

**COMPETITIVE NEUTRALITY:  
REGULATING INTERCONNECTION DISPUTES  
IN THE TRANSITION TO COMPETITION**

Australian Competition and Consumer Commission

Regulation and Competition Conference  
Manly Beach, Australia  
July 25-26, 2002

William B. Tye

*The Brattle Group*  
44 Brattle Street  
Cambridge, MA 02138-3736  
voice 617.864.7900  
facsimile 617.864.1576  
e-mail [btye@brattle.com](mailto:btye@brattle.com)

## **ACKNOWLEDGMENTS**

This paper is an attempt at synthesis of results in expert reports, published papers, and books written over an extensive period. Where I have relied on jointly written pieces, I have attempted to recognize my co-authors. I am also indebted to many others, too countless to name. The expert reports were written on behalf of a variety of clients, including incumbent firms, fringe competitors seeking interconnection, ratepayers, and regulatory bodies. I have not attempted to recognize these organizations, but suffice it to say that the views expressed are my own and do not necessarily represent the positions of any present or former consulting clients. I would also like to thank Robert Albon, Chris Pattas, Sean Riordan, Ingo Vogelsang, and Boaz Moselle for comments on the current paper.

## SUMMARY

The issue of competitive neutrality usually arises when a transition is desired from a prior regime of state-owned or regulated monopoly. New entrants often cannot provide service over the entire network required for efficient service to customers. Competition emerges only over certain routes or services, requiring interconnection agreements from incumbents to provide efficient service. These incumbents retain certain monopoly “bottlenecks” yet compete in other geographic regions and services with new entrants. Prominent examples are when one railroad has to interconnect with another to provide the total service from origin to destination or when telecommunications carriers must interconnect with another carrier controlling the Public Switched Telephone Network (PSTN) to complete a call. The basic notion of “competitive neutrality” is to define the terms of interconnection to purge the emerging competitive regime of the legacy of the historical monopoly regime. An efficient transition regime would then achieve effective competition through efficient entry and provision of services.

Whether competitive neutrality is a desirable feature of the regulatory transition is a matter of judgment on a case-by-case approach. But before that judgment is made, we need to understand more clearly what the term really means. The most important useful distinction is between what we call “weak” and “strong” competitive neutrality. Weak competitive neutrality achieves “static” (*i.e.*, short-run) economic efficiency. It is achieved when a more efficient competitor (measured by lower incremental costs) has a profitable pricing strategy available to it that will be successful in a “winner-take-all” competition. Equally efficient competitors (*i.e.*, equal incremental costs) enjoy weak competitive neutrality if they suffer no disadvantage from the pricing rules in a “winner-take-all” competition.

Strong competitive neutrality includes weak competitive neutrality, but also requires that more efficient firms have a better opportunity to recover their total costs in a winner-take-all competition (the “firm viability” requirement). This “better opportunity” also usually manifests itself in the inability of firms controlling access to appropriate the efficiency advantages of firms seeking

interconnection, *i.e.*, all firms can retain the fruits of their superior efficiency, either in the form of higher profits or lower prices. By the same token, strong competitive neutrality ensures that equally efficient firms have an equal opportunity to recover total costs.

A corollary to these two definitions is the “indifference test”: competitive neutrality overall is achieved when a firm’s ability to compete successfully on the basis of efficiency advantages and to recover total costs is invariant to the identity of the firm that supplies interconnection services.

These concepts are applied to four ongoing debates in the transition to deregulation and competition. These illustrate that weak competitive neutrality is an amazingly robust property of interconnection regimes in terms of preserving the relative efficiency advantages of competitors going forward. But, perhaps paradoxically, it is so robust that it has little discriminatory power to tell us what the appropriate regime ought to be. For this determination, we need to consider an additional dimension that is recognized in strong competitive neutrality.

The lesson from these applications of the concepts is to beware of claims that interconnection disputes can be resolved by reference to a purported unique ability to achieve economic efficiency, as embodied in weak competitive neutrality. The Efficient Component Pricing Rule (ECPR) or the “parity principle” achieves unique results only because it supplements the goal of weak competitive neutrality with the requirement that the monopolist be indemnified from the loss of profit resulting from the introduction of competition—a strange constraint to impose on a transition regime. Instead, the goal of strong competitive neutrality supplements the goal of weak competitive neutrality with true parity, including an equal opportunity for recovery of total costs. It thus provides a far better guide for achieving a successful transition to competition.

