Study on

Universal Service in the Accession Countries

Annexes to Main Report

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Annexes to Main Report

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ANNEX I: NETWORK COSTS IN ACCESSION COUNTRIES

A. Principles

1. Forward-looking costs

In competitive markets where technology develops fairly rapidly, firms cannot price their services by simply marking-up their own book value costs and expect to stay in business long. Other firms which have invested in more recent technology will have a cost (and perhaps quality) advantage which will allow them to offer lower prices to consumers. Firms faced with such competition must set prices with one eye fixed firmly on their competitors.

In such an environment the value of a firm's irreversible invested assets will depend on the prices and quality of services provided by the competitive market, not by the amount the firm paid for the assets. This is in particular contrast to what a utility monopolist can do. Such a monopolist can continue to put off buying new technology, and can set its prices without regard to new technology or competitors. In a competitive market the value of those outdated assets would not hold up.

Failing to update technology on a timely basis and failure to set prices according to competitive conditions, causes considerable inefficiencies and cost to society. In the absence of competition the approach to take when assessing real economic costs (by which we mean the costs to society as a whole) is to employ a 'forward looking' mindset. This means that once assets are sunk they can no longer be relied upon to provide true economic costs, or to guide us in our assessment of whether we need to upgrade our assets, or change our prices. Forward-looking means that we assume a competitive environment: we assume a modern network and modern network costs.

In addition to these capital costs there will be operating and maintenance costs also associated with a modern network, with the further requirement that these are "best current practice" costs. This assumption allows us to weed-out the inefficiencies which are found in firms and industries which are not disciplined by effective competition.

2. Incremental costs

A service (or good), call it Φ, is said to cover its incremental cost if the revenue generated from its sale is sufficient to cover its production costs, such that the cost of producing all other services are no higher than they would be if Φ was not produced at all. In other words, if a service does indeed cover it incremental costs, we can say that it attracts no cross-subsidies.

In actuality, the time over which the cost assessment takes place needs also to be specified. For such things as individual calls, the assessment can be very short. However, where an entire single service is involved it will necessarily be a very long time period – long enough so that all sunk assets that are incremental to the service are included in the analysis. This then is known as the long-run incremental cost (LRIC), and it is the basis by which we will assess how much line rental prices must rise in order for them to cover the long-run average incremental cost of provision. Of course we qualify this by calling it forward-looking; the network assets we are valuing are for a technologically modern network.

