annex 1 to this report.

Care must be taken that revenue on account of rentals include the subsidy that the Portuguese Government has paid to PTC through the year 2006 to cover 50 % of the rental due by pensioners below the minimum income level.

Table 1: Revenues from retail services initiated in area

Description of the service	Quantity	Price*	Revenue
Access			
Local calls			
Regional calls			
National calls			
International calls			
...			
...			
Total			

\* This may be an average price if there are two-part tariffs or non-linear tariffs with more than two components.

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- 1 It is in line with this argument that in PTC's submission regarding the USO net cost for 2003 replacement calls do not play a role.
  - 2 According to PTC's submissions regarding the USO net cost for 2003, the information should be available in this granularity. This submission appears to cover only telephone calls, which constitute the most import services, but there is no compelling reason that corresponding information should not also be available for the other services.

Table 2: Revenues from wholesale services initiated in area .....

Description of the service	Quantity	Price*	Revenue
Unbundled local loops			
Local interconnection			
Single tandem interconnection			
Double tandem interconnection			
Termination of calls from other fixed operators			
...			
...			
Total			

\* This may be an average price if there are two-part tariffs or non-linear tariffs with even more than two components.

For the determination of forgone contributions due to incoming calls, one should in principle have the information regarding such calls

- coming in from all possible areas of origination, i.e. all MDF areas (including the one for which the information is being reported since a proportion of calls originated there will be directed to partners in the same area), as well as
- coming in from all the foreign countries for which it makes sense to differentiate.

The information would have to be organized in the form shown in Table 3 where each cell would have to indicate the number of minutes, price and resulting revenue due to calls from area or country zone i to area j. While the entries in a line would sum to the total revenue due to calls from an area to all other areas, the entries in the columns would sum to revenues from incoming calls to a particular area from all other areas and relevant foreign countries. The latter figure would be the one of interest. Table 3 presents a huge matrix of dimension (N+M) by N where in particular N would be quite large.

It can safely be anticipated that PTC is not in a position to provide the data in this detail. On the other hand, in its submission regarding its 2003 USO net cost, PTC points out that it has information on incoming calls on the basis of which it was possible to carry out the relevant reclassifications. Such information would have to be evaluated judiciously as to whether it could adequately serve the purpose.



If no usable information as to actual volumes and revenues due to incoming calls could be provided by PTC, assumptions would have to be made in order to arrive at estimates of contributions forgone due to incoming calls. A typical assumption is to assume that (a) the total number of incoming calls stand in a fixed proportion to total calls initiated in the area ("outgoing" calls) and (b) the calls coming from a particular area is a proportion of this total where the proportion corresponds to the proportion of that areas volume of outgoing calls in the volume of outgoing calls summed over all areas. Assumption (a) allows to determine forgone revenue from incoming calls as a function of these areas' outgoing calls. Assumption (b) allows to deduct from the amount of such forgone revenue that part that is initiated in uneconomic areas that will already have been considered as revenue forgone from outgoing calls in these areas and thus to avoid double counting..

## **2.3 Avoidable costs**

Avoidable costs will have to be determined within the framework provided by PTC's regulatory accounts, broken down, however, so that, analogously to revenues, they are expressed for the services rendered in each of PTC's MDF areas. The requirements will be different according to whether it is the avoidable cost of access (the average cost of a subscriber line in an area or that of the fixed link to a public pay phone), or whether it is the costs of the communications services that are delivered over these lines and links and then over the whole fixed network.

### **2.3.1 Avoidable costs of access**

The cost of access varies across the country depending on whether the areas are urban, suburban or rural, which makes for different densities of population and therefore customers, and depending on geographical characteristics of the areas, for example whether they are flat or mountainous, have mainly natural surfaces or to a large extent man-made surfaces like asphalt, or are served by lines buried in the ground or hanging on poles.

These differences make that the cost of access, primarily that of the subscriber line from the MDF to the premises of the customers, varies from one area to the other. In some areas the cost of the subscriber line may be so high that it cannot be covered by the rental nor the margins from communications services delivered over it. The deficits arising in these areas are the cause of the USO net cost.

For a robust determination of this net cost, it is paramount to determine the avoidable cost of access for each area, in particular of course for each of those areas that would be candidates for generating deficits or, in the language of this report, would be

uneconomic. Consistent with the data in the regulatory accounts, PTC should be requested to provide the cost data for access in this granularity.

In a situation that PTC claims that it cannot provide the corresponding data, the best remedy would be to require PTC to carry out an exhaustive assessment of the costs of access which would then allow to provide the relevant information for each MDF areas. This assessment would cover

- the assets in place, their values at the time of installation and their remaining values; their amounts of depreciation and the amounts of required return on the investment; and
- the costs of the various service centres and other functions used to operate and maintain the access network and serve the customers using it.

An alternative would be to generate this information for carefully selected samples of relevant areas, each of the samples representing a type of area in terms of the characteristics that can be considered as cost drivers. The results for each type of area could then be extrapolated to all areas that are of this type.

Irrespective of whether information is available for the totality of possible uneconomic areas or to be based on representative samples, the cost data considered need to be carefully screened as to whether they are to be classified as avoidable or non-avoidable. This requirement applies to both the costs due to assets as well as to service centres and other functions. For example, the regulatory accounts (presenting aggregated figures for the whole fixed network) allocate substantial amounts of cost to "Access" that appear to be due to switching (comutação). It will here have to be verified whether such cost are actually to be allocated to access at all, and if so, whether they will be avoidable if a particular MDF area were eliminated. In respect of the costs of service centres, these may be located at different levels of the organizational structure, being associated with departments at the regional, sub-regional or local levels and serve the areas within the jurisdiction of that department. Such service centres and functions will have large shares of costs that are independent of the volumes of activity and that do not change when a particular MDF area is not served any more. Again, only that part of the cost of the activities which ceases when an area is eliminated is to be classified as avoidable.

The regulatory accounts present cost data (at the aggregate level) broken down into "direct costs", "joint costs" and "common costs". The costs appearing under "direct costs" and "joint costs" need all to be screened according to the criteria described above where it may be anticipated that a larger part of "direct costs" will be classified as avoidable than will be the case with "joint costs". All cost items listed under "common costs", however, should be disallowed. Common costs are not caused directly by particular services and will therefore not vary when services that are marginal (services

to uneconomic customers would from the perspective of PTC fulfil the criterion for being marginal) are discontinued. Only if it is specifically demonstrated that some function leading to common cost will diminish in scope and therefore generate less costs when uneconomic areas are eliminated shall it be considered that the corresponding cost share be classified as avoidable.

### 2.3.2 Avoidable costs of all other services

The distinguishing aspect of the cost of access is that it varies from area to area according to the areas' different characteristics. For communications services delivered over this access and over the whole fixed network of PTC, this is not, or much less, the case. It is therefore appropriate to determine avoidable costs for these services on an average per unit basis where this average applies to the whole territory served. Having established the average avoidable cost per unit of each service allows to enlarge Tables 1 and 2, used to establish forgone revenues, so that the avoidable costs of the various services are also shown and the net result of providing services can be calculated as soon as the revenues are established, see Tables 4 and 5. (The tables would of course also show the rental revenue and cost due to access for the particular area; the cost per subscriber line would, however, for each area be an individually determined figure.)