**TABLE OF CONTENTS**

I. INTRODUCTION & SUMMARY ..... 1

II. TYPICAL STRUCTURE OF THE INTERCONNECTION PROBLEM..... 6

III. ORIGINS OF THE DEBATE IN THE U.S. RAIL INDUSTRY ..... 7

IV. DEFINITIONS OF “WEAK” AND “STRONG” COMPETITIVE NEUTRALITY ..... 15

    A. “WEAK” COMPETITIVE NEUTRALITY ..... 16

    B. “STRONG” COMPETITIVE NEUTRALITY ..... 16

    C. INDIFFERENCE COROLLARY ..... 17

    D. GENERALIZATION TO OTHER COMPETITIVE REGIMES ..... 17

    E. REFLECTIONS AND SUMMARY ..... 17

V. HYPOTHETICAL EXAMPLES ILLUSTRATING THE ROBUSTNESS OF WEAK  
COMPETITIVE NEUTRALITY ..... 19

VI. APPLICATION OF CONCEPTS OF COMPETITIVE NEUTRALITY ..... 20

    A. AUSTRALIA: APPLICATION TO RECOVERY OF ACCESS DEFICIT ..... 20

    B. NEW ZEALAND: ECPR FOUND UNNECESSARY FOR EFFICIENT  
INTERCONNECTION REGIME ..... 27

    C. U.S. ELECTRIC UTILITIES: WEAK COMPETITIVE NEUTRALITY COMPATIBLE WITH  
WIDE RANGE OF STRANDED COST RECOVERY MECHANISMS ..... 29

    D. U.S. RAILWAYS: REVENUE ADEQUACY TRUMPS COMPETITION AND  
COMPETITIVE NEUTRALITY ..... 32

    E. REGULATORY ASYMMETRY IN OTHER INDUSTRIES ..... 37

VII. CONCLUSIONS ..... 40

## I. INTRODUCTION & SUMMARY

The term “competitive neutrality” (a.k.a. “level playing field,” “competition on equal terms,” *etc.*) has been increasingly bantered about in regulatory or antitrust proceedings. In these debates, the term is usually used (but not always) to characterize one’s preferred regime and to disparage the opposition’s proposals. Yet these exchanges often fail to define exactly what is meant by the term. Definitions of the term are at best implicit, used inconsistently, and certainly not agreed upon. This paper seeks to fill this void by offering definitions that will hopefully achieve consensus among interested parties and serve to provide objective tests against which to judge alternative visions of appropriate competitive regimes. Four ongoing controversies are used to illustrate the concepts.

The issue of competitive neutrality usually arises when a transition is desired from a prior regime of state-owned or regulated monopoly. New entrants often cannot provide service over the entire network required for efficient service to customers. Competition emerges only over certain routes or services, requiring interconnection agreements from incumbents to provide efficient service.<sup>1</sup> These incumbents retain certain monopoly “bottlenecks,” yet compete in other geographic regions and services with new entrants.<sup>2</sup> Prominent examples are when one railroad has to interconnect with another to provide the total service from origin to destination or when telecommunications carriers

---

<sup>1</sup> For a description of the issues that have arisen in the telecommunications industries, see Ingo Vogelsang and Bridger Mitchell, *Telecommunications Competition: The Last Ten Miles* (Cambridge, MA: The MIT Press, 1997). More generally, see Lawrence J. White, *U.S. Public Policy Toward Network Industries* (Washington, DC: AEI-Brookings Joint Center for Regulatory Studies, 1999), and Julian K. Wright, Eric K. Ralph, and D. Mark Kennet, *Telecommunications Interconnection: A Literature Survey*, 9 February 2002, E. Ralph@NECG.com.au.

