Chapter 7

THE TRAGIC INEFFICIENCY OF THE M-ECPR*

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1. INTRODUCTION

In a recent article,[1] J. Gregory Sidak and Daniel F. Spulber ("SS") argue for the validity of the regulatory rule "M-ECPR," an adaptation of "ECPR." M-ECPR, or "Market Determined Efficient Component Pricing Rule" was proposed by Michael J. Doane, *et al.* (1996) at a regulatory proceeding in Hawaii in support of a filing by GTE Inc.[2] The original ECPR ("Efficient Component Pricing Rule") has been originally proposed by Robert Willig and William Baumol in the late 70s and early 80s.[3]

In this article, I argue against the validity of the M-ECPR (and consequently of the ECPR) as an appropriate regulatory rule in telecommunications. I will show that use of M-ECPR (and of ECPR) and, more generally of the *private* opportunity cost of the incumbent local exchange carriers ("ILECs") as a basis for setting prices for unbundled network

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* The title derives from the original meaning of the word "tragic." In Ancient Greek tragedies, the hero, although valiant, is held captive by his own contradictions, apparently beyond his control, and this leads to his demise. Similarly, the M-ECPR and the ECPR are held hostage to original inefficient pricing, and this leads to their demise, since their application perpetuates inefficiency.

I thank Glenn Stover and participants in the American Enterprise Institute conference on "Costs and Pricing in Telecommunications" for their helpful comments.

[1] See Sidak and Spulber (1996).

[2] This paper was subsequently filed in many State regulatory proceedings on the implementation of the Telecommunications Act of 1996 as an attachment to the positions of GTE.

[3] Originally ECPR was proposed by Willig (1979). Baumol (1983) started its application in the railroad industry. It has also been used in the electricity industry. The adoption of the ECPR in the telecommunications sector in New Zealand (Privy Council decision) lead to significant long term damage in the sector, since entrants were unable to provide local service because of ECPR pricing of interconnection by the incumbent monopolist, Telecom New Zealand ("TCNZ"). In applying ECPR, TCNZ demands a very significant termination fee to terminate calls of competing carriers to its network, while refusing to pay any fees to other carriers for termination of calls to their networks when they originated from TCNZ's network. Economides, Lopomo and Woroch (1996) discuss ways to fix this interconnection problem through the adoption of *reciprocity* of termination charges.

4. The Logic of the ECPR and the M-ECPR

The ECPR was designed to guard against productively inefficient entry. Since, under the ECPR, the entrant in the production of component B has to pay to the incumbent the full monopoly profits of the incumbent in the market for the composite product AB, the entrant will not survive unless the entrant is equally efficient, or more efficient than the incumbent in the production of component B. Thus, the ECPR and the M-ECPR are supposed to guard against productively inefficient entry. However, in attempting to achieve this task, the ECPR and the M-ECPR force consumers to pay a terrible price in terms of unrealized price decreases and lost consumers' surplus that would have been realized if these rules were not imposed. Application of the ECPR and the M-ECPR result in an allocative inefficiency. Moreover, often the loss in allocative efficiency that results from the use of the ECPR (or the M-ECPR) is much larger than any potential gains in productive efficiency from its use. Thus, in terms of total efficiency, use of the M-ECPR and the ECPR are detrimental to social welfare and to overall efficiency. Before establishing these propositions in the next sections, we briefly discuss the purported justification for ECPR and M-ECPR based on private opportunity cost.

5. Are the ECPR and the M-ECPR Cost-Based?

ECPR and M-ECPR are often presented as a resulting in access fees that are purely cost-based. Proponents of these rules say that the fee the ECPR and the M-ECPR set as the price that the entrant should pay for component A is just the actual cost of A plus the opportunity cost to the incumbent. Since profits are part of the opportunity cost of the incumbent, in this interpretation, the ECPR-based fee includes any original profits, normal and supernormal, as well as any cost inefficiencies of the incumbent. However, a fee that includes supernormal profits cannot possibly be thought of as containing only costs. Where is the mistake?