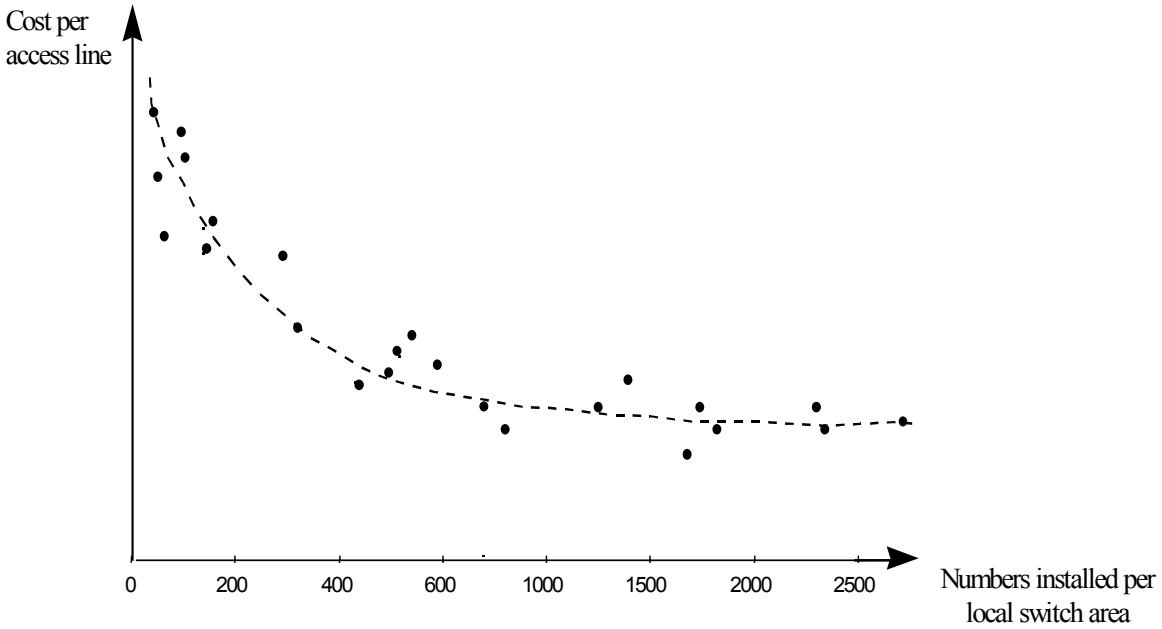
B. Access costs

By far the greatest determinant of the average cost per subscriber line for the local access network (i.e. for estimating net USO costs), is line length. In the absence of this information two factors that cause line lengths are the number and density of termination points (or access lines). The two are clearly highly correlated, with density being the most important factor explaining average line length in an area, although if the density of two areas is the same and one has 50 houses where the other has 2000, the average line costs can vary by a relatively large amount.

While geological, and topological factors will also play a part in explaining cost difference between one area and another, for countries as a whole these factors tend to average out such that they tend to have fairly minimal effect on average line costs from one country to another.[1] Generally, the main cost differences will be explained by line length, or in its absence, line density, and the number of termination points that are clustered together.[2]

Moreover, as can be seen below, quite a large degree of variation in installed lines per switch area is needed before there is a significant change in the average line cost of an access network.

Figure 1 - Plotting cost against numbers installed for a sample of areas of a European operator

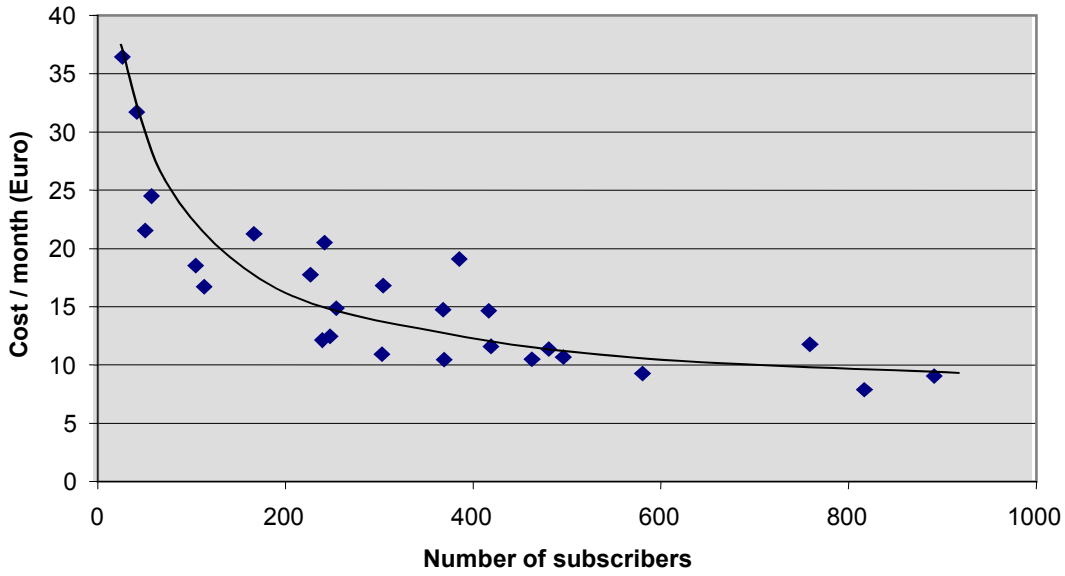


[1] Even in those countries where particular geological and/or topographic characteristics do make a difference, it typically occurs in areas where there are few lines installed, and therefore there is little impact on the average per line access network cost.

[2] For small clusters of subscribers higher cost are partially explained by the indivisibility of costs; i.e. the matching of resources (human and capital) to tasks in time, becomes more difficult. There may be some problems, even at larger scales of operation relating to the "lumpiness" of some investments, such as would occur when the capacity of a switch reaches its limit, and a new one has to be purchased.

Figure 1 - Plotting cost against numbers installed for a sample of areas of a European operator shows actual average line cost numbers for a representative sample of areas for a European operator. Figure 3 shows figures generated from the WIK access network model for 27 areas in Germany, plotted against cost per line, and the total number of subscribers in each area.