<sup>2</sup> The response to this problem has been an emerging literature on the economics of network access pricing. See M. Armstrong, C. Doyle, and J. Vickers, “The Access Pricing Problem: A Synthesis,” *Journal of Industrial Economics*, Vol. 44 (1996): 131-150; Jean-Jacques Laffont and Jean Tirole, “Creating Competition Through Interconnection: Theory and Practice,” *Journal of Regulatory Economics*, Vol. 10, No. 3 (November 1996): 227-256; Jean-Jacques Laffont, Patrick Rey, and Jean Tirole, “Network Competition: I. Overview and Nondiscriminatory Pricing,” and “II. Price Discrimination,” *The RAND Journal of Economics*, Vol. 29, No. 1 (Spring 1998): 1-56; David Gabel and David F. Weiman, *Opening Networks to Competition: The Regulation and Pricing of Access* (Boston: Kluwer Academic Publishers, 1998); Alexander C. Larson and Dale E. Lehman, “Essentiality, Efficiency, and the Efficient Component Pricing Rule,” *Journal of Regulatory Economics*, Vol. 12 (1997): 71-80; and Nicholas Economides, “The Tragic Inefficiency of the M-ECPR,” December 1997.

must interconnect with another carrier controlling the Public Switched Telephone Network (PSTN) to complete a call. The basic notion of “competitive neutrality” is to define the terms of interconnection such that the emerging competitive regime is purged of the legacy of the historical monopoly regime. An efficient transition regime would then achieve effective competition through efficient entry and provision of services.

That the appropriate transition regime should be competitively neutral is by no means universally accepted.<sup>3</sup> In the U.S. rail industry, regulators deliberately offered a “helping hand” to bottleneck owners with the view that such monopoly segments should be exploited to further industry profitability. Conversely, AT&T was deliberately regulated asymmetrically in order to facilitate entry, as discussed in more detail below. As we shall see, the “Efficient Component Pricing Rule” (ECPR) starts with an implicit assumption that incumbents should be protected from profit erosion due to price competition, implying that asymmetric treatment of incumbents and entrants is appropriate.

Whether competitive neutrality is a desirable feature of the regulatory transition therefore is a matter of judgment on a case-by-case approach. But before that judgment is made, we need to understand more clearly what the term really means.

The most important useful distinction is between what we call “weak” and “strong” competitive neutrality.<sup>4</sup> Weak competitive neutrality achieves “static” economic efficiency.<sup>5</sup> It is achieved when

---

<sup>3</sup> While they do not use the term, J. Gregory Sidak and Daniel F. Spulber, “Deregulation and Managed Competition in Network Industries,” *Yale Journal on Regulation*, Vol. 15, No. 1 (Winter 1998): 117-147, make the case for “equal opportunity” and “impartiality.”

<sup>4</sup> The distinction between the two types of neutrality (without benefit of the clarifying labels) was first made implicitly in the debate over applying voluntary negotiations and the “Efficient Component Pricing Rule” (ECPR) to the U.S. railway industry. See Tye, *et al.*, *The Transition to Deregulation: Developing Economic Standards for Public Policies* (New York: Quorum Books, 1991); and Tye, “The Pricing of Inputs Sold to Competitors,” *Yale Journal on Regulation*, Vol. 11, No. 1 (1994): 203-224. The specific terminology first emerged in the context of telecommunications disputes. See Tye and Carlos Lapuerta, “The Economics of Pricing Network Interconnection: Theory and Application to the Market for Telecommunications in New Zealand,” *Yale Journal on Regulation*, Vol. 13, No. 2 (Summer 1996): 419-500 and “Promoting Effective Competition Through Interconnection Policy,” *Telecommunications Policy*, Vol. 23 (March 1999): 129-145.

<sup>5</sup> “Static” efficiency is achieved by production efficiency, *i.e.*, when the competitor with lowest cost successfully competes for the business, and only considers forward-looking incremental costs, ignoring sunk costs and the “dynamic” efficiency considerations arising from innovation, entry, *etc.* It does not include issues of allocative efficiency, such as would arise from discrepancies between price and marginal costs.

(continued...)

a more efficient competitor (measured in the static sense of lower incremental costs<sup>6</sup>) has a profitable pricing strategy available to it that will be successful in a “winner-take-all” competition.<sup>7</sup> Equally efficient competitors (*i.e.*, measured by equal incremental costs) enjoy weak competitive neutrality if they suffer no disadvantage from the pricing rules in a “winner-take-all” competition.