As described for the cost of access, the costs recorded for the various communications services in the regulatory accounts, whether retail or wholesale, need to be scrutinized according to whether they are avoidable or non-avoidable. This again applies to the cost of assets as well as to that of service centres. Switches, for example, have shares of cost that do not vary with the volume of minutes switched so that these cost shares are not avoidable when uneconomic areas cease to be served. The same holds for the various service centres, like those for operations and maintenance, or functions like billing and collection. Also as stated in respect of access, cost shares included for common cost should be disallowed unless it is proven that some common cost causing function varies with delivering communications services to uneconomic areas. The difference to determining the avoidable costs for access is that here the scrutiny will be carried out regarding the total cost of a service delivered within the whole territory served and not have to be differentiated according individual areas.

For local, regional and national telephone calls it is known that per-unit cost figures have been established on a fully-allocated cost basis. It is assumed that such per-unit cost figures exist also for all the other services delivered by PTC to customers over its fixed network. After the reclassification using the procedure described above, these cost figures will be lower due to the elimination of the common cost elements included in them and any cost shares listed in the regulatory accounts under "direct cost" and "joint cost" but identified as non-avoidable.

At this point it is worthwhile reiterating the statement made in Section 1 that a USO net cost determination exercise can only be carried out if the USO providing operator, here PTC, is instructed to provide the relevant data in the required form, structure and detail as it is the only one in a position to do so. In some cases, information and data will have to be assembled especially for the purpose of the exercise. Precise directions on how to proceed in concrete circumstances, in particular in the presence of data availability problems, will have to be developed in the process of carrying out the exercise.

Table 4: Net results from retail services initiated in area

Description of the service	Quantity	Price	Avoidable cost per unit	Net result
Access				
Local calls				
Regional calls				
National calls				
International calls				
...				
...				
Total				

Table 5: Net results from wholesale services initiated in area

Description of the service	Quantity	Price	Avoidable cost per unit	Net result
Unbundled local loops				
Local interconnection				
Single tandem interconnection				
Double tandem interconnection				
Termination of calls from other fixed operators				
...				
...				
Total				

### 3 Uneconomic customers in economic areas

Any exercise to determine the direct net cost of uneconomic customers in economic areas has to be carried out after the economic areas are known, and these can only be known after the uneconomic areas have been established.

There are two possible types of uneconomic customers in economic areas:

- (1) They are identified by very low revenues that would not cover the costs they cause.
- (2) They are identified by high individual costs of access which exceed the revenues they generate, even if these revenues correspond on average to the nationwide average.

For (1) it is low revenue, for (2) it is abnormally high access costs of certain customer groups that would be the cause for being uneconomic. For the first group of customers it can be claimed that they will be very hard to identify before they actually prove to be uneconomic. In other words, it is reasonable to assume, for example, that the premises in which uneconomic customers are going to reside will be connected when new settlements are connected to the network en block, or that telephones are reconnected when dwellers change in an apartment where the new ones will later on prove to be uneconomic. It is also reasonable to assume that, once connected, PTC will not disconnect such customers when they turn out to be uneconomic for fear of the public repercussions that this would cause and for fear that this may be considered discriminatory. In any case the net cost caused by these customers will be relatively small and often consist only of the cost of the drop wire and the cost of servicing both connection and the customer, so that even a low bill will cover it if not entirely but to a large extent. If there then remains a remainder of a net cost, it is reasonable to assume that even without the USO obligation, in the normal course of business, PTC will bear the corresponding cost as part of its normal cost of doing business.

Accordingly, the discussion below will only consider uneconomic customers in economic areas of the second type. The assumption is that PTC would be able to identify such customers in advance and be ready to disconnect them, expecting that in their case the particularly high cost would justify such action in the public opinion.

The determination of the net cost of serving uneconomic customers in economic areas is based on the same general approach as that for uneconomic areas while nevertheless it needs to consider specificities that to some extent change the actual procedure. These specificities concern both the identification of potentially uneconomic customers and the actual determination of avoidable costs. They are as follows:

- Ideally, for the purpose of a cost determination that is as precise as possible, all customers that reside in economic areas and have particularly high cost of access could be individually identified. PTC may, however, claim that such individual

identification is not possible. The following is based on the assumption that this position is accepted. It implies that a statistical approach will have to be followed in determining the set of uneconomic customers.

- Individual customers in economic areas may be uneconomic because network elements specifically dedicated to their subscriber lines cause a disproportionately high cost. It is necessarily so that such dedicated network elements cause this high cost since if it were the question of network elements shared with economic customers they could not cause that extra high cost, otherwise those economic customers would also be uneconomic which is a contradiction. The statistics to be provided by PTC will have to show convincingly that there are the claimed number of relevant cases, listing in particular the types of dedicated network elements that are causing the high cost.
- The statistics referred to above will have to show that the cases reported apply only to economic areas. It would not be adequate to consider a proportionate share from a total number of cases identified for the whole country, since (a) the criteria for such high cost cases in uneconomic areas would have to be different (each subscriber line in an uneconomic area is per se already a high cost subscriber line) and (b) there is a presumption that the share of particularly high cost subscriber lines in uneconomic areas is proportionately larger than that of the relevant cases in economic areas.
- Since these potentially uneconomic customer groups consist of customers that are not easily identified, their specific net revenues from non-access services cannot be identified. The national average over all customers is therefore to be used as best estimate. There is then one single average net revenue figure – plus the rental – to be set against the various levels of these customer groups' access cost.
- These customer groups will have to be stratified according to the various levels of abnormally high avoidable costs of access. They have to be ordered from the highest such cost level to the lowest, where the latter may still be high enough to exceed the relevant revenue that will be forgone. PTC will have to provide convincing evidence that the cost levels shown are in fact avoidable, given that there will be components of the relevant infrastructures serving economic customers that will not change in case service to uneconomic customers is abandoned.
- Revenue forgone due to incoming calls will arise from calls initiated by all economic customers in economic areas and directed towards uneconomic customers. For the determination of the relevant amount it is necessary to proceed on the assumption that incoming calls received by uneconomic customers stand in a certain fixed relation to these customers' outgoing calls. To avoid double-counting, revenue due to calls coming in from uneconomic customers both in uneconomic and economic

areas need to be taken out. This share of total revenue from incoming calls is to be determined on the basis of the proportion of total revenue from outgoing calls generated by all uneconomic customers in relation to the total revenue from outgoing calls generated by all customers nationwide.

- The amount obtained by summing the revenues from incoming calls for all relevant customer groups, as determined under the preceding bullet point, will have to be reclassified as not belonging to revenues due to economic customers but instead belonging to forgone revenues due to uneconomic customers.
- Provided there is a sufficient number of groups (individually identified according to the levels of avoidable cost of access), it may be that when taking the forgone revenues due to incoming calls out of the revenues of marginally economic customer groups, some of these groups may also become uneconomic. As for uneconomic areas, It may then be necessary to carry out iterations.
- The customer groups for which the various levels of avoidable cost of access are higher than the forgone revenue from communications services engendered by them, as derived above, will be considered uneconomic.