Figure 2 - Representative sample of cost and line numbers from WIK access network model



1. Adjusting for input costs

To compare real living standards between countries with very different per capita incomes would require us to make a purchasing power parity (PPP) adjustment. One might expect that input costs for an operator in a country with significantly lower per capita income would need to be similarly adjusted. We argue below why for operators' input costs will make less difference to overall cost than when 'inputs' to humans are compared.

a) Labour costs

On average wage rates are lower in lower GDP per capita countries than in higher GDP per capita countries. Indeed, the per capita income in the EU is more than twice the highest of the 13 accession countries, and roughly 20 times the per capita income of the poorest of the 13 countries. Wage rates will be similarly variable, and with wage payments typically comprising 20 to 25 percent of an operators annual expenses, we might expect accession country operators to have significantly lower overall costs than EU operators typically have, and thus to be able to sustain much lower prices.

The factor working against this argument is that lower income countries by definition have lower productivity – approximately in proportion to the difference in wage rates. However, in tasks that

are more labour than capital intensive, differences in labour productivity tend to be smaller. In particular, access networks are relatively labour intensive to build, and depending of the labour costs/productivity ratio, access networks may well be cheaper to build in countries with lower GDP per capita. The average cost of access may therefore be lower in accession countries than in the EU. The fact that in most accession countries there remains little or no competition implies that their operators have monopoly power, which in most circumstances translates into relatively worse efficiency.[3] This will tend to cancel the advantage of lower labour costs.

b) Capital equipment inputs

Capital equipment is normally purchased on international markets, and if we put risk to one side, in a vigorously competitive market these costs would be similar in Euro or US dollars for any operator. In the case of switches, this appears to be rather less true, with very large buyers reputably negotiating very substantial discounts off list price.[4] It thus seems possible that for switches, many accession country operators could have paid more than large European or American operators such as BT and Ameritech. For other assets, such as fibre cable and the copper used in access networks, Accession country operators probably pay a similar price compared to EU operators. For the purposes of this study exact measurements are not important, and we make the assumption that capital input costs are similar.

c) The cost of capital

The cost of capital is know to be higher in developing countries. The term 'cost of capital' refers to the return a firm is expected to pay to investors for the provision of their funds. Although there are many forms of investment, we can group them into the two most common forms of investment: debt and equity. For emerging economies the cost of both debt and equity tends to be higher than it is in developed economies. In the main part this is due to there being greater non-diversifiable risks, i.e. even an investor who is fully invested in the index of all possible stocks will face fluctuation returns.

Source of non-diversifiable risk are mainly macroeconomic and political in nature. They include inflation, interest rates, DGP growth. This also include political risk, such as expectations as to the probability of a fairly drastic policy change. These factors differ from one country to another, and the markets' expectations about non-diversifiable risk show that it is significantly higher in middle and lower income countries than in high income countries. The cost of capital tends to be lower in liberal economies with stable democratic government, where there are well established laws protecting property rights.

C. Conclusion on input and access costs

Labour costs and clearly lower in accession countries, but the cost of capital is higher and labour productivity lower. Without doing detailed studies of the cost of capital and the cost of building and

[3] Accession country operators still use analogue technology for large parts of their networks, which is associated with significantly high maintenance costs and poor service quality.

[4] While information about sale prices is kept very secret, our understanding is that discounts greater than 50% off list price are not uncommon.

operating networks in accession countries, we can not categorical comparisons. We are, however, of the opinion that as a general rule, for higher income accession countries, and assuming a similar density of termination points, the prices accession country operators would need to charge for access over the long-run to make a fair return on capital will not in general differ by a very large margin compared to EU operators. For those accession countries in the middle and lower end of the GDP per capita range, access service costs may be a little lower than those needed by efficient operators in EU countries, but we think probably not by more than 10 to 20 percent, assuming a similar density of termination points. However, without direct empirical evidence, there may be a wide margin for error.

The average dedicated customer access costs per line in the USA are listed at $250 per annum by the FCC.[5] Economic/engineering cost models suggest that on the basis of a modern equivalent assets these costs might be substantially less than this, approximately $15 per month or $180 per year. When these costs are de-averaged for states, the costs vary from a little less than $100 to about $300 per year depending on line density, with states like Wyoming, and Alaska having the highest costs, and Massachusetts, Rhode Island, the lowest.