Strong competitive neutrality includes weak competitive neutrality,<sup>8</sup> but also requires that more efficient firms have a better opportunity to recover their total costs in a winner-take-all competition (the “firm viability” requirement). This “better opportunity” also usually manifests itself in the inability of firms controlling access to appropriate the efficiency advantages of firms seeking interconnection, *i.e.*, all firms can retain the fruits of their superior efficiency, either in the form of higher profits or lower prices. By the same token, strong competitive neutrality ensures that equally efficient firms have an equal opportunity to recover total costs.

---

<sup>5</sup> (...continued)

Nicholas Economides and Lawrence J. White, “Access and Interconnection Pricing: How Efficient is the ‘Efficient Component Pricing Rule’?” *Antitrust Bulletin*, Vol. XL, No. 3 (Fall 1995): 557-579, show that lower access prices may be called for when monopoly pricing of the final product is perpetuated by an access regime focused solely on static efficiency (*i.e.*, production) as measured here. Below we expand the analysis to consider these other dimensions of economic efficiency.

<sup>6</sup> The discussion, at this point, leaves vague what is meant by “incremental costs.” Most of the discussions of competitive neutrality assume that they measure the going-forward relative efficiencies of competitors, whether long run or short run. Thus, much of the discussion equates “incremental costs” to long-run or short-run marginal costs. In the U.S. rail industry, costing methodologies usually equate them to “average variable costs.” Most incumbent monopolists calculate them as very short-run avoided costs (as opposed to “avoidable costs”). Regardless of how defined, “incremental costs” are usually well below what has become known as “Total Service Long-Run Incremental Cost” or “TSLRIC,” which includes all the “forward-looking” costs of an efficient supplier incurred in the long run as a consequence of the service in question. This concept is functionally equivalent to “attributable” or “avoidable” costs where the “relevant increment” is the entire service. In concept, TSLRIC goes beyond “marginal costs” to include “specific fixed” costs, *i.e.*, costs incurred as a consequence of the service as a whole, but that may not be traffic sensitive in either the long or short run.

<sup>7</sup> This will be recognized as the assumption that competitors act as “Bertrand” competitors, *i.e.*, they compete on the basis of price only, and not quantity. See F.M. Scherer and David Ross, *Industrial Market Structure and Economic Performance*, 3<sup>rd</sup> Edition (Boston: Houghton Mifflin Company, 1990): 200-201. A more realistic assumption is that firms will compete as Cournot competitors, or some other regime where firms share the market at prices in excess of their incremental costs. See Bridger M. Mitchell and Ingo Vogelsang, “Markup Pricing for Interconnection: A Conceptual Framework,” in David Gabel and David Weiman (eds.), *Opening Networks to Competition: The Regulation and Pricing of Access* (Boston: Kluwer Academic Press, 1998): 31-47. Nevertheless, we hypothetically assume “winner-take-all” competition to test the static efficiency property of the interconnection regime, since this is the market structure assumed in the initial debate over ECPR.

<sup>8</sup> Again, strong encompasses weak competitive neutrality under the assumption of Bertrand competition.

A corollary to these two definitions is the “indifference test”: competitive neutrality overall is achieved when a firm’s ability to compete successfully on the basis of relative efficiency and to recover total costs is invariant to the identity of the firm that supplies interconnection services.

These concepts are applied to four ongoing debates in the transition to deregulation and competition. The lessons learned might not have been recognized without the benefit of the distinctions embodied in the pertinent definitions. When summarized as follows, several common themes emerge.

*Australia.* Decisions regarding the allocation of the recovery of the access deficit (AD) (losses due to price constraints on retail interconnection to end-use telecommunications customers) can dramatically affect the rates paid by firms seeking interconnection services from their competitors. The issue is whether firms seeking interconnection services should help defray the access deficit (if any), and by how much. Although much of the proceeding involved confidential data, some broad generalizations can be made on the basis of the public record. Despite a tendency in such matters for competitors to cloak their self-interest with generalized efficiency defenses, competitive neutrality is a better standard for judging the alternatives. A wide range of recovery mechanisms for the access deficit are shown to achieve weak competitive neutrality, including prices so low that they fail to achieve strong competitive neutrality (by denying the supplier of interconnection services the ability to recover the deficit). Unreasonably high interconnection prices, however, potentially could foreclose effective competition by violating both weak and strong competitive neutrality. Although the case was settled before the issues were resolved, at the time of settlement an emerging consensus among the experts appeared to be developing over the proper definitions of competitive neutrality, if not the ultimate issues.