The results from this exercise will present themselves as shown in Table 6.

Table 6: Net results from serving uneconomic customer group .....  
Identified by the amount of avoidable cost of access of ... per  
subscriber in the group  
Number of customers in this group: .....

Description of the service	Quantity	Price	Avoidable cost per unit	Net result
Access				
Local calls				
Regional calls				
National calls				
International calls, zone A				
...				
...				
Total				

Each cell in the columns "Quantity" and "Net result" of Table 6 contains the information for the corresponding service summed over all customers in the given group. If the figures in the column "Net result" summed over all services is negative then there is a net cost due to serving this customer group.

There remains the qualification that the analysis above presupposes that PTC provides convincing information on the number of high cost customers in economic areas, in terms of the dedicated network elements causing such high cost. If such information cannot be provided, given also that the amounts involved are most probably relatively insignificant, it would be reasonable for ANACOM to dismiss the case for any net cost of uneconomic customers in economic areas.

## 4 Public pay phones in economic areas

Public pay phones may be looked upon as a particular type of uneconomic customer group. The determination of their net cost in economic areas is again based on the same general approach as that for uneconomic areas. Here one must, however, carefully assess whether or not PTC’s deployment of public payphones exceeded its deployment obligations. If such a scenario arises, it might not be reasonable to consider US funding for the public payphones in excess of PTC’s deployment obligations.

The information available on account of public payphones can be expected to be more concrete which means that the procedure can to some extent also be more concrete. Again, however, there are specificities that affect the actual procedure. These are as follows:

- Depending on the location, whether in central cities or in rural areas, public pay phones may be economic or uneconomic. PTC is expected to have the information to identify those (clusters of) phones that are candidates to be uneconomic, on an MDF area basis.
- Only the potentially uneconomic public pay phones in economic areas are to be considered.
- Public pay phone revenues that would be forgone will have to be provided on an MDF area basis. Revenue figures will consist exclusively of revenues from calls. Public pay phones have no incoming calls so that no corresponding revenues need to be considered.
- As for uneconomic customers, PTC has to convincingly demonstrate the costs that will actually be avoidable when ceasing to provide public pay phone services. As regards network costs, for example, these will in many cases only be the cost for the connection from the nearest street cabinet to the public phone (or the group of such phones if there are several at the same location), all the other infrastructure being needed for serving economic customers.
- The public pay phones for which the avoidable cost of access is higher than the forgone revenue due to calls made from them, as derived above, will be considered uneconomic.

The results from determining the net cost of public pay phones will be as shown in Table 7.

Table 7: Net results from operating pay phones in area ...  
Number of pay phones in this area: ...

Description of the service	Quantity	Price	Avoidable cost per unit	Net result
Access (including booths and terminal equipment)		0		
Local calls				
Regional calls				
National calls				
...				
...				
Total				

## 5 Enquiry and directory services

Enquiry and directory services constitute jointly a component of the USO, as stated in the EU Universal Service Directive and in Portuguese communications law. For this reason they are considered here together.

### 5.1 Enquiry services

Enquiry services differ from other USO services in that they are not associated with the provision of services to particular areas or customer groups or, in the case of public pay phones, with the provision of services at particular locations. The services are provided over service centres that are sporadically called up by enquiry seekers. For these services the USO net cost may arise not because of a high cost of access but because of their price levels not being high enough to cover their costs.

The determination of the net cost of this service follows the same line as that for the other services. Costs shown for it in PTC's cost accounting records need to be scrutinized as to whether they are avoidable or non-avoidable. This applies to the cost of assets, which will be relatively few here, as also to the cost of service centres, which will be mostly due to labour and be the largest component. Any common cost component is to be considered as unavoidable and therefore be disallowed. Cost components identified as unavoidable are also to be removed from joint costs as also from direct costs.

The costs of different types of enquiry services are to be determined separately and expressed as costs per unit, for example for an occurrence of providing a particular type of enquiry service.

Costs due to the use of the network should be included on the basis of the volume of minutes actually employed and the per-minute cost of the corresponding type of call (local or regional) and be allocated to the different enquiry services on a proportional basis.

The results of the net cost determination are to take the form shown in Table 8.

Table 8: Net results from enquiry services

Description of the service	Number of occurrences	Price	Avoidable cost per unit	Net result
...				
...				
...				
Total				

## 5.2 Directories

Directories are part of the USO but differ in the case of PTC in that they do not generate a net cost but rather a profit. The profit is generated by selling advertising space in the Yellow Pages that are published by PTC. While thus in principle directories are to be considered when a USO cost determination is carried out, here they practically fall out of the picture because of the very fact of being a profitable operation.

In submissions regarding the net cost of the USO for 2003, PTC has indicated that on account of these profits it would not claim to be compensated for the net cost caused by enquiry services. It is recommended that, if this proposal is formally submitted, ANACOM agrees with it.

## 6 Total direct net cost of the USO in the context of the USO providers’ total financial performance

For each type of uneconomic customer and uneconomic service, i.e.

- Whole uneconomic areas,
- Groups of customers in economic areas,
- Public payphones in economic areas, and
- Enquiry and directory services,

there will be information collected in the form presented in Tables 4 through 8. This information will suitably have to be collected in summary spreadsheets with one such spreadsheet dedicated to each of the above types of uneconomic customers and services. In a spreadsheet for uneconomic customers, each line will correspond to a specific uneconomic area, particular uneconomic customer group, or an economic area’s public pay phones, as the case may be. For each service delivered there is to be a set of columns, one column each for forgone quantity, price, per unit cost, resulting forgone revenue, resulting avoided cost, and net result. There will then be one column in which the net results summed over the net results from all services for an uneconomic area, uneconomic customer group or pay phones in an economic area are shown. The sum of the negative net results shown in this column constitute the direct net cost of serving the corresponding type of uneconomic customer. The spreadsheets for uneconomic services will be organised correspondingly.

The total direct net cost of the USO, i.e. the sum over the amounts from the various types of uneconomic customers and services, needs to be evaluated in the context of the operator’s overall financial performance. For this purpose the results both from economic and uneconomic customers are presented together in Table 9.

Table 9: The direct net cost of the USO in comparison with the overall financial performance of the USO provider

Type of customer or service	Revenues	Costs	Net result
(1)	(2)	(3)	(4)
Economic customers and services			
Uneconomic customers in uneconomic areas			
Uneconomic customers in economic areas			
Public pay phones			
Enquiry and directory service			
Totals			

It is useful to interpret the figures in Table 9 starting from PTC’s regulatory accounts, which should be grouped as shown in the table. In order to obtain figures representing PTC’s overall financial performance, revenues and costs for relevant unregulated services are also included. The following then holds:

- The total revenues and costs (last line of columns (2) and (3)) correspond to the total revenues and costs shown in the regulatory accounts plus the revenues and costs of any unregulated services that are provided over access lines that are subject to the USO.
- To the extent that forgone revenues from uneconomic customers include revenues due to incoming calls, the revenues of economic customers will correspondingly be lower.
- To the extent that avoidable costs due to ceasing to serve uneconomic customers are lower than average costs (due to certain cost components not being avoidable, such as common cost and the costs of non-volume sensitive parts of network elements and the set-up costs of service centres), the costs of economic customers will correspondingly be higher.
- Given that the cost in the regulatory accounts are compiled in a way that they include a normal return on invested capital, and provided that the results for unregulated services are included on the same basis, PTC will already earn a normal profit if the figure for the overall financial performance (column (4), last line) is zero. If this amount is positive, the operator earns from all its activities including serving uneconomic customers the shown amount on top of its required return. If this amount is negative, the operator earns correspondingly less than the required return.