5.1 *Private* Opportunity Cost in Contrast with *Social* Opportunity Cost

The fallacy of the proponents of the ECPR and the M-ECPR lies in confusing *social* opportunity cost with *private* opportunity cost. Social opportunity cost of a resource reflects the present social cost of the resource and should be correctly included in a cost calculation. Private opportunity cost is the benefit or cost to a private party of a certain activity. Private opportunity cost differs in general from social opportunity cost, since private opportunity cost does not, in general, reflect the cost of resources to society, which social opportunity cost does.

An example will be helpful to understand the difference. Suppose that two companies, X and Y are competing for the business of customer C, which is worth $C to each of them. Assume that X and Y are equally cost efficient in serving C. If customer C used to buy from X and now buys from Y, firm X's *private* opportunity cost is $C. However, the *social* opportunity cost of the switch of customer C from X to Y is exactly zero, since society does not gain or lose from customer C's change of carrier. Essentially, since firm X's loss was firm

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Y's gain, private opportunity costs and gains canceled each other, and the social cost of customer C's change of carrier is zero.

5.2 Prices Based on Social Opportunity Cost are Efficient But Prices Based on Private Opportunity Cost are Inefficient

Economic theory teaches that, to achieve allocative, productive and dynamic efficiency, *social* (rather than *private*) opportunity costs (and benefits) should guide pricing decisions. Private opportunity costs differ, in general, from social opportunity costs. In the pricing of access to monopolized bottleneck facilities, there is significant private benefit to the owner of a bottleneck facility in charging a high price for access to the facility. However, high prices of access would result in a significant social loss because they result in prices of final services that are higher than the efficient prices. Therefore, an incumbent monopolist should not be compensated for its (private) opportunity costs (that is, its lost profits) that result from entry of a rival.

6. The General Inefficiency of the ECPR and the M-ECPR

Economists use the word "efficient" to denote an outcome that optimizes an objective. In economics, typically "efficient" is meant to be "socially efficient," that is, maximizing total social welfare or total surplus. Does the ECPR or the M-ECPR, in general, maximize social surplus? Absolutely not! Although the rule has been debated for the last 18 years, neither its creators nor its present supporters have ever provided a *proof* that the use of either of these two rules maximizes social surplus, and thereby deserves to be called "efficient."

The lack of such proof over such a long period of time is telling. In fact Economides and White (1995, 1998) and Laffont and Tirole (1994) have proved the general *inefficiency* of the ECPR rule, and similar proofs apply to M-ECPR. The essence of the proof of Economides and White (1995, 1998) relies on the fact that since ECPR-based fees perpetuate high prices, they imply a consumers' surplus loss and a social welfare loss in comparison to prices that would reflect social economic costs and not private opportunity costs. Economides and White (1995, 1998) show that the consumers' surplus loss associated with the application of the ECPR can easily outweigh any welfare losses from productively inefficient entry. This means that (1) if the entrant is productively efficient, application of the ECPR just results in consumers' surplus loss and social welfare loss; (2) if the entrant is productively inefficient, for many parameter values, application of the ECPR results in consumers' surplus loss and social welfare loss.

7. Why Are the ECPR and M-ECPR Inefficient?

The ECPR and the M-ECPR guarantee the incumbent the recovery of its full pre-entry profits, all the way up to the full monopoly level, as well as full recovery of any historic cost

inefficiencies under which the incumbent is laboring.[6] That is, the ECPR fee $p_A = p_{AB} - c_B$ that the entrant pays for monopolized component A contains the incumbent's full pre-entry profits *and* any cost inefficiencies, since these are part of the pre-entry final price p_{AB} and are not part of cost c_B. Moreover, if the incumbent's pre-entry production was inefficient, such inefficiency would push the ECPR fee higher, since it would be reflected in p_{AB} and, through it, in p_A.

The M-ECPR is inappropriate for pricing unbundled network elements and services because it leads to allocative and dynamic inefficiencies when the final service price is above incremental cost, through the perpetuation of high prices for final services. Accordingly, consumers who would have been served in a competitive market in the absence of M-ECPR (for example if the monopolized bottleneck were offered at cost) are excluded from the market because of the high price that results when M-ECPR is applied. This leads to allocative inefficiency. This means that, although the forward-looking economic costs of the final service are below consumers' willingness to pay, the application of M-ECPR-based access fees results in artificially high costs for providers of the service that is complementary to the bottleneck, as well as artificially high prices for the final service. As a result, some consumers are excluded from purchasing the service, and others buy less of it, resulting in a social welfare loss.