*New Zealand.* The Efficient Component Pricing Rule (ECPR) does not uniquely achieve weak competitive neutrality. The principles of competitive neutrality can be used to show that a wide variety of interconnection prices, including even zero, possess these same efficiency properties. A New Zealand governmental inquiry concluded that

To summarize, the BW rule [the “Baumol-Willig” rule, as the ECPR was known] was solely designed to achieve the goal of productive efficiency. In the simplest, static and no-uncertainty contexts the rule achieves this goal. However, if other factors are introduced, such as uncertainty and sunk costs,

or if the dynamic benefits of competition are considered, the BW rule may, in fact, deter efficient entry.

...Together [this and other] considerations raise concerns about the appropriateness of the BW rule for pricing interconnection in the New Zealand regulatory environment.<sup>9</sup>

More recently, the new Telecommunications Act specifically banned use of the Baumol-Willig rule.

*U.S. Electric Utilities.* Arguments for and against recovery of “stranded costs” in the U.S. electric utility industry (*i.e.*, costs incurred in the prior regulatory regime that could not be recovered by the incumbent competing against entrants with no such legacies) relied heavily on debates over efficiency (as measured implicitly by the weak competitive neutrality test). Incumbents argued that failure to recover stranded costs would encourage “uneconomic bypass,” *i.e.*, encourage entry of inefficient firms. New entrants instead argued that permitting stranded cost recovery would subsidize service by uneconomic incumbents. The relevant economic principles of competitive neutrality show that neither side was quite right: weak competitive neutrality tests have little power to discriminate among stranded cost recovery regimes. The debate was resolved in favor of stranded cost recovery on a case-by-case basis, but almost entirely irrespective of the efficiency arguments.

*U.S. Railways.* Regulatory authorities embraced the theory of “voluntary negotiations” to resolve interconnection disputes in the U.S. rail industry. They reasoned that efficient interconnection regimes would emerge as a consequence of negotiation among self-interested parties. They further accepted the notion that any interference in those negotiations would necessarily impose inefficiency. These arguments were initially cloaked in the garb of an economic efficiency rationale (*i.e.*, achievement of weak competitive neutrality). Nevertheless, what really drove the debate was that regulators believed that competition was incompatible with the achievement of revenue adequacy. The desire to protect carrier revenues from competitive threats therefore trumped the objectives of achieving competitive neutrality of either type.

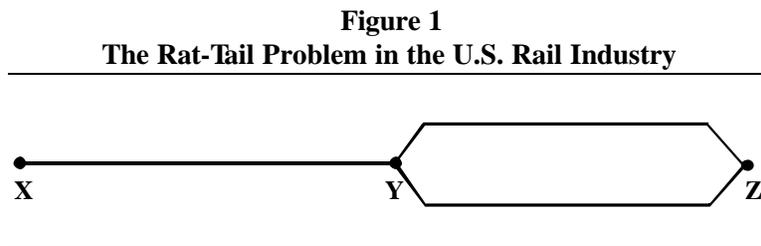
---

<sup>9</sup> New Zealand Ministry of Commerce and Treasury, *Regulation of Access to Vertically-Integrated Natural Monopolies*, (August, 1995), p. 33. For earlier claims for widespread success of the ECPR, see William J. Baumol and J. Gregory Sidak, “The Pricing of Inputs Sold to Competitors: Rejoinder and Epilogue,” *Yale Journal on Regulation*, Vol. 12 (1995): 179-185. For an example where the efficient component pricing rule might lead to the exclusion of efficient suppliers, see Paolo Buccirossi, “Access to an Essential Facility: Efficient Component Pricing Rule or Unrestricted Private Property Rights?,” *Journal of Regulatory Economics*, Vol. 16, No. 3 (November 1999), pp. 287-296.