In Section 1 it was argued that if competition is still weak it may be that due to this fact the USO provider is price regulated in a way that it cannot abuse of its market position, but also in a way that all its costs are covered, including those of the costs of uneconomic customers. If PTC is in fact so price regulated, the latter condition would be fulfilled if, as pointed out in the last bullet point, PTC’s overall financial performance were at least zero (a zero account being sufficient because here the costs already include the return on investment), or better. While there may be direct net cost of uneconomic customers and therefore of the USO, there would be prima facie no burden, in particular no “excessive burden”, since PTC is allowed to recover all the relevant costs from its economic customers. But see the more detailed discussion on “excessive burden” in Section 8.

## 7 Indirect benefits

### 7.1 Introductory observations

Indirect benefits become important if PTC’s revenues are not sufficient to cover all its costs (including the required return on invested capital) as discussed in Section 6. Indirect benefits need then to be evaluated to determine to what extent the shortfall of revenue due to serving uneconomic customers is compensated by their value. As will be seen, the benefits due to corporate reputation and brand image as well as due to life cycle effects may be quite substantial while the effects of the remaining candidates (ubiquity, customer data base, advertising through telephone booths) may be considered of minor importance.

### 7.2 Corporate reputation and brand image

Corporate reputation and brand image are closely related effects, the former is a reflection of the esteem in which customers and the population in general hold the company in question, the latter refers to the degree of readiness with which a particular brand comes to mind when customers have to make decisions on what products or services to buy. When a company has high corporate reputation their brand comes more readily to mind and if a company’s brand is popular this is usually correlated with a high corporate reputation. Companies value both effects highly and they are prepared to spend considerable resources in order to establish and maintain them.

Being the USO provider is generally well reputed so that the USO provider will gain an enhancement of both its corporate reputation and its brand name. It is not a marginal effect. The size will depend on the number of customers that are prepared to honour the USO function with additional loyalty in the face of offers from competitors that may be more advantageous.

There are two different approaches to determining the value of this effect. The one endeavours to determine the amount the company would be prepared to spend on advertising and marketing in order to establish and maintain a reputation and brand image that is comparable in value, the other is to measure directly to what degree customers extend a greater loyalty to the USO provider, and what commercial benefit the latter derives from this greater loyalty. If the measurements in both cases were done – and were done correctly – the latter should show a higher value than the former because the commercial benefit from enjoying greater loyalty with customers should exceed the amount that the company is ready to spend in order to obtain it.

The former approach was first used in the study culminating in the 1997 consultation on the USO by Oftel and has since been copied in other studies. Referring to the difficulties

of properly quantifying the benefit due to the USO status, Oftel considered the value of the effect to equal approximately 20 % of BT's advertising and marketing expenditures aimed at its retail operations. This assessment was apparently based on an expert evaluation that the enhancement of BT's corporate reputation is worth this particular amount of money. It was, however, not justified by a concrete assessment.

In the absence of the more direct approach as discussed below, it may be advisable to use an adjusted version of Oftel's approach. The adjustment would consist in employing financial indicators in addition to that of advertising and marketing expenditures. For this, and as to what concrete percentages in relation to the other indicators are to be used, advice should be solicited from experts on advertising and marketing. In the study that WIK conducted for the European Commission in 1997<sup>3</sup> it was recommended to apply a share of the advertising and marketing budget that takes note of the relation of that budget to the USO provider's sales. If that relation (advertising budget to sales) were lower than in BT's case the percentage to estimate the benefit should correspondingly be higher than 20 % of the advertising budget. The reason is that in those cases where the USO provider in question has so far engaged in advertising and marketing on a relatively low level, 20 % of this amount would appear too low to properly reflect the benefit. It would in effect be better to express the benefit as a percentage of the relevant sales figure. In BT's case the estimated benefit due to enhanced corporate reputation was at the time about 0.35 % of the turnover of BT Group as a whole.

A comparable percentage, in any case to be supported by the advice of marketing experts, would need to be applied to the sales of PT Group as a whole. It is PT Group as a whole that benefits from PTC's USO status. Given that PTC is owned 100 % by PT Holding Company, it and all other operating companies in the PT Group are to be considered as closely affiliated and intent on optimising their joint financial performance.

The more direct approach should actually be preferable. For this a consumer survey would be required in which representative samples of consumers are faced with hypothetical choices between offers from different telecommunications companies, one of them being PTC who is clearly identified as the USO provider. Provided it is carefully designed, such consumer research can yield reliable results. The consumer survey would have to be based on interviews with a representative sample of households and be designed by an expert consumer research organisation. Interviews should include questions the answers to which would reveal respondents' awareness of PTC's USO status and the degree of their willingness to honour such status with increased loyalty.

There are indications that the results would yield a substantially larger benefit in terms of enhanced corporate reputation than is expressed by a 20 % share of the advertising

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<sup>3</sup> See WIK (1997).

and marketing budget or a 0.35 % share of turnover. To illustrate this, WIK in its USO study for the European Commission of 1997<sup>4</sup> refers to the results of a consumer survey designed for a different purpose but also addressing telecommunications services. In this survey questions were put to a representative sample of more than 2,000 German residents. Answers to the relevant questions showed that a range of between 10 % to 30 % of the subjects, depending on age, education and other socio-demographic characteristics, would consider switching from Deutsche Telekom to a competitor not at all or only at a substantial price difference because of the enhanced reputation that Deutsche Telekom enjoys due to its USO status. If this result is taken as suggestive and applied to Deutsche Telekom's sales with residential customers of about 14 billion ECU in 1997 by multiplying it with the average of 20 % of the above range of percentages, this yields 2.8 billion ECU. This share of turnover could be considered "safe". Considering that without the loyalty of these customers this business would have to be protected by say a 10 % decrease in price to counter the offer of competitors, one arrives at an estimated benefit that will probably surpass by a multiple the 0.35 % of turnover according to the Oftel approach.<sup>5</sup>

### 7.3 Life cycle effects

Life cycle effects refer to the effects of cycles undergone by people because they enjoy varying levels of income and therefore have varying demands for telephone services over their life times as also to the effects of cycles undergone by services as their importance rises and declines in people's and businesses' activities. Life cycle effects can go either way. While uneconomic customers may become economic over time due to rising incomes, so may economic customers become uneconomic because of their reduced use of services as these are substituted by other ones. In case life cycle effects are negative they will show up in future years' USO direct net cost determinations and therefore need not be anticipated here. In case life cycle effects are positive, they are expected to induce the USO provider to continue serving the customers concerned which means that the currently determined direct net cost of serving these customers should be disregarded.

One important point is that not only life cycle effects regarding PTC's fixed services are of relevance here. All of the services offered by companies belonging to the PT Group are to be taken into account, in particular mobile services. This is so because, as already pointed out, these companies are to be regarded as closely affiliated that optimise their joint financial performance.

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<sup>4</sup> See WIK (1997), p. 107.

<sup>5</sup> It is of interest to note that in its submission regarding the USO net cost for 2003 PTC also points out that a consumer survey would probably reveal a more accurate estimate of the value of PTC's status as USO provider.

The exercise to determine the relevant effects consists of net present value calculations for each of the relevant customers and services used by them. The components include forecasts of future volumes and prices leading to revenues that would be forgone in the future, and forecasts of corresponding costs that would be avoided in the future, if the customers were not served any more. For each type of uneconomic customer and type of service the net present value (NPV) is to be determined on the basis of the following relation:

$NPV_{i,j}$	=	$\sum_{t \rightarrow N} Q_{i,j,t}^e (P_{i,t}^e - C_{i,t}^e) / (1+R)^t$
where		
$Q_{i,j,t}^e$	=	the volume of service i expected to be demanded by uneconomic customers of type j at time t (where j may stand for an uneconomic area or an uneconomic customer group in an economic area)
$P_{i,t}^e$	=	expected price of service i at time t
$C_{i,t}^e$	=	expected cost of service i at time t
R	=	the return on investment which is to be used as discount factor
N	=	Horizon over which calculation is carried out, usually 5 years

The results for all services in a given area or for a particular customer group are to be added up and, in case the net present value of future business with these customers exceed their current direct net cost, these uneconomic customers are declared economic and their direct net cost eliminated from the tally of uneconomic direct costs as shown in Table 9.

Given the way electronic communications markets currently develop and how this development is likely to continue in the future, life cycle effects can be expected to be important. While it may be possible that there are negative impacts with regard to classic fixed line telephone services, there may be expected to be substantial positive effects with respect to other, in particular mobile services. The mobile arm of PT Group, TMN, has the largest market share in the Portuguese mobile market, and since it may operate under the same logo as its sister company PTC, it is likely to be the preferred partner when uneconomic fixed-line customers demand – profitable – mobile services.

For the estimation of life cycle effects it is essential to obtain realistic forecasts of current uneconomic customers' future demand for the relevant services. These have to be established taking into account the development of competition in each market. It is recommended that a specialized market research organisation conduct a corresponding market study, after the direct net cost exercise has established the identity of supposed uneconomic areas and uneconomic customer groups.

Due to the uncertainty with which in any case the forecasts can be obtained, the resulting life cycle effects will lie within a relatively large margin of error. This has to be taken into account when using them to offset the net direct cost of the USO. If these calculations could actually be done precisely, i.e. without these margins of error, the USO net cost calculations should in general be done on a net present value basis and not by way of first determining the costs and revenues of currently provided services.

## 7.4 Ubiquity

Ubiquity is an aspect of a network operator that is offering services nation-wide since all customers know that they can order telecommunications services from it no matter where they are on the national territory. The operator to which this characterisation generally applies is the incumbent network operator, here PTC.

PTC enjoys ubiquity due to it being the incumbent operator, with a dominant national presence which it has had for many years, and not to it being the USO provider. It is an issue in the USO net cost determination, however, insofar as current subscribers to PTC in uneconomic areas, when moving to economic areas where these subscribers then become economic, will have a tendency to select PTC again in their new location. This is a factor which makes these customers although living in uneconomic areas valuable to PTC or, more generally, makes serving the relevant uneconomic area appear less costly than it would otherwise be. There are of course also subscribers that move in the opposite direction from economic into uneconomic areas. These will in the predominant number of cases take up service with PTC, given that they have rarely another choice, and thereby tend to aggravate the uneconomic status of these areas. This effect, however, will show up in future years' USO direct net cost determinations and therefore need not be considered here.

In order to determine the benefit that PTC will receive from the effect of ubiquity, one must have an estimate of how many people move each year from uneconomic areas to economic areas, as well as an estimate of the proportion of these that are likely to choose PTC as their provider of telecommunications services. For the proportion of people moving, one will need empirical estimates, for the proportion of them taking up service with PTC, one would have to make an appropriate assumption. The net profits earned from these people taking up service with PTC over its planning horizon discounted up to the present would be the benefit to be taken into account. (The calculation is similar to that used above for the calculation of life cycle effects.) With time it is to be expected that as competition spreads and competitors advertise nationally to market their services, this effect will diminish. Given the relatively small

number of people living in uneconomic areas and the still smaller number of people moving out of these into economic areas, this effect can also be assumed to be small.<sup>6</sup>

## 7.5 Data base of uneconomic customers

The control of a telecommunications customer data base is valuable as it enables to establish contact with these customers and thus might help increase cross selling capabilities for PT Group companies. To the extent that it is legally permitted, these contact data can also be sold to interested third parties. If PTC in fact uses the data for this purpose, the financial contribution from this business on account of uneconomic customers, which would be forgone if these were not served any more, is to be counted as indirect benefit of the USO. The corresponding share of that business would have to be assessed on the basis of market prices for such contact data and the relevant share of PTC's cost of running this business. Cost assessment would be similar to that of other of PTC's functions, for example its own directory services. As throughout these USO net cost calculations, care has to be taken that in fact only avoidable costs are taken into account.

The value of this data base to PTC's own enquiry and directory services is not to be considered as an indirect benefit as the value of its availability is implicitly taken into account when the net costs of these services are determined. By not considering the value of the data base in the costs of these services their costs are kept lower than they would otherwise have been.

Also, the additional benefit that PTC obtains through the rather comprehensive information about the demand profile of these customers should not be considered separately. This benefit is actually part of the benefit discussed under life cycle effects given that the promotion of PT Group members' services will have been made more effective through mailings to these customers the success of which will have found its reflection in the success of providing service to these customers, as precisely discussed in the section on life cycle effects.

## 7.6 Advertising through public telephone booths

A benefit of public pay phones is the value of the advertising effect of the operator's logo on call boxes. Depending on the location of the public pay phone, the benefit can be substantial, if for example the location is in a city's central business district and

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<sup>6</sup> The positive effect due to ubiquity on an operator's profitability gained some notoriety after in its 1997 determination Of tel found that there was quite a large benefit due to it. This finding, however, was based on an erroneous perception as to what is the basis for this ubiquity. In subsequent reviews, Of tel/Ofcom recognised this error and revised the corresponding estimate down to close to zero. See also Section 9 of the present text.

visible by all by-passers; or close to zero, if in a remote area and hardly visible. Thus the number of public pay phones need to be classified according to whether they are located in densely or sparsely populated areas and according to their degree of visibility. This may best be done on the basis of the price for comparable advertising space for the various types of location.

For each type of location, the advertising benefit is then to be calculated as the number of public pay phones in the given type of location multiplied with the corresponding price of comparable advertising space.

## 8 Identification of “excessive burden”

EU rules allow that the USO provider be compensated for the net cost of the USO whenever it is deemed that its provision constitutes an excessive burden. An excessive burden may arise because the pressure of competition does not allow the USO provider to recover all its costs and make a reasonable profit from serving customers, both those that are profitable and those that are not. Before the liberalisation of the telecommunications market, it was not necessary to allow for such compensation mechanisms as universal service, to the extent that it was actually delivered, was assured by the then still monopolist incumbent operators under pricing regimes that safeguarded margins sufficient to cover all costs.

Thus the EU rules on compensation mechanisms are “can” and not “must” rules. A regulatory authority may on request by the USO provider evaluate to what extent the provision of the USO adds up to an excessive burden, and only if an excessive burden is identified will it be obliged to provide for such a mechanism. Given that USO providers are usually the former monopolist operators with still significant market power (SMP) in many markets they may still be able to earn a return on their investments that exceeds the one required by the capital market and is sufficient to attract further capital. In this case an excessive burden may not be identified. When Oftel reviewed BT’s costs and benefits of being the USO provider in the UK, it came to the conclusion that BT suffered no excessive burden stating that “BT’s overall level of profitability, after taking into account the costs of USO, exceeded what BT needed to cover its full costs and make a reasonable return”.<sup>7</sup>

It is recommended that ANACOM take the same perspective when approaching the question as to whether PTC is suffering an excessive burden due to the provision of universal service. At the end of Section 6 it was pointed out, that PTC’s overall financial performance ought to be evaluated after including as a cost item the required return on investment.<sup>8</sup> If then this performance is positive, i.e. if revenues exceed costs including that required return, this should be taken as a prima facie indication that PTC is earning more than is sufficient and that there is no excessive burden due to the USO. Actual results from PTC’s financial accounts through the years 2006 (the latest for which these are available at the time of writing) indicate sizable positive margins by which revenues exceeded the costs that were arrived at this way.

As ANACOM has pointed out to WIK-Consult, when PTC was placed under price cap regulation in the 1990s, the overall price levels on which the price caps were placed enabled PTC to recover all of its costs at the time, in particular also the costs of fulfilling

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<sup>7</sup> See Oftel (2001).

<sup>8</sup> In economic analysis the required return on invested capital is considered a cost given that this return is necessary to induce investors to provide the capital and thus represents the scarcity price for this capital.

the USO. Given the relatively weak degree of competition during most of the time since then, PTC was able to maintain profit margins beyond the level to guarantee a normal return. If PTC were reimbursed for any net cost of the USO, this would amount to still adding to the margins earned and established to be on top of the normal return. Only if PTC could show that it earned an amount equal to that extra margin (the margin actually realized plus the amount paid on account of the net cost of the USO) due to its efforts in becoming more efficient, reducing prices much below the price cap and thereby extending its operations, in particular in the area of regulated services covered by the regulatory accounts, could it advance an argument that it was being penalized by not being granted a reimbursement.

It is true that not only the current level of profitability but also that of future years should enter into the assessment of the existence of an excessive burden. If in effect the current high profit level were to a substantial degree due to past extraordinary efforts at greater efficiency and innovativeness which, however, could be expected to disappear under the threat of future aggressive competition, then this may be a reason in favour of granting a reimbursement of the USO net cost. Now, ANACOM is currently reviewing PTC's claim for reimbursement of USO net costs that, presumably, were incurred during the periods 2001 through 2003. In respect of the evaluation of excessive burden for these years, ANACOM is in the advantageous position of already being able to check the development of PTC's profitability since that time and to base its decision on this development. If, however, the assessment is to be made for a recent year, the assessment will have to be made on the evaluation of developments actually lying in the future which in turn will be the result of a number of various separate developments.

Below is a list of indicators, all of which are to be assessed in respect of current levels and future expected changes:

- Price levels,
- Market share,
- Level of market entry barriers,
- Operational efficiency, and, based on all these,
- Future profitability.

If prices and market share are expected to go down rapidly, feasible future efficiency gains will be rather insignificant and not enough to offset these effects, in addition if there are no market entry barriers any more (because the regulator has effectively pulled them down), then this may persuade the regulator to grant reimbursement of the USO net cost. This will necessarily be an assessment for which there does unfortunately not exist a hard and fast list of values for the various indicators. When it is observed that their values go clearly in the one or other direction, it should be relatively

obvious what the situation regarding future profitability will be so that the assessment becomes relatively easy. It is the cases in which developments are not so clear-cut where an ability for judgement is necessary to decide one way or the other.

While the above evaluation is in a first round to be carried out in respect of the regulated company, in the final analysis it is to be extended to cover the whole corporate entity. The latter is here PT Group to which besides PTC, as the group member having to fulfil the USO, a number of other telecommunications companies belong<sup>9</sup> which are all wholly owned by PT Holding. Under EU competition law, all these companies are to be regarded as one single economic entity under one single management (the Comissão Executiva) intent on optimising the performance of this entity. Any shortfall of profits that PTC might have on account of the USO would need to be assessed on the basis of the considerations discussed in the preceding paragraph as these would affect PT Group as a whole. In particular it would have to be assessed whether such a profitability shortfall of PTC would constitute an excessive burden for PT Group considering the SMP advantages it possesses and inherited from its past monopoly status.

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<sup>9</sup> Most importantly PT Corporate, PT Prime and TMN.

## 9 USO net cost determination in selected European countries

The practice of USO cost determination in four EC member states are briefly reviewed here highlighting those aspects that are of particular interest for the Portuguese case. The countries covered are the UK, France, Italy and Belgium.

### 9.1 UK

Oftel was the first regulatory authority in a EU member state to make a USO net cost determination. It covered the provision of USO services by BT, the predominant incumbent operator on UK territory<sup>10</sup>, for the business year 1995/96. Oftel itself apparently initiated the determination. According to the records there has been no formal submission for reimbursement by BT.

The study carried out for 1995/96 was based on data from BT’s cost accounting records. Since this first study, Oftel, respectively Ofcom, carried out reviews of the initial determination in order to determine the net cost for the years 1998/99 and 2003/04 without, however, repeating the detailed and complex cost modelling undertaken earlier. The reviews aimed at verifying whether the conditions that led to the conclusions of the first determination had materially changed in the meantime.

The results of Oftel/Ofcom’s determinations are shown in Table 10.

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<sup>10</sup> There is another incumbent operator, Kingston Communications (Hull), for which Oftel declined to carry out a USO net cost determination.

Table 10: Development of the USO net cost in the UK\*

	1995/96		1998/99	2003/04
	BT claim	Determined by OfTel		
Net direct costs				
Uneconomic areas		5 -10	5-10	5-10
Uneconomic customers		30-40	38-48	24-31
Pay phones		10-15	10-15	23-33
<b>Total</b>		<b>45-65</b>	<b>53-73</b>	<b>52-74</b>
Indirect benefits				
Corporate reputation and brand enhancement		50	50	50-52
Life cycle effects		1-10	0-1	0-1
Ubiquity		40-80	~0	~0
Advertising on public pay phone boxes		11	11	9-11
<b>Total</b>		<b>102-151</b>	<b>61-62</b>	<b>59-64</b>
<b>Conclusion</b>	<b>No unfair burden</b>			

\* Source: Ofcom (2005, 2006)

The following points are of particular interest:

- Areas that may be uneconomic are defined by local exchange areas which correspond to MDF areas.
- Uneconomic areas, usually thought to be the predominant source of a USO net cost, make up a relatively small share of total direct net cost.
- A large share of the direct net cost of the USO has in all three reviews been due to uneconomic customers, where these are primarily customers who benefit from special tariff schemes targeted at households with low incomes.
- Pay phones also make up a relatively large share of total direct net cost. The amount shown for 2003/04 sharply increased relative to that for 1995/96 and 1998/99. The increase is attributed to revenues from public pay phones having decreased substantially as many calls that used to be made from them are now made from mobile phones.
- For 1995/96 a very high indirect benefit due to ubiquity was determined which in the following reviews was reduced nearly to zero. The reason for the initial high amount was that the effect of BT's ubiquity due to being present on the total of the national territory was – erroneously – taken into account and not only that due to being present in uneconomic areas.

- In each of the three reviews Oftel/Ofcom did not judge that the net cost of the USO, if at all any, did not constitute an unfair burden for BT, stating that BT’s overall level of profitability exceeded what BT needed to cover its full costs and make a reasonable return.<sup>11</sup>

## 9.2 France

The French regulatory authority ART (later ARCEP) has carried out USO net cost determinations since 1997. It is the regulatory authority itself that takes the initiative, requesting USO providers, practically only France Télécom, to provide the relevant data. These data stem from USO providers’ cost accounting records that have before been audited by an independent auditor.

The determination for 1997 was disallowed by the European Court of Justice as for this year, France Télécom, the incumbent operator and USO provider was still the monopolist on the market for fixed telephony and was therefore under European law not entitled to be reimbursed for any USO net cost.

The results of ART/ARCEP’s determinations are shown in Table 11.

Table 11: Development of the USO net cost in France\*

	1998	2002	2005
	Million €		
Net direct costs			
Uneconomic areas	306.7	164.0	3.2
Social tariffs	0.0	35.7	37.3
Pay phones	23.3	20.9	13.9
Directories and inquiry services	0.0	0.0	0.0
<b>Total</b>	<b>330.0</b>	<b>220.6</b>	<b>54.4</b>
Indirect benefits			
Corporate reputation and brand enhancement	54.7	86.2	23.3
Life cycle effects	0.0	8.2	0.0
Ubiquity	0.0	0.3	0.1
Usage data	0.0	0.9	0.1
<b>Total</b>	<b>54.7</b>	<b>95.6</b>	<b>23.5</b>
<b>Balance</b>	<b>275.3</b>	<b>125.0</b>	<b>30.9</b>

\* Sources: ART (2003), ARCEP(2006)

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11 See Oftel (2001).

The following points are of particular interest:

- Areas that may be uneconomic are defined by “zones de répartition locale” which correspond to MDF areas.
- Initially it was the net cost of uneconomic areas that made up the largest part of total direct net cost, in 2005 social tariffs and pay phones had become the most important positions.
- The net direct cost on account of uneconomic areas decreased from a high level of 306.7 million Euro in 1998 to only 3.2 million Euro in 2005. The reasons given are changes in the tariff structure, the volume of traffic and, most significantly, in accounting rules when FranceTélécom adopted international financial reporting standards (IFRS) with the consequence of a prolongation of the economic lives of the components of the local loop. This is an example of how changes in rules that intervene rather arbitrarily can substantially alter the results of a cost determination.
- The value of France Télécom’s brand name was determined on the basis of a rather complex economic model using data from a consumer survey. The drop in the value observed in 2005 (in 2004 the amount had still been 81.7 million Euro) is attributed to the effect of competition, as other providers than France Télécom are apparently now seen as viable alternatives for providing also universal service.
- The USO net costs determined by ART/ARCEP since 1998 have always been acknowledged as an unfair burden for France Télécom. In its 2006 annual report ARCEP made the following observation:<sup>12</sup>

The existence of a net cost leads to the possibility of compensation only in cases where it constitutes an unfair burden on an operator. It was the Authority’s view that, in light of the definitive costs for 2005, such was the case and the implementation of a compensation mechanism was therefore justified.

No justification in terms of France Télécom’s market and profit positions was provided.

### 9.3 Italy

The Italian regulatory authority AGCOM has been determining the net cost of the USO since 1998. The determinations are based on claims submitted by Telecom Italia. Telecom Italia calculates the net cost figures using an elaborate model that in part uses information from its cost accounting records and in part is based on bottom-up cost

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<sup>12</sup> See ARCEP (2007), p. 397.

modelling. AGCOM's procedure consists in having a consultancy firm verify these claims. The results of the determinations for the years 1999 through 2003, comparing for each year the net costs claimed by Telecom Italia and the amounts granted by AGCOM, are shown in Table 12.



Table 12: Development of the USO net cost in Italy\*

	1999		2000		2001		2002		2003	
	TI	AGCOM	TI	AGCOM	TI	AGCOM	TI	AGCOM	TI	AGCOM
In million €**										
Net direct cost										
Uneconomic areas	103,8	73.9	96,1	70.3	72,8	54.8	80,8	16,4	74,9	11.6
Uneconomic customers in economic areas	125,5	0.0								
Street cabinets in economics areas			23,8	0.0	5,7	1.0				
Pay phones	37,7	34.1	29,4	20.5	27,4	15.5	44,6	13,1	14,5	11.7
Directory services	69,2	0.0	52,2	0.0	20,7	17.6	25,6	3,8		
Social tariffs							13,4	0,0	7,8	7.5
<b>Total</b>	<b>336,3</b>	<b>108</b>	<b>201,4</b>	<b>90.8</b>	<b>126,5</b>	<b>88.9</b>	<b>164,4</b>	<b>33,3</b>	<b>97,2</b>	<b>30.8</b>
Indirect benefits										
Customer loyalty	28,7	28.4	0,0	20.5	0,0	25.3	1,5	24,7	10,2	15.4
Mailings due to customer data base	2,9	2.6	4,1	4.1	3,1	2.6	3,1	1,8	2,1	1.7
Advertising on public phones	8,9	14.3	5,9	5.9	1,5	3.1	1,7	2,4	0,0	3.1
Knowledge of customer profiles	0,0	0.3	0,0	0.1	0,0	0.0	0,0	0,0	0,0	0.0
Ubiquity	0,0	0.0	0,0	0.0	0,0	0.0	0,0	0,0	0,0	0.0
Life cycle effects		0.0	0,0	1.7	0,0	0.0	0,0	0,0	0,0	0.0
<b>Total</b>	<b>40,6</b>	<b>45.5</b>	<b>10,1</b>	<b>32.4</b>	<b>4,6</b>	<b>31.0</b>	<b>6,2</b>	<b>28,9</b>	<b>12,3</b>	<b>20.2</b>
<b>Balance</b>	<b>100,9</b>	<b>62.4</b>	<b>191,4</b>	<b>58.4</b>	<b>121,9</b>	<b>57.9</b>	<b>158,2</b>	<b>15,0***</b>	<b>84,9</b>	<b>10.6</b>

\* Sources: AGCOM (2002a, 2002b), Europe Economics (2006)

\*\* The amounts for 1999, 2000 and 2001 are stated in the sources in Italian Lira but have here been converted to equivalent amounts in Euro.

\*\*\* The amount is higher than the straight difference between direct cost and indirect benefits as a large share of customer loyalty indirect benefit was set directly against the direct net cost due to uneconomic areas.



The following points are of particular interest:

- Areas that may be uneconomic are defined by SL (subscriber line) areas which correspond to MDF areas. During the years until 2001, a net cost was also claimed by Telecom Italia for smaller areas defined by being served by street cabinets. A cost for these areas was, however, accepted by AGCOM only for one year, i.e. 2001.
- There has been a substantial decrease in the USO net cost from 2001 to 2002, primarily due to the reduction in the cost of uneconomic areas. A main reason for the decrease is a change in accounting rules whereby the net replacement value of assets, and therefore the corresponding net replacement cost, was reduced substantially.
- AGCOM did not recognize a USO net cost due to uneconomic customers in economic areas claimed by Telecom Italia in 1999.
- There appears to be a lack of consistency in the types of net cost and indirect benefits being taking into consideration. While the net direct costs of uneconomic areas and pay phones are always included, those for directory services are not admitted in 1999 although claimed by Telecom Italia, admitted in 2001 and 2002, and do not appear any more in 2003. Among the indirect benefits, life cycle effects are admitted once in 2000, in the other years they are not recognized.
- AGCOM has so far acknowledged that the USO net cost determined for Telecom Italia is an unfair burden and justifies this with reference to competition becoming more effective. In its determination for 2001, it specifically states:<sup>13</sup>

The Authority used the data requested from operators to assess the level of competitiveness of the telecommunications market. The results of the analysis have shown an improvement of the degree of competition as opposed to previous years. More specifically, the market share of Telecom Italia's telephone traffic was down from 82% in 2000 to 79% in 2001. The same trend was identified on Telecom Italia's traffic volumes which, in the same period, were down from 81% to 77%. The overall telephony market, in revenue terms, fell by one percentage point against the 7% traffic-volume increase. The Authority, based on the foregoing analysis, maintained that the burden of obligations of universal service provision was unfair to Telecom Italia.

Apparently, it was not checked to what extent Telecom Italia's profitability was affected by these – modest – improvements in the degree of competition. :

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13 See AGCOM (2002b)

## 9.4 Belgium

The Belgian regulator IBPT determined Belgacom's USO net cost the first time for the year 2003. The determination was carried out using data from Belgacom's cost accounting system which are based on CCA and economic depreciation. In this respect the methodology used appears to be a best practice approach. Table 13 shows the result of this determination.

Table 13: The USO net cost in Belgium for 2003\*

	N
	Million €
Net direct costs	
Basic telephone service	11.1
Public pay phones	23.7
Social tariffs	27.4
Directory services	0.0
Directories	0.0
<b>Total</b>	<b>62.2</b>
Indirect benefits	
Corporate reputation and brand enhancement	8.2
Life cycle effects	4.5
Ubiquity	1.7
Customer data base (mailing)	4.5
Advertising in directories	0.2
Advertising on public phones	2.2
<b>Total</b>	<b>21.4</b>
Net direct costs, <u>after deducting indirect benefits</u>	
Basic geographic telephone service	0.0
Public pay phones	21.4
Social tariffs	27.7
Directory services	0.0
Directories	0.0
<b>Total</b>	<b>48.4</b>

\* Source: IBPT (2005)

The following points are of particular interest:

- Areas that may be uneconomic are defined by LEX (local exchange) areas which correspond to MDF areas.

- As in the case of the UK, public pay phones and social tariffs make up the largest share of the direct cost of the USO.
- An unusual aspect is that the various indirect benefits are apportioned to the various types of direct net costs according to coefficients that are supposed to reflect the relationship of these benefits with these types of uneconomic services. One outcome is that the direct net cost determined for basic geographic telephone service is more than compensated by a share of indirect benefits that is greater than this amount.
- The access deficit is deducted from the direct net cost of basic geographic telephone service.

The last point is commented on as follows:

- IBPT essentially argues that Belgacom could by 2003 have completely rebalanced its tariffs in a way that there should have been no access deficit any more. In particular Belgacom could have accomplished this within the price cap under which it is allowed to adjust its prices. It is not specified in detail how the deduction of the access deficit from the USO net cost is actually carried out.

Now, when an operator moves to rebalance its tariff structure this usually involves two offsetting changes: an increase of the rental and a decrease in call charges of a similar magnitude to compensate users for the increase in the rental. If IBPT's adjustment has taken into account such a complementary tariff measure, the effect on the USO net cost should be negligible as additional receipts on account of the rental will largely be forgone again on account of compensating reductions in call charges. Arguably there could have been an effect via larger volumes of calls due to the lower charges; this effect, however, would have been of a relatively small magnitude.

Conceivably IBPT carried out the adjustment without such a compensatory change in call charges, where the assumption must hold that this was possible under the given price cap. The total effect would then probably be of a larger magnitude where, however, only the part of the extra revenue coming out of uneconomic areas would be eligible to be deducted from the USO net cost as the part realized in economic areas could not count as revenues forgone in a USO net cost determination.

It is not evident that IBPT needed to argue that the possible increase in the rental but not realized by Belgacom should be counted as a decrease of its USO net cost. A more elegant line of reasoning would have been that by foregoing the revenue voluntarily the corresponding part of the cost of the USO could obviously not be counted as an unfair burden.

## 9.5 Lessons learned from the country cases

As mentioned earlier, the EU rules regarding the compensation of USO net costs are “can” and not “must” rules which means that it is essentially up to the discretion of the regulatory authorities in member state countries to decide to what extent they recognize these costs and consider them as an excessive burden. If there is no USO net cost regime in an member state it can safely be assumed that this is acceptable to the Commission. The European Commission is not on record strongly supporting claims made by operators for compensation of the USO net cost while in contrast it objected to France Télécom being reimbursed for a net cost determined for 1997 (when this operator was still a monopolist and was covering all its costs through corresponding prices) and was upheld in this by the European Court of Justice.

It also appears that regulators have a large degree of freedom in respect of how they go about determining a net cost and at what intervals the cost determining exercises are to be carried out. While the British regulator did one in-depth study for the 1995/96 period, finding no excessive burden, and performed relatively superficial reviews twice since that time, each time confirming that there was no excessive burden, the French and Italian regulators have been performing such determinations each year since 1998 and have each time ruled that the net costs determined constituted excessive burdens. As long as the amounts to be reimbursed remain within reasonable bounds,<sup>14</sup> the Commission would apparently not interfere with the details.

In general, it can be noted that in the two cases for which the results of USO net cost determination are well documented over time, i.e. France and Italy, the amounts of the net cost have gone down since their first determinations. In both cases it is striking that sharp decreases in the amounts found for uneconomic areas occurred after there were changes in accounting rules. This throws up the question as to the appropriateness of the higher estimates that were arrived at in earlier periods. This also serves as a reminder that there is a need to avoid the danger of determining too high a USO net cost in a first such exercise, as is currently the case in respect of PTC.

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<sup>14</sup> ARCEP states in its 2006 annual report that the maximum contribution for an operator contributing to the USO net cost amount to 0.1 % of turnover in 2004 and to 0.09 % of turnover in 2005; see ARCEP (2007), p. 396.

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