8. Inefficiencies Resulting from the Application of the ECPR and the M-ECPR

Various inefficiencies result from pricing bottleneck facilities according to the ECPR or the M-ECPR. We go through these on a case by case basis.

8.1 The Case Where the Entrant(s) in the Complimentary Goods Market is Equally or More Efficient than the Incumbent

When there are more or equally efficient potential entrants in the complementary component market, application of the M-ECPR results in a pure allocative loss. The M-ECPR keeps the price of the bottleneck facility high, entry occurs, and final prices remain high to the detriment of consumers. Application of the ECPR or the M-ECPR nullifies all the potentially positive effects of entry on consumers and social welfare.

[6] There is no requirement that the pre-entry market be a monopoly for this statement to be true, as Sidak and Spulber (1996) incorrectly assert. The ECPR and M-ECPR guarantee to the incumbent *any* supernormal profits that it was making before entry, thus perpetuating an allocative inefficiency whenever the original (pre-entry) final service price is above incremental cost. And, clearly, the final service price can be below the monopoly level but above incremental cost

8.2 Using the ECPR and M-ECPR to Exclude Equally Efficient or More Efficient Rivals when there Are Increasing Returns to Scale

The ECPR and the M-ECPR have been proposed as a way to exclude entry in the complementary good market by *inefficient* entrants. When the technology of production exhibits increasing returns to scale, however, the monopolist can use the M-ECPR to exclude or marginalize an equally or more efficient rival. The bottleneck monopolist may use the M-ECPR to establish high interconnection or access charges that result in a restriction of the scale of operation of the rival in the complementary market. Given increasing returns to scale, the rival then operates at the high end of its average cost curve. Thus, the monopolist is able to raise the production costs of its rival through the application of the M-ECPR. This results in a competitive disadvantage for the rival, as well as in higher prices for final services. Consumers are deprived of lower prices that would have resulted from competition if M-ECPR were not applied, as well as of competitive choices.

8.3 The Case where the Entrant(s) in the Complimentary Goods Market is (are) Less Efficient than the Incumbent

An allocative inefficiency can also result from the application of the M-ECPR when rivals are less efficient than the incumbent. Imposition of an M-ECPR access fee would not allow entry by firms that are less efficient than the incumbent. However, if the M-ECPR were not applied and use of the bottleneck facility were offered at incremental cost, often the entry of even inefficient rivals will decrease the final service price to the benefit of consumers. Thus, if the M-ECPR were not applied, entry would increase allocative efficiency. This increase in allocative efficiency can yield higher overall economic efficiency, despite a decrease in productive efficiency. Thus, even if the potential entrant in a complementary good market is less efficient than the monopolist, application of the ECPR or M-ECPR often leads to overall efficiency losses, as shown for a wide range of parameters in Economides and White (1995, 1997).

For example, suppose that the incumbent's unit costs are \$0.50 for component A and \$0.40 for component B, and final service AB was originally sold at \$1.20, *i.e.*, at a profit of \$0.30 per unit. Under the M-ECPR, an entrant would have to pay \$0.80 (= 0.50 + 0.30) for component A. If an entrant is less efficient than the incumbent in service B, *i.e.*, if its production costs are above \$0.40, the entrant cannot enter and survive. Under the M-ECPR, there is no entry and the final service price remains at \$1.20. However, if component A were sold to the entrant at cost, i.e., at \$0.50, an inefficient entrant could enter, survive, and precipitate a significant final price reduction and an increase in allocative efficiency. For example, entry by an inefficient entrant with production costs for component B of \$0.41 per unit (above the efficient level of \$0.40) would result in a reduction of final price to \$0.91 (= .0.50 + 0.41). In summary, when component A is sold at cost (rather than the M-ECPR access fee that includes monopoly profit), the price falls by \$0.29, and this results in an allocative efficiency gain: more consumers buy the good, and the ones who used to buy, now buy more of it.

The effects of application of the ECPR are shown in Figures 1 and 2. Figure 1 shows the benefits of not applying ECPR when the entrant is equally efficient as the incumbent. Under

ECPR, the price remains at $1.20 despite entry, while with cost-based pricing, price falls to $0.90.

Figure 2 shows the benefits of not applying ECPR when the entrant is less efficient than the incumbent. Under ECPR, the entrant is foreclosed and the price remains unchanged. Under cost-based pricing, the entrant enters, and the price falls to $0.91.

Figure 1. Benefits of Not Applying ECPR When Entrant is as Efficient as Incumbent

Incumbent

c_A = $0.50	c_B = $0.40	profit = $0.30

Output price: p_{AB} = $1.20.

Efficient Entrant Under ECPR

ECPR-implied fee for A = $0.50 + 0.30 = $0.80	$c_{B'}$ = $0.40

Output price: p_{AB} = $p_{AB'}$ = $1.20.
No price decrease.

Efficient Entrant With Cost-Based Pricing And No Application Of The ECPR

$p_A = c_A$ = $0.50	$c_{B'}$ = $0.40	

Output price: $p_{AB'}$ = $0.90.
Price decrease = $0.30.

Figure 2. Benefits of Not Applying ECPR When Entrant is Less Efficient than Incumbent

Inefficient Entrant Under ECPR

ECPR-implied fee for A = $0.50 + 0.30 = $0.80	c_B = $0.40

Output price: p_{AB} = $1.20.

Entrant is foreclosed. Price remains unchanged.

Inefficient Entrant With Cost-Based Pricing And No Application Of The ECPR

$p_A = c_A$ = $0.50	$c_{B'}$ = $0.41	

Output price: $p_{AB'}$ = $0.91.
Price decrease = $0.29.

8.4 Inefficiencies Arising from the Application of the M-ECPR when the Monopolist's Costs Are Not Well-Known or Not Transparently Observable

The M-ECPR access fee to the bottleneck facility is equal to the price of the final service minus the incumbent's incremental cost of the complementary component. Thus, when the

M-ECPR is applied, the monopolist has an incentive to understate its incremental costs of the production of the complementary component (i.e., the service where it faces competition) and then employ the M-ECPR to levy an exclusionary access fee to its rival. This results in higher incremental costs even for a rival that is equally or more efficient than the incumbent. Thus, *even equally efficient or more efficient rivals can be excluded.* In this case the ECPR and the M-ECPR fail in their declared objective, which is to exclude only inefficient entrants.

In the example, the actual costs of the incumbent were \$0.50 for component A and \$0.40 for component B, and final service AB was originally sold at \$1.20, with a profit of \$0.30. The M-ECPR access fee for A is \$0.80 (= 0.50 + 0.30 = 1.20 - 0.40). If costs are unobservable from the outside, the incumbent has an incentive to claim that the cost of its B component is lower (and consequently that its original profit rate is higher). For example, the incumbent can claim that the cost of B is \$0.36, which is 10% lower than its actual cost of \$0.40. This results in a profit of \$0.34 (= 1.20 - 0.50 - 0.36), and an M-ECPR access fee of \$0.84 (= 0.50 + 0.34 = 1.20 - 0.36). Facing this access fee, entrants that are equally efficient in the production of B as the incumbent, i.e., with cost of \$0.40, are foreclosed from entering since they can only sell AB at \$1.24 (= 0.84 + 0.40), while the entrant still sells at \$1.20.

Even if the monopolist were constrained not to earn positive economic profits in the bottleneck market, if its costs are not perfectly observed, it can claim that some incremental costs of the complementary services are incremental costs of the bottleneck service. Lower incremental costs of the complementary component justify a higher charge for the bottleneck under the M-ECPR. Again, this higher charge will deter even those rivals which are more efficient than the monopolist in the production of the complementary component.

8.5 Application of the M-ECPR Can Result in Inefficient Entry

Application of the M-ECPR may also result in inefficient entry. The M-ECPR keeps prices for the monopolized input artificially high. High prices invite entry in the monopolized bottleneck market (good A). Since entrants will have to beat the monopoly price (rather than the competitive price for that element which would equal its cost), even entry by firms that have higher production costs for A than the incumbent may be profitable and may occur.

8.6 Perverse Comparative Statics under the ECPR and the M-ECPR

In a competitive market, reductions in the costs of either A or B would be reflected in reductions in the prices of these components and in a reduction of the price of the final service. Under the M-ECPR, a reduction of the cost of the monopolized component A has no effect on the final price and on the access fee for A. Even more perversely, under the M-ECPR, a *reduction* in the incumbent's cost for component B results in an *increase* of the access fee that an entrant has to pay for A! In the example, when the cost of B falls (say because of technological change) from \$0.40 to \$0.36, this results, as shown earlier, in an access fee for A of \$0.84 (= 1.20 - 0.36), which is higher than the access fee of \$0.80 (= 1.20 - 0.40) that prevailed when the cost of B was higher.

8.7 Dynamic Inefficiency of the M-ECPR

One of the fundamental properties of a competitive environment is free and unencumbered entry. Free entry drives the competitive process and leads markets to lower prices as well as efficient production. On the other hand, the M-ECPR preserves the market power of an incumbent monopolist. It increases the costs of entrants in the good that is complementary to the bottleneck by acting as an "entry tax," i.e., an extra cost that entrants have to pay to enter. When the M-ECPR is applied, entrants face a smaller potential profit margin (difference between consumers' willingness to pay and cost). Thus, the M-ECPR diminishes entry and competition in the complementary goods market, and results in higher prices for final services.

Starting from a situation of inefficiently high prices for final services, application of the M-ECPR preserves these high prices by setting prices for intermediate goods at inefficiently high levels. Thus, competition is not allowed to take its course and drive prices to competitive, efficient levels. Application of the M-ECPR prevents the natural tendency of the market to self-regulate itself through competition.

8.8 Administrative Problems of the M-ECPR

It is prohibitively complex and difficult to apply the M-ECPR in practice. The M-ECPR defines an access fee for the monopolized service of the incumbent that includes the private opportunity cost to it resulting from entry in a complementary market. In telecommunications there are hundreds of goods/markets that are complementary to a typical monopolized bottleneck such as the "local loop." These markets correspond to various vertical services that LECs currently provide, as well as to various geographic locations of intraLATA, long distance, and international destinations where calls originating from that loop may terminate. It is clear that these markets have different prices and various price discrimination schedules are used. Adoption of the M-ECPR requires that a different access fee be determined for the same good or service, say access to the local loop, depending on its use in combination with other goods and services. This means hundreds of different M-ECPR-derived access fees for the same good -- clearly an unmanageable situation (as well as discriminatory). Further, even if a regulatory agency is able to untangle this chaotic situation and assign correctly the hundreds of M-ECPR-based prices to the same bottleneck service or unbundled network element, it would be almost certainly of no use. In the presence of different prices for the same service, there are very strong incentives for providers of complementary unbundled network elements and services to rearrange their own pricing structure so as to arbitrage the price of the monopolized element to a single price. And, that price will have, in general, little discernible relation to the hundreds of M-ECPR-based prices that the administrative agency would have worked so hard to set. In short, administratively, M-ECPR-based prices are unworkable and unlikely to last. It is much easier, as well as more efficient, to price unbundled network elements without reference to private opportunity costs.

9. APPLICATION OF THE M-ECPR AND THE ECPR IN THE IMPLEMENTATION OF THE 1996 ACT

The intent of the Telecommunications Act of 1996 was to bring competition to *all* telecommunications markets. In particular, the 1996 Act attempts to bring competition to the monopolized local exchange markets. To facilitate competition as well as to neutralize the ILECs' current grip on local exchange markets, the 1996 Act allows for two new ways of entering the local exchange, besides the obvious way, in which entrants build their own facilities.[7] In the first new way of entry, an entrant can enter the local exchange market by leasing unbundled network elements (UNEs) from the ILEC at cost-based prices. In the second, an entrant can buy at wholesale prices any service that the ILEC provides and resell it. This method of entry allows competition only for the retailing of telecommunications services. On the other hand, entry through UNE leasing should allow the entrant to produce all network functions and telecommunication services.

Currently, given the ILECs' virtual monopoly in markets for UNEs, one cannot rely solely on the market to determine economically efficient prices for UNEs. The 1996 Act correctly attempts to imitate a market environment by mandating the setting of cost-based prices for UNEs. To be economically efficient, prices have to reflect the forward-looking economic (minimized) cost of a present-day, telecommunications-only, efficient network. Such a cost measure is the Total Element Long Run Incremental Cost ("TELRIC") of a network element.

We show below that pricing rules that are based on private opportunity costs, such as the ECPR and the M-ECPR are inconsistent with the 1996 Act.

9.1 The M-ECPR and the ECPR Are Inconsistent with the 1996 Telecommunications Act ("Act" or "the Act")

A key requirement of the Act is that prices for unbundled network elements be based on cost (Act at Section 252(d)(1)(A)(i)). The M-ECPR fails to satisfy this requirement and is therefore inconsistent with the Act because, in my view, the correct meaning of "cost" in the Act does not include "private opportunity cost." Another requirement of the Act is that prices be non-discriminatory (Act at Section 252(d)(1)(A)(ii)). The M-ECPR however, implies different prices for the same unbundled network element, depending on with which complementary component or service it will be combined to create a final service. Given the wide diversity of components and services that can be combined with the same network element, M-ECPR-based prices for the same unbundled network element are, in general, different. In other words, the M-ECPR implies discriminatory pricing for the same component (which is produced at the same cost), contrary to the Act. Only the setting of a single price is consistent with the Act, and is inconsistent with the logic of M-ECPR.

As in the previous example, let component A have a unit cost of $0.50, component B a unit cost of $0.40, and let final service AB be sold at $1.20. As we have shown earlier, this implies an M-ECPR-based fee for A of $0.80 (= 1.20 - 0.40) when used as part of AB. Now let a second final service be created by combining A with component C. Let the cost of

[7] Act at section 252(d)(1)(A)(i).

component C be \$0.60 and let the final product AC be sold at \$1.50. Then the M-ECPR-based fee for A when sold as part of AC is \$0.90 (= 1.50 - 0.60). A firm that sets prices according to the ECPR or M-ECPR, therefore, will charge \$0.80 for component A to anyone who buys it for use in combination with component B, but will charge a higher price, \$0.90, to anyone who uses A in combination with component C. This is a clear violation of the Act's non-discrimination requirements. On the other hand, the adoption of a single price for good A would violate the logic of the ECPR and the M-ECPR.

10. FCC's Position on the Appropriateness of the ECPR as a Costing and Pricing Principle

The FCC in its First Report and Order on the implementation of the 1996 Act concluded (at paragraph 709):[8] "ECPR is an improper method for setting prices of interconnectionn and unbundled network elements because the existing retail prices that would be used to compute incremental opportunity costs under ECPR are not cost-based. Moreover, the ECPR does not provide any mechanism for moving prices towards competitive levels; it simply takes prices as given." In further criticism of ECPR, the FCC concluded: "The ECPR, however, will serve to discourage competition in these very markets because it relies on the prevailing retail price in setting the price which new entrants pay the incumbent for inputs. While ECPR establishes conditions for efficient entry given existing retail prices, as its advocates contend, the ECPR provides no mechanism that will force retail prices to their competitive levels." (Order at Paragraph 710). The FCC's arguments hold equally for the M-ECPR.

11. Multiple Cost Recovery under the M-ECPR

If an ILEC uses the M-ECPR to set prices for unbundled network elements at stand-alone cost, this would that lead to multiple recovery of shared and common costs. Stand-alone costs include shared and common costs. If unbundled network elements are sold at stand-alone costs, the ILEC is able to recover the shared and common costs many times -- once for each element.

Multiple recovery of shared and common costs is inconsistent with the FCC's First Report and Order.[9] The First Report and Order strictly forbids multiple recovery of shared and common costs. Thus, the M-ECPR would lead to a clear violation of the FCC's rules. Further, the Doane *et al.* (1996) claim that an ILEC should be able to recover its historical costs (page 3). In contrast, the First Report and Order clearly dismisses the notion of using book or embedded costs. Instead, the FCC advocates the use of forward-looking, efficient costs.

[8] See Federal Communications Commission (1996).
[9] See Federal Communications Commission (1996).

12. Basing UNE Prices on Historical or Embedded Costs Would Lead to Inefficiency

Historical or embedded costs of a network element or of a service do not reflect the current cost to produce the element or service. This is because historical costs do not reflect current prices of inputs used in the production of the element or service and because they are not calculated using the most efficient current production technology. Thus, it would be economically inefficient to base UNE or services prices on embedded or historical costs.

Moreover, many of the historical costs of the ILEC's network are sunk. Thus, using M-ECPR to set final services prices that include these sunk costs will further tip the playing field in favor of the incumbent and create an unfair advantage. Deriving wholesale service prices and/or unbundled network element prices through the application of M-ECPR to set final services prices that include historical sunk costs will foreclose from the complementary goods market providers that are equally or more efficient than the bottleneck monopolist. Therefore, two types of efficiency loss would result from using M-ECPR to set final service prices based on historical costs: first, an allocative efficiency loss, since prices are held above TSLRIC; and, second, a productive efficiency loss, since the most efficient producer is foreclosed from the complementary goods market.

13. The Issue of Stranded Revenue

The overwhelming dismissal by state regulatory commissions and by the FCC of ECPR and M-ECPR, as well as those authorities' basing of prices on forward looking, rather than historical costs, lead the proponents of M-ECPR to attempt to recover ILECs' embedded or historical costs through a claim that the Act creates "stranded assets."[10] The claim is that the 1996 Act introduced competition, which results in lower market share for the ILEC and lower market prices. Doane *et al.* (1997) claim that this makes the assets of ILEC "stranded," and ask for a "transition charge" imposed on consumers and on entrants to "make the ILEC whole."

Doane *et al.* (1997) provide no evidence of particular "stranded assets." Even if some services were achieving a profit rate below the competitive rate of return, since typically each asset is used in the production of many services, it is unlikely that the *asset* would be realizing a profit rate below the competitive level of return. The nature of the proposal is to find ways to collect the ILEC's pre-Act revenue. Thus, it is not really about "stranded assets," but about "stranded revenue."

The attempt to collect a "transition charge" to recover "stranded revenue" is a clear attempt to create artificial barriers to entry and to harm competition. Competitors would have to pay the ILEC a "ransom" for every customer they gain. Keeping the ILEC's revenues and prices at pre-Act levels robs consumers of the benefits of competition. Moreover, the ILEC is encouraged to be inefficient, since it will have the same revenue irrespective of the level of its sales or its efficiency. Clearly, the proposal creates special advantages for GTE and is unfair to competitors. The proposal to collect "transition payments" from CLECs for reductions of

[10] See Doane *et al.* (1997), submitted in Hawaii as an attachment to the testimony of David Sibley on behalf of GTE.

the ILEC's share is clearly anti-competitive and directly opposes the objective of the 1996 Act to introduce competition in the local exchange. The proposal to collect so-called "transition charges" from consumers, if implemented, would rob consumers of the benefits of competition and perpetuate existing inefficiencies. In summary, the Doane *et al.* (1997) proposal has significant anti-competitive consequences.

14. CONCLUDING REMARKS

We have shown that access fees based on the ECPR, the M-ECPR, or other forms of private opportunity cost, perpetuate inefficiencies. Such fees include monopoly profits and historical cost inefficiencies, if they were present to start with, thereby resulting in losses in consumers' surplus and social welfare. In particular, prices based on the ECPR, the M-ECPR, or other forms of private opportunity cost are inappropriate for pricing unbundled network elements in the implementation of the Telecommunications Act of 1996. Prices for unbundled network elements of the telecommunications network that are based on the ECPR and the M-ECPR would create artificial barriers to entry and impede the emergence of competition. This is contrary to the intent of the 1996 Telecommunications Act.

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