The WIK local access network model suggested an average line rental price of approximately 26 – 30 Dmark per month, or roughly 160 – 185 Euro per annum would be needed for Deutsche Telekom to fully cover the cost of providing fixed wire access services. If accession countries had similar teledensity to Germany, we would guess that LRAIC of an access service may be between about 140 and 160 Euro per line.

In countries where most phone connections are in high density areas, as tends to be the case where there are low penetration rates, costs are clearly lower, with annualised rental rates of between 80 and 120 Euro possibly covering the relevant long-run incremental cost. Where there are also some less densely clustered termination points, as typically also occurs, this will put the price needed to cover costs up as the **average** cost per line will be higher. We suspect that for all countries in this study, annual line rental income of between about 90 and 160 Euro per year for the operator would cover the range of forward-looking long-run average incremental cost for providing customer access.[6]

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5 See FCC *Monitoring Report*, CC Docket No. 87-339, p 139.

6 By using some form of wireless local loop technology costs are likely to be substantially lower, however, given current technologies bit rates will be significantly lower, not sufficient to provide adequate internet access.

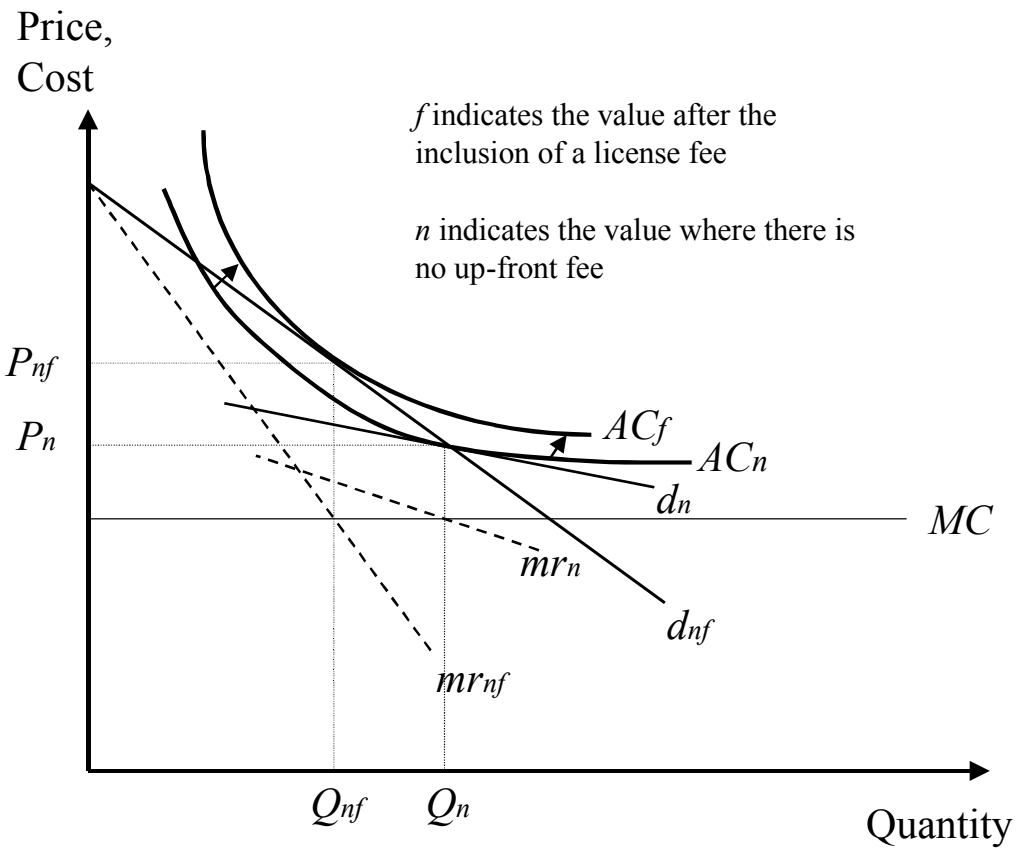
ANNEX II: ECONOMIC EFFECTS OF UP-FRONT LICENSE FEES

(Static analysis)

Up-front license fees do not *per se* alter the operating costs (*MC*) of firms. What they tend to do however is reduce the number of firms competing. This is because they raise the fixed cost and thus the average cost (*AC*) of firms entering the industry.

The average cost without license fees is shown by AC_n which results in the number of entrants *n* producing output Q_n at price P_n. Higher entry costs in the form of a relatively large license fee pushes average cost up to AC_f, where *f* indicates the existence of a license fee. Compared to a situation where there are no entry fees, this requires there to be fewer firms in the market, i.e. it requires a more concentrated oligopoly in order for profits rates to be high enough so that each firm can meet its average costs (including the rate of return required by investors). The fewer firms means that each firm faces a perceived steeper demand curve d_{nf} which implies a higher price P_{nf} and lower level of output Q_{nf}.

Figure 1 - Up-front license fees and new entrant numbers



Source: WIK own construction

Where the maximum number of entrants is fixed and the average cost is below the demand curve, each firm will earn supper profits. This tends to be the case with mobile telecommunications licenses which include rights to spectrum. In this case, among other things, values bid at auction push up the average costs for the winning bidders, but of course do not alter the margin cost of providing services, and thus have no effect on the prices paid by subscribers i.e. the auction fees work to raise the total costs for the winning bidders so that much of the expected future supper (or excess) profits are provided to the state in the form of license fees.[7]

[7] Clearly there needs to be a sufficient number of bidders to make this work. Moreover, where expected future profits using new technology dwarf those that are presently available with existing technology, the industry may eventually have difficulties in raising the finance needed to compete away expected future excess profits. While there were several other important factors at work, this appears to have been one of the causes behind the poorer revenue performance of more recent 3G auctions. Auctions tend to be pro-competitive compared to tendering, because they provide the licenses to the highest value users (unlikely with tendering), they are transparent, and because they require the state to provide regulatory commitments in order to reduce uncertainty to attract bidders. Auctions for scarce resources therefore tend to increase the economic welfare of a country compared to tendering i.e. beauty contests. For a thorough introduction to the theory of auctions, see McAfee and McMillan (1987).

ANNEX III: AN EXAMPLE OF THE PROBLEM OF REGULATORY COMMITMENT.

An example of a typical problem that arises, especially where the incumbent is privately owned, involves the RPI-X price control basket. This is a means of sharing the efficiency gains a dominant operator can make in supplying those services which are not subject to competitive pressures (i.e. those services in the price controlled basket), between the operator and its shareholders and subscribers. In determining the X factor the regulator needs to estimate a reasonable value in relation to a fair return on capital invested for a year-by-year efficiency gain of the operator over the stated price capped period. Assuming the operator at least reaches this efficiency improvement, the value X is what the regulator provides for telecoms consumers in the form of required reductions in the operator's revenues earned through lower prices of the controlled services. To the extent that the operator can be at the required efficiency gain (the X factor) it keeps the extra profit. The X needs to be set to provide a fair sharing of those possible gains between shareholders and subscribers, otherwise investment incentives are undermined with serious implications for both parties. Furthermore, when the X is set and there is no evidence that the operator has acted in bad faith, it is imperative that no re-negotiation of that value occurs, or that the regulator tries to claw back profits it (or government) considers with hindsight were too high. Where this occur it tends to be because the regulator has responded to political pressure, and especially where regulators are still trying to establish regulatory independence, this type of intervention may trigger an ongoing inability for the regulatory authority to establish its independence.

The implication of the authority pursuing the objectives of the party of government can be quite serious. The length of the regulatory time frame could easily become the next election, and in this case the strategy followed can be one that looks at providing short term benefits to consumers, such as through operating an unfavourable X factor in the price control arrangements that apply to the incumbent. This implies the shifting of value from shareholders to consumers, i.e. an RPI-X which is too hard on the incumbent, such that investment declines. While this can be an effective policy for government as far as the next election is concerned, in the medium to long-term consumers are actually worse off compared to a situation where the price cap provides the incumbent with a fair opportunity to increase its profits by increasing its efficiency.[8]

[8] For a discussion of the economics of this aspect of regulation see Laffont (1994); Baron and Besanko (1987).

ANNEX IV: COSTING AND FUNDING NET USO COSTS

1. Costing USOs

To estimate net USO costs an avoidable costs and benefits methodology must be used. It provides a mental framework which allows analysts to put themselves in the place of the operator's managers who it is assumed are making decisions according to the interests of profit seeking shareholders.[9] Moreover, in order to avoid an over-estimate of any net cost figure that other firms may be asked to contribute toward, a forwarding looking 'best practice' approach should be added to the analysts mental framework. Among other things, this shifts analysts' (and management's) gaze away from past investments, and substitutes more socially efficient current assets values and modern technology.