## II. TYPICAL STRUCTURE OF THE INTERCONNECTION PROBLEM

Perhaps the clearest way to illustrate both the interconnection problem and the development of the concepts of weak and strong competitive neutrality is to trace their development in the U.S. railway industry. Interconnection problems would arise usually under two scenarios, as illustrated by the “rat tail” problem (shown in Figure 1). The entire route from X to Z was served by only one railroad (the “bottleneck”). But two railroads served from Y to Z. In the prior regulatory regime, tariffs were “open routed” in the sense that an unaffiliated connecting carrier (serving only Y to Z) could propose a “through route” under a “joint rate” via the junction at Y, and agreed-upon “divisions” of the revenue. The single-line route could then compete with the through route because the shipper could specify the routing. After regulatory reform, the connecting carrier was also allowed to rebate its share of the division to encourage diversion to the joint-line route and the single-line carrier could compete on the basis of price as well.

Complaints of “vertical foreclosure” of this competition would arise if, during the transition to deregulation, the bottleneck carrier cancelled the interchange at Y with the connecting carrier (and they used their new ratemaking freedom to do so on a widespread basis). New opportunities for such foreclosures also arose from mergers. When a bottleneck carrier merged with one of the two carriers competing over the Y to Z service, the non-merging carrier would lose a “friendly connection” at Y. It would then request “protective conditions” to prevent post-merger cancellation of the joint rate.



U.S. regulators embraced the theory of “voluntary negotiations” to justify a permissive approach to these route cancellations on the grounds that self-interest of the carriers would result in the “parity principle” or the so-called Efficient Component Pricing Rule (ECPR). The distinction between weak and strong competitive neutrality arose in response to this regulatory permissiveness (although the terminology came later).

### III. ORIGINS OF THE DEBATE IN THE U.S. RAIL INDUSTRY

Figure 2 illustrates in greater detail the origins of the two types of competitive neutrality in response to the logic behind the theory of the parity principle.<sup>10</sup> As do the proponents of the parity principle, we look initially only at the effects of the access policy on routing choices, *i.e.*, static economic efficiency.<sup>11</sup> The example is drawn from Baumol and Sidak in their *Yale Journal On Regulation* article<sup>12</sup> (and closely resembles the ones that Baumol and Willig presented in numerous written testimony before New Zealand authorities, the Interstate Commerce Commission, *etc.*). The controlling railroad determines the bottleneck price by taking the full price over the entire route and subtracting its incremental costs over the competitive portion. Specifically, the carrier owning the bottleneck can receive a price of \$10 over the entire route and faces “direct” incremental costs of \$3 over the competitive portion.<sup>13</sup> Under the parity principle, these assumptions yield a price of  $(\$10 - \$3 =)$  \$7 for the bottleneck service.<sup>14</sup> If a new entrant can pay \$7 for access to the bottleneck portion and charge *less* than \$10 for the entire route, it is only because the new entrant has incremental costs *less* than \$3 over the competitive portion and is therefore more efficient. *Ergo*, it is argued that the parity principle is a necessary condition for economic efficiency.<sup>15</sup>

---

<sup>10</sup> This discussion relies heavily on Tye, “Achieving Competitive Neutrality in Rail Competitive Access Disputes,” *Journal of Transportation Law, Logistics and Policy*, Vol 65, No. 4 (Summer 1998): 343-358, and Tye and Lapuerta, “The Economics of Pricing Network Interconnection.”

<sup>11</sup> Note that Figure 2 also assumes away all the other problems in implementing the parity principle by simply taking the assumptions in the hypothetical as true. Below we consider the fact that both carriers have sunk costs.

<sup>12</sup> Under ECPR or the parity principle, the price of the bottleneck facility is set equal to (1) “the direct pre-unit incremental cost” plus (2) “the opportunity cost to the input supplier of the sale of a unit of input.” The term “parity” arises from the fact that the bottleneck carrier is made indifferent to the route chosen. See William J. Baumol and J. Gregory Sidak, “Pricing of Inputs Sold to Competitors,” *Yale Journal on Regulation*, Vol. 11 (1994): 171, 178.

<sup>13</sup> Baumol and Sidak, pp. 185-6.

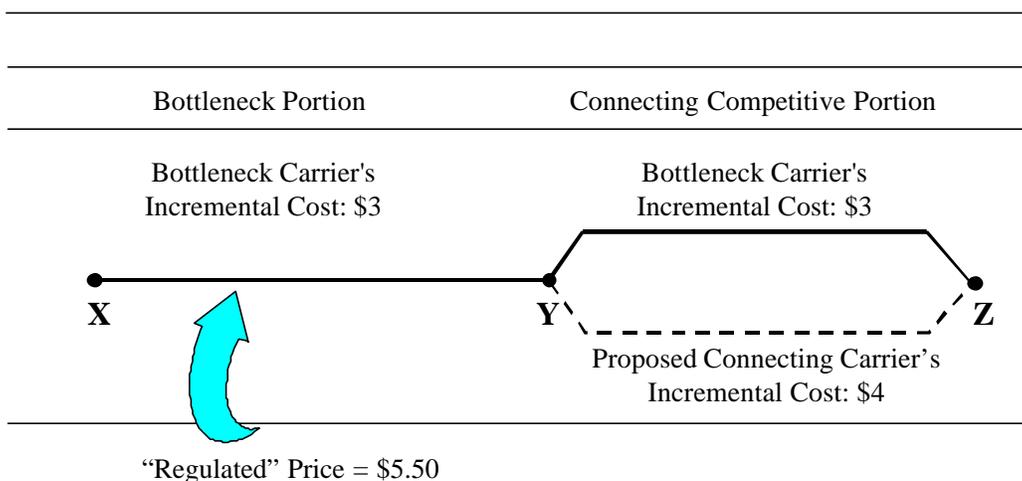
<sup>14</sup> Note that the carrier avoids the \$3 incremental cost of the competitive portion of the route when the traffic moves over the joint route, leaving the carrier with the same \$7 revenue for the service of the bottleneck regardless of the choice of route.

<sup>15</sup> William J. Baumol, Janusz A. Ordover, and Robert D. Willig, “Parity Pricing and Its Critics: A Necessary Condition for Efficiency in the Provision of Bottleneck Services to Competitors,” *Yale Journal on Regulation*, Vol. 14 (1997): 145, claims that “only pricing based on what has come to be called the parity-pricing formula or efficient component-pricing rule (‘ECPR’) permits economic efficiency and competitive neutrality....” Given purported mathematical proofs of the alleged unique efficiency properties of the rule,

(continued...)

If the price for the bottleneck portion were set below the parity principle price, at say \$5.50, Baumol and Sidak claim a new entrant might be able to turn a profit even if its incremental costs are higher than those of the bottleneck carrier.<sup>16</sup> *Ergo*, it is argued, prices lower than the parity principle produce inefficiency.

**Figure 2**  
**Hypothetical Example of Rail Market Access Using the Parity Principle**



- z Price over entire route = \$10.00
- z Profits to inefficient connecting carrier:  $\$10.00 - \$5.50 - \$4.00 = \$0.50$

The parity principle price requires that the bottleneck carrier be *indifferent* between handling all the business itself and cooperating with the connecting carrier at the \$10 final price to the customer. It is, in this sense, that the bottleneck carrier is indemnified financially from the financial consequences of opening up access. Handling the business itself, the bottleneck carrier receives \$10 over the entire route and incurs \$3 in “direct” incremental costs over the competitive portion, leaving a total of \$7 remaining to cover the costs of the bottleneck. Put differently, the monopolist earns a “contribution” of  $(\$10 - 3 - 3) = \$4$  when it provides the service itself, if its “direct” incremental costs on both route segments are \$3. This contribution is labeled the “opportunity cost” of providing access. The \$7 price

<sup>15</sup> (...continued)  
Baumol, *et al.*, infer that proponents of alternative access rules must therefore base their views “largely from their adoption of goals that go beyond attainment of economic efficiency in supply...” (*Ibid.*, p. 146).

<sup>16</sup> *Ibid.*

of access may be thought of as the sum of the “opportunity cost” (\$4) and the “direct” incremental cost (\$3).

By cooperating with the connecting carrier at the parity principle price, it receives the same \$7 to cover the costs of the bottleneck—its “direct” incremental costs over the competitive portion are avoided altogether. The bottleneck owner is therefore no worse off by using the services of the connecting carrier. The appeal of the parity principle stems largely from the indifference of the bottleneck carrier over routing decisions at this “efficient” price.<sup>17</sup>

Proponents of the parity principle often conclude from similar illustrations that no regulatory intervention is necessary to set the terms of access. Indeed, it is argued that, if the ECPR is the only efficient price, any regulatory intervention to set a different price must necessarily result in inefficiency.<sