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**TAKING ABC TO COURT – A RESEARCH
NOTE ON COST ORIENTED ACCESS
PRICES IN TELECOM**

by

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TAKING ABC TO COURT – A RESEARCH NOTE ON COST
ORIENTED ACCESS PRICES IN TELECOM*

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ABSTRACT

This paper investigates how and why Activity Based Costing (ABC) has been introduced to the cost based price regulation regime in the telecommunication sector. The study draws on empirical insight from a recent court case between NetCom and the incumbent, Telenor, to identify problems related to cost orientated pricing and how these are attempted solved in the directives. We then explore the relevance of regulator's argumentation for adopting ABC. It is argued that ABC does not solve the problems faced by the regulator and later on, the court. We then attempt to answer why ABC has still been adopted.

Keywords: regulated industries, telecommunications, Activity Based Costing, accounting separation, cost orientation.

1. Introduction

Since the early 1980's, telecommunications sectors in many countries have been opened for competition. However, the nature of the costs in the industry makes the establishment of complete, parallel infrastructure economically infeasible or socially undesirable when sufficient capacity exists in the incumbent's network. Hence, to be able to compete with the incumbent in the end user market, competitors are normally dependent on access to the incumbent's network. Particularly the local loop may be considered an essential facility for which an unrestrained incumbent may set monopoly price or simply foreclose competitors altogether (see e.g. Laffont and Tirole, 2000).

The new European regulation for electronic communications services is an *ex ante* regulation that is based on a three stage process: (1) market definition, (2) identifying Significant Market Power (SMP), (3) choice of remedies. Given that the incumbent has SMP, the National Regulatory Authorities (NRA's) must impose obligations as appropriate. The obligations laid out in the Access Directive (2002) are transparency (Article 9), non-discrimination (Article 10), accounting separation (Article 11), access obligation (Article 12), and price control and cost accounting (Article 13).¹

Usually, the incumbent is required to grant access at cost plus a reasonable return on capital employed. However, cost orientation of the access price is subject to several problems. First, operationalizing it is extremely difficult as the costs of telecommunications services are often not separable. Indeed there is a high degree of joint costs in the production of many services. For instance, leased lines and interconnects are a required input into both mobile calls and fixed line calls. Still, regulators have attempted to operationalize the regulation through accounting practices. In a recent paper, Bromwich and Hong (2000) focus

on the use of Accounting Separation in telecommunications. Particularly, they consider how far the BT accounting system satisfies the very strict conditions for accounting separability. While providing a rigorous theoretical analysis, Bromwich and Hong (2000) call for empirical work to “assess the resultant distortions in costs arising from jointness, non-separability and non-homothetic technology.” (p. 151). This paper provides empirically based insight into the effects of the regulation practice based on a recent court decision in Norway where the incumbent was found guilty of overpricing access based on cost orientation.² Second, the regulation explicitly proposes Activity Based Costing (ABC) as a solution to the estimation problem. This paper investigates the arguments for introducing ABC, and the relevance of ABC in the recent court case.

The next section briefly reviews the purpose and content of cost oriented price regulation. Section 3 provides an empirical study of the regulation in relation to a court case. Section 4 discusses the relevance of ABC for pricing leased lines and interconnect charges. Section 5 concludes the paper.

2. Regulation on cost orientation

As the focus of this paper is the effects of cost orientation of prices, we begin by briefly reviewing the regulation on this issue. On April 24, 2002, the Access Directive (2002) entered into force and member states were to implement it by July 25, 2003. The *goal* of the NRA's in exercising the regulation shall be to promote efficiency, sustainable competition and provide the maximum benefit to end-users (article 5(1)). In accordance with previous directives, this directive emphasizes cost orientation of interconnection and/or access prices

¹ Dominant incumbents may also be restricted under competition law. For a discussion, see Stoyanova (2005).

² After being found guilty in overpricing, the incumbent appealed and the case was later settled out of court.

as a *tool* for NRA's in achieving these goals. Indeed, where market analysis³ reveals significant market power, NRA's shall consider cost orientation of prices. Specifically, in the Access Directive (2002) article 13(1) it is stated that (square brackets added):

“A national regulatory authority may, in accordance with the provisions of Article 8 [operator with significant market power], impose obligations relating to cost recovery and price controls, including obligations for cost orientation of prices and obligations concerning cost accounting systems, for the provision of specific types of interconnection and/or access, in situations where a market analysis indicates that a lack of effective competition means that the operator concerned might sustain prices at an excessively high level, or apply a price squeeze, to the detriment of end-users. National regulatory authorities shall take into account the investment made by the operator and allow him a reasonable rate of return on adequate capital employed, taking into account the risks involved.”

3. NetCom vs. Telenor – a case of overpricing?

On November 1, 1991, the private entrant NetCom GSM AS was granted a license to build and operate a GSM mobile phone network in Norway. However, NetCom was also required to use the fixed net of the public incumbent, Telenor ASA (then Televerket), to link its mobile stations into a network – specifically through the use of leased lines. From January 1, 1993, the prices of telecommunications products were required to be cost oriented as an implementation of the obligations according to EU Directive of June 28, 1990 on open networks (“Alminnelig forskrift om åpne telenett og om teletjenester av 04.12.1992”, §9). On December 7, 1994, “Leide Samband forskriften” (leased lines directive) came into force and explicitly required prices for each type of leased lines to be cost oriented (an implementation

³ As set forth in Directive 2002/21/EC (Framework Directive) article 16.

of the EU Directive of June 5, 1992), and the court found it to be effective as of January 1, 1995. On March 10, 1998, NetCom sued Telenor for overpricing of digital leased lines of type n*64 kb/s and 2 Mb/s for the period 1993-1996 demanding a repayment of NOK 97 million. On June 19, 2001, Oslo City Court awarded NetCom NOK 51 million in repayment.⁴ Plaintiff's amount was modified due to statute of limitation for the year 1993, and adjustments to plaintiff's estimates of overpricing (Oslo Byrett, NetCom vs Telenor Telecom Solutions, case nr. 98-02251 A/45).

Defining cost orientation

The main issue according to the court was whether the prices that Telenor had charged were in line with the principle of cost orientation for the relevant years. On this issue, the court found little guidance in the "Åpne nett forskriften," (open network directive) §9. Although the term "cost oriented pricing" was found to be ambiguous and not commonly used in literature, the court found the NRA's definition – i.e. Fully Distributed Cost (FDC) plus a mark-up based on estimated capital cost to yield a satisfactory return – to be in line with the regulation. This is also in line with assertions by Laffont and Tirole (2000) and Vogelsang (2003) that all regulatory cost allocation methods used to compute the access price are based on average costs.

On allocation of common fixed costs

The court realized that at the product level, FDC meant an arbitrary allocation of common fixed costs at the product level. Specifically, the court stated that "costs within the group leased lines are hardly separable" (Case 98-02251 A/45, p. 27). However, four main arguments were given for still accepting such arbitrary allocation. First, the court argued that FDC still had to be estimated in many such situations, and common costs should then be

⁴ The ruling was appealed by Telenor, but a settlement was reached before the Court of Appeal, for a repayment of NOK 35

allocated proportionally and by use of predetermined allocation rules.⁵ Second, the incumbent would itself propose the allocation rules subject to approval by the NRA. Third, if Telenor chose to price its leased line products differently, these differences would have to be supported by cost differences arising from these allocation rules. That Telenor chose to price its analogue and digital ($n \times 64$ kb/s and 2 Mb/s) leased lines differently, thus required that these price differences could be substantiated by cost differences. Finally, the cost accounting system of Telenor, giving rise to its Open Network Provisions report, was the only foundation on which the court could base its ruling – no comparable alternative estimates of costs existed.

On allocative efficiency

The court points out that FDC will result in allocative inefficiencies as FDC exceeds the variable cost of service, and particularly so in telecommunications which is characterized by high fixed and low variable costs. The court here seems to refer to the first best solution from a social perspective which would be price equal to marginal cost. However, given the natural monopoly characteristic of regulated access services, this would not lead to recovery of fixed cost.

The optimal recovery of fixed costs both from a profit and a welfare maximizing perspective would typically be to allocate more to markets exhibiting lower price elasticity (see e.g. Mitchell and Vogelsang, 1991).⁶ However, there is no reason to expect FDC to result in such an outcome. Laffont and Tirole (1994) point out that FDC interestingly satisfies the more complex efficient component pricing rule (ECPR), but other than that their conclusion on FDC is “that the fixed cost allocation is arbitrary and has no reason to reflect

million including interest (Press release by Telenor, March 7, 2003).

⁵ Unlike the LRIC mentioned in (Bromwich and Hong 2000) which is based on cost of future (3 years) replacement cost, the court based its estimates on historical cost – regardless of whether these should exceed or fall short of replacement cost.

the proper cost, demand and entry considerations” (p. 1697). It seems that as a consequence of arbitrary cost allocation, an increased emphasis has been placed on locking the incumbent to a predetermined allocation rule as the only means of ensuring some objectivity. This quest for objectivity may also result in a rigidity of the system as NRA’s may be reluctant to accept changes to the predetermined rule fearing that frequent changes will undermine the credibility and objectivity of the system. In a rapidly developing sector such as telecommunications, such a rigidity may itself result in welfare losses.

Relevant costs

Among the disputed issues were whether Telenor’s costs relating to restructuring from a public institution with monopoly to a limited company in an increasingly competitive market, should be included in the cost base of leased lines. The costs were predominantly salaries to superfluous employees whom the government (as sole owner of Telenor) did not wish to lay off. The court argued that a general requirement of efficiency could not be imposed. For instance, costs related to failed investments could in principle be added to the cost base if they were otherwise relevant. On the other hand, costs which were avoidable should not be included. As the salaries to superfluous employees in principle could be avoided, this was an argument for not including them in the base, according to the court.⁷

On the timing of cost orientation

A much disputed issue in the trial was whether cost orientation should take place at the time when price was set (*ex ante*) or when costs and sales volumes were known (*ex post*). This would matter when costs and/or volume were uncertain, as price would have to be set in advance based on predicted volumes and costs, whereas unit cost and contribution would

⁶ Welfare maximizing Ramsey (1927) prices arise from allocating fixed cost in inverse proportion to demand elasticities of the various services subject to a normal profit constraint for the monopolist.

⁷ The court also emphasized that special appropriations had been made to cover these costs, implying they did not belong in the cost base.

later depend on realized volumes and costs. During the relevant years (1993-1996), volumes were increasing rapidly, partly as a result of falling retail prices. Hence, based on FDC, unit cost would decline thereby advocating declining access prices. The court could appreciate the argument by Telenor that cost and volume uncertainty would make it impossible to set prices in advance which were perfectly cost oriented. However, the court emphasized that the regulation required a relation between cost and price.

The court concluded that the pricing would have to be based on a best estimate of future costs and volumes. If volumes turned out to exceed (fall short of) the estimates, profits (losses) would accrue to seller. In principle therefore, realized profit has no bearing on whether price is cost oriented, argued the court. However, the court pointed out that the incumbent had a right and a duty to adjust prices when it became aware of significant deviations from the estimates. The court found that Telenor had based the prices on best estimates, but had not been sufficiently responsive in updating its estimates when later information proved demand to exceed expectations.

The court realized that the very nature of the problem makes it difficult to verify cost orientation *ex post*. However, the court argued that by necessity such verification must be done *ex post* and be based on the actual accounting statements for the period. Even if it is estimates at the time of pricing which are being tried, the court must also take into account if a subsequent analysis of actual figures for the period concludes that prices have not been related to costs.

On reasonable rate of return

A reasonable rate of return to incumbent, the court argued, should consist of a suitable risk free rate plus a risk premium which had to be based on the risk related to the part of the incumbent's activities where the relevant capital was employed. The court was of the opinion

that both financial and operational risk related to the infrastructure of the telecommunications network was relatively low in the relevant periods due to Telenor's monopoly.

The court made its own independent estimate of what constituted a reasonable rate of return, and arrived at a risk premium of 9% before tax, which it considered to represent the average risk premium for the Norwegian capital market for that period. This implied a return to equity in 1995 of 16.34% and to total capital employed of 12.65%. Applying an average risk premium contrasts the court's statement that risk was relatively low, which would suggest a risk premium lower than average.

Conclusion

The court found the regulation to be ambiguous as to how cost orientation should be defined. It accepted that it could be taken to mean FDC. However, the court was apprehensive about the allocation rule presented as it believed costs to be non-separable. In the end, the court chose a pragmatic solution and accepted the allocation rule as the only alternative presented to it.

4. Attributable cost, ABC and cost orientation

ABC and regulation

One of the major issues in the Telenor vs. NetCom case was how to achieve FDC. Both Norwegian and EU regulation emphasise that cost should be attributed directly or indirectly to services based on cost causality. In this regard, the US Federal Communication Commission (FCC) claims that;

“With a well designed cost allocation system over 80% of cost can be attributed to services on cost-causative basis” (Arthur Andersen, 1994, p. 20)

Services refer to interconnect charges and leased lines and are thus relevant in the above mentioned court case. In the preparation for the EU directive, Arthur Andersen, seem to link a well designed cost allocation system to an ABC system;

“Activity-Based Costing principles should be encouraged for use as a method for understanding the underlying costs and cost drivers where FDC or Embedded Direct Cost standard are used” (Arthur Andersen, 1994 p. 206).

This recommendation is also in accordance with regulation in Norway where ABC is explicitly recommended: “Operations costs should be calculated by means of ABC-analysis as far as possible.” (Regler for produktregnskap i Telenor ASA [Guidelines for product costing in Telenor], March 2001, chapter 2).

ABC and cost oriented prices of leased lines

ABC systems are based on assumptions of separability, linearity and homogeneity (Noreen, 1991). Based on the above discussion, separability seems to be a major problem. This is based on a definition of separability where a change in volume of leased lines causes a change in total reported cost. However, in the preparation for the EU directive, Arthur Andersen is using the American regulatory expert Alfred Kahn as a propagator for an ABC view;

“The fact that most services are typically provided in combinations, using the same facilities, does not mean that definable shares of common costs cannot in principle be causally attributed to each.If any of these products or services uses freight cars, circuits, or warehouse space that would in fact otherwise be used for one of the others, or if it requires the construction of greater capacity than would otherwise be necessary, then it does bear a causal responsibility for a share of common capacity costs, the allocation formulae actually employed may achieve only a rough, rule-of-thumb approximation to actual costs for which

each of product or service is responsible, but those costs have objective reality” (Arthur Andersen , 1994, p. 57).

The arguments used in the preparation for the regulation are consistent with Zimmerman's (1979) argument for allocation cost as proxies for hard to observe opportunity costs. In order to explore the relevance of ABC for telecom services we investigated the cost structure for leased lines in the period relevant to the court case.

Cost structures of leased lines

According to the costing system, the FDC of leased lines in the period was developed from the following cost pools:

Table 1: Leased lines cost pools (source: Telenor’s Product costing system)

Direct costs	app.	5%
Indirect infrastructure cost	app.	75%
General overhead cost	app.	20%

The structure of costs in Table 1 was claimed to also apply at the product level for all three leased line types (analogue, 64 kb/s, and 2 Mb/s). General overhead (OH) was considered “not attributable” on a causal basis. Thus the critical issue is the allocation of infrastructure cost to services based on the use of capacity. By definition the infrastructure costs are common costs, since the capacity can provide many different services. The capacity is, however, not used by different services in strict proportions, and thus is not a true joint resource. The problem of allocating capacity costs to services is then reduced to an issue of whether common infrastructure costs can be indirectly attributable to a service on causal basis, i.e. whether Kahn’s arguments are relevant or not.

In the period covered by the court case, leased lines utilized less than 5% of total infrastructure capacity. Hence, the 75% indirect infrastructure costs in Table 1 reflect the leased lines' 5% of total capacity costs. Telenor also claimed that all reductions in unit costs were driven by increases in volume of *other* services. Thus the extraordinary surplus on leased lines was not achieved by an increase in volume of leased lines, but rather by other services receiving a larger share of predominantly fixed common infrastructure costs as their relative volume share increased.⁸

Another important issue is that on average less than 50% of total capacity was in use. It was claimed that during this period leased lines services had very little impact on capacity planning. Hence, a large share of unused capacity cost was included in the FDC for leased lines.

Based on this case, it is difficult to see the rationale for using ABC for cost plus pricing of leased lines (or interconnect charges). Although “the hard to observe” opportunity cost argument may be relevant for allocating costs based on volume, the use of a linear approximation for these costs is arbitrary. In fact, in this case the court’s decision is an argument against ABC. It is claimed that when other services are increasing their volume, and scale advantages are gained, these advantages should also benefit services with unchanged volumes, such as leased lines and interconnect. This is not in accordance with the resource usage view advocated by Cooper and Kaplan (1992).

⁸ In the period covered by the court case, there was also a rebalancing of prices, leading to increasing subscription fees and reduced calling charges to end-users, thus leading to greater volumes of calls being placed. Subscriptions were showing a loss whereas calling was showing a profit for several years – thus motivating the rebalancing. Interestingly, this could be used as an argument for overpricing of leased lines as volumes of end user calls would have been higher if prices had been rebalanced sooner, thus causing this service to assume a greater portion of common infrastructure costs.

5. Conclusion

The strong rhetoric of ABC seems to have established the estimation method as an important tool in the regulation of telecom services. In the case of interconnection and leased lines, the problem of cost causality is argued by the NRA and their consultants to be a matter of hard work rather than a problem of allocating joint costs. Instead of implicating detailed cost based pricing rules and cost allocation procedures, which has been commonly used by regulating authorities (see e.g. Ahmed and Scapens, 2003), a vision of true cost is created using the ABC method. However, when taken to court, the method fails to provide relevant solutions to the problem of cost oriented pricing. First of all it does not provide a solution to the joint cost problem. Secondly, it does not provide a solution to the problems faced by the court. Instead the court had to go for more pragmatic interpretations of FDC.

An institutional perspective may be used to help understand the diffusion of ABC into this sector. The arguments for introducing ABC were propagated by regulatory experts and strong institutional actors, i.e. Arthur Andersen. Like for the regulation of different markets during the second world war, legislative mechanisms were put in place to enforce and give legitimacy to the use of costing rules (Ahmed and Scapens, 2003). However, instead of using uniform costing systems, like in the printing industry in the 20th century (Walker and Mitchell, 1996), a much more ambiguous costing system (ABC) was introduced, followed by strong rhetoric and auditing procedures. The underlying assumptions of ABC were not discussed or analysed.

One plausible explanation for explicitly referring to ABC in the Norwegian regulation may be to legitimize the regulator *per se*. Ambiguity in the definition of FDC may threaten the possession of the national regulatory authorities. Thus, ABC may in the short run provide stability and order by claiming to create justice in a regulated market. However, introducing

ABC as a solution to problems it cannot solve may in the long run in fact increase ambiguity.

Like “The Emperor's New Clothes”, such solutions are rather risky.

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