This framework assist analysts to only identify real economic costs and to avoid including embedded costs, outdated technology, and any internal inefficiency of the USO provider. When properly implemented a forward-looking net incremental cost test to measure universal service costs is intended to provide an honest estimate of the true economic costs of the USO to the responsible operator.

Because many of the costs involved will be common to the USO and to the provision of other services, a very broad approach is required. Specifically, in regard to the measurement of avoidable costs in uneconomic areas, the services provided in addition to voice telephony (for example, leased lines, ISDN services, ADSL, packet switched services, premium rate services, and public payphones), need to be included in the net USO cost assessment. To the extent that these services are provided in unprofitable areas they will share with basic voice telephony, costs such as trenching, ducting, switching etc. If the operator were to withdraw its voice telephony service from such an area, many of the costs which the basic voice service shared with these 'other services' would not be avoidable if these 'other services' continued to be provided. Thus, the decision needs to be made as to whether these 'other services' are profitable and would continue to be provided when USO services were withdrawn, or, what is much more likely, these 'others services' are unprofitable to supply once USO services are withdrawn. In the latter case, the revenues earned from these 'other services' would have to be added into the USO cost/benefit analysis, as these revenues would be lost if USO services were no longer provided in that area. If the area is profitable once these other revenues are added back in, then no net USO cost can be said to arise in that area. The main reason for the complexity is the common that costs make up a large proportion of the relevant costs.

However, it is possible that 'all other services' are profitable, even when all costs are included (i.e. including the costs that were previously shared by both basic voice telephony and all 'other services'). If the USO operator could only provide basic voice telephony to the area at a loss, then the total profit earned by providing the full range of services to the area would be reduced. Therefore, if the legal obligation to provide these services did not exist, the USO operator would no

[9] This is not always a realistic assumption as shareholders (principles) are unable to closely control the actions of managers (agents) whose interests will not always coincide with those of shareholders. However, the assumption that shareholder interests should motivate company actions in our analysis is entirely reasonable in the circumstances.

longer provide them. The net cost of the obligation to serve those customers would be the profit made by providing all 'other services' only, minus the profit made when providing basic voice telephony as well.

In broadly profitable areas it is likely to be only in higher than average costs areas, where low user households are clustered together in significant numbers, that any net incremental costs arise. This is because even where average line rental is much less than average line cost, i.e. there is a national access deficit, the revenue earned from the line rental for a subscriber is likely to easily cover the relevant incremental cost of serving that additional subscriber (being mainly the final drop wire), given that most neighbouring subscribers continue to be served in any case.

A fundamental requirement of this exercise is that it should not conflict with commercial reality. The scenarios that underlie the avoidable costs and revenues used to calculate the total net costs, must be consistent with the regulatory environment that would have prevailed at the time investment decisions were made, with the information that would have been available to managers at this time. In this regard, it should be noted that when first connecting a new customer or area, the operator typically has no billing information. Where such connections are relatively recent in time (e.g. in the last 10 years), any measured net incremental costs incurred by the operator today may not all have been avoidable at the time the original investments were made.[10] As with most businesses, some unprofitable trading occurs, even absent USO regulations. In principle, the USO provider should not be compensated for loses that it could not have avoided, even in the absence of any USO.

We wish to highlight the fact that assessing USO costs and benefits is one of the most difficult of all regulatory tasks. Our impression from reading official documents from the 13 countries in this study, is that a number of the Accession country administrations have not recognised this. The level of information required is highly detailed, and will mainly resides with the operator. Arguably, the greatest problem in trying to estimate net USO costs, is in being able to search out this information. Other difficulties revolve around the application of abstract economic principles, and the need to employ complex statistical methods and modelling. This is not a task for the inexperienced. In this regard, the table in Annex VI shows an unlikely high variation in country net USO costs as a percentage of industry fixed wire revenues.[11]

2. Funding a USO

Revenues needed to fund net USO costs are in essence a USO tax. This is true no matter where the tax is levied. Especially in a dynamic industry like telecommunications, characterised by rapidly changing technology and convergence, it is important not to make rules which impose tax obligations on part of the industry only, or which depend on a type of technology, favour a particular type of content, favour a particular geographic location, or are bias in favour of a

[10] The difference between the two will depend on the age of the assets and other the regulatory scenario that would have prevailed under the counterfactual – that no USO applied. The bottom line is that the information available to management and the decisions that are assumed they would have made under the benchmark scenario, must pass a reality check.

[11] These issues are discussed in more detail in, ERCS/NERA/WIK (2000); Chapter 4 of WIK (2000); WIK/NERA (1999), and in WIK (1997).

particular industry structure. A USO tax needs to be: competitively neutral; technologically neutral; structurally neutral, and neutral in terms of application and content.

There are broadly four feasible options, and each pose different challenges in terms of these neutrality principles. Each of the four options below will be permitted if the present draft EU directive on universal service is passed without major exclusions. The options are:

1. Do not establish a compensatory scheme, as is the situation in all but 2 EU Member States. This would mean that any net USO costs are being met by an internally funded tax on the USO provider;

2. Fund any estimated net USO cost out of the state budget (probably the least inefficient method, where net USO cost are too large to leave with the incumbent). We note that if introduced currently in most un-liberalised countries, virtually all of the contributions would come from the incumbent and mobile operators;

3. Recover any net USO costs by placing the liability directly on subscribers, e.g. as a USO VAT tax (the most transparent option), and

4. Fund any estimated net USO cost through a fund into which all industry competitors contribute according to market share (not competitively neutral and probably the least efficient of the 3 formal cost recovery options).

The existing EU directive allows USO costs to be funded through interconnection charges. Under the proposed new EU directive this will no longer be permitted because of the acute distortion and efficiency costs it would entail.[12]

Where there has been a privatisation (full or partial), care needs to be taken that no USO provider is collecting net USO costs more than once. The danger of 'double' collection can arise because privatisation results in investors taking stock of the present value of the operator, which will include an assessment of the operator's expected future profitability. Obviously, the regulatory environment can greatly effect the outcome of this assessment. A regulation or enforceable requirement that imposes a liability on the operator, will result in investors discounting the value of the stock accordingly, such that a USO contributory scheme set up some time later can result in the operator collecting net USO costs more than once.[13]

3. Other services and USO schemes

In regard to individual services, like directory enquiries and the provision of white pages directors to all subscribers, the same methodology to estimating costs and benefits is needed as is outlined above, although in some cases, such as for white pages, the service would appear to be well suited to being assigned by competition.

Voucher systems are also permitted under EU law. Vouchers work by providing a specified contribution toward a voucher recipient's telephone bill. Vouchers typically involve quite high administrative costs, are subject to fraud, and are less cost effective than self select service

[12] For a discussion of different efficiency costs and transparency issues, see chapters 2, 3 and 8, in WIK (2000).
[13] See Scanlan and Neu (2001)) for details.

schemes. However, vouchers do provide the political advantage of publicly identifying those groups who will receive benefits.

4. ANNEX from the draft EU directive on costing and funding universal service obligations

This section deals with calculating the net cost, if any, of universal service obligations and establishing any recovery or sharing mechanism in accordance with Articles 12 and 13.

a) Calculation of Net Cost

Universal service obligations refer to those obligations placed upon an undertaking by a Member State which concern the provision of a network and service throughout a specified geographical area, including, where required, averaged prices in that geographical area for the provision of that service or provision of specific tariff options for consumers with low incomes or with specific social needs.

In order to avoid the regulatory burden of calculating any net cost of universal service obligations where this subsequently proves to be unnecessary, national regulatory authorities shall consider all means to ensure appropriate incentives for undertakings (designated or not) to provide universal service obligations cost efficiently. Included is an assessment of the feasibility of assigning universal service obligations by tendering or auction methods.

In undertaking a calculation exercise, the net cost of universal service obligations shall be calculated as the difference between the net cost for an organisation of operating with the universal service obligations and operating without the universal service obligations. This applies whether the network in a particular Member State is fully developed or is still undergoing development and expansion. Due attention shall be given to correctly assess the costs that any universal service operator would have chosen to avoid had there been no universal service obligation. The net cost calculation should assess the benefits, both financial and non-financial, to the universal service operator.

The calculation shall be based upon the costs attributable to:

(i) elements of the identified services which can only be provided at a loss or provided under cost conditions falling outside normal commercial standards.

This category may include service elements such as access to emergency telephone services, provision of certain public pay telephones, provision of certain services or equipment for disabled people, etc.

(ii) specific end-users or groups of end-users who, taking into account the cost of providing the specified network and service, the revenue generated and any geographical averaging of prices imposed by the Member State, can only be served at a loss or under cost conditions falling outside normal commercial standards.

This category includes those end-users or groups of end-users which would not be served by a commercial operator which did not have an obligation to provide universal service.

The calculation of the net costs of specific aspects of universal service obligations shall be made separately and so as to avoid the double counting of any direct or indirect benefits and costs. The overall net cost of universal service obligations to any undertaking shall be calculated as the sum of the net costs arising from the specific components of universal service obligations, taking account of both financial and non-financial benefits. The responsibility for verifying the net cost lies with the national regulatory authority.

b) Recovery of any net costs of Universal Service Obligations [14]

The recovery or financing of any net costs of universal service obligations requires undertakings with universal service obligations to be compensated for the services they provide under non-commercial conditions. Because such a compensation involves financial transfers, Member States shall ensure that these are undertaken in a transparent, objective, non-discriminatory and proportional manner. This means that the transfers result in the least distortion to competition and to user demand. Member States should give due consideration to recovering any net costs via general government budgets.

A sharing mechanism based on a Fund may also be used. A sharing mechanism based on a Fund should respect the principles of transparency, least market distortion, non-discrimination and proportionality. Least market distortion means that the contribution burden should be spread as wide as possible, subject to proportionality. Proportionality means that NRAs may choose not to require contributions from undertakings whose national turnover is less than a set limit.

NB. Member States undertaking cost recovery via a Fund should give due consideration to collecting contributions via a VAT mechanism on operators and service providers so as to provide a transparent and consistent mechanism (to avoid the danger of double imposition of contributions on both outputs and inputs of operators and service providers) for collecting contributions.

The independent body administering the fund shall be responsible for collecting contributions from operators or service providers who are assessed as liable to contribute to the net cost of universal service obligations in the Member State and shall oversee the transfer of sums due and/or administrative out-payments to the persons and/or undertakings entitled to receive payments from the Fund.

[14] A more detailed analyse of a range of funding options can be found in WIK (2000).

ANNEX V: USO COSTS AS % OF TURNOVER IN SELECTED COUNTRIES

Table: USO costs as a % of sector revenue – selected countries.

Country	USO costs as a % of total sector revenue
The Netherlands$^{\tau}$	5.5?
United States#	5.0
Columbia#	4.3
Spain$^{\tau}$	2.04 - 3.6?
France#	3.0
Norway#	2.0 – 2.4
Switzerland#	1.7 – 2.2
Australia#	2.0
Sweden#	0.8 – 1.2
Argentina#	0.6 – 1.0
Peru#	1.0
Italy[15], ψ	0.29
United Kingdom#	0.2 – 0.3
Chile#	0.2
AVERAGE	1.54
Note: #Figure is from Wellenius B. (2000); τ Figure is modified from European Commission (1998), Table 14, to account for Airtel revenues; ψFigure is from ERCS/NERA/WIK (2000).	

Notes: Not all of the figures in this table are directly comparable. In many cases the figures include other elements than the net avoidable cost of the USO. In the USA, for example, it includes tariff averaging subsidies paid to other operators (35% of the new universal service fund). In France, virtual voucher costs are not based on the net avoidable cost methodology. In some cases historic costs have been used. In other cases they also represent a shift in the incidence of taxation, for example, from the national (education) budget to the telecoms industry, as in the case of subsidies relating to internet provision to schools. (In the USA this represents 47% of the new universal service fund).[16] In some cases an estimate of the value of indirect benefits has been made and subtracted from the net avoidable cost estimate, as has occurred, for example, with the UK and Italian figures. A few of these figures are now several years old and the respective regulatory authorities may not accept them today as being an accurate estimate of net USO costs at the time of measurement.

[15] Before indirect benefits and non-recurring benefits were accounted for, we estimated Telecom Italia's net USO costs in 1999 to be approximately 0.61 % of gross industry revenues. See ERCS/NERA/WIK (2000).

[16] For a detailed analysis of universal service policies and costs in the USA, see, WIK (2000), pp 138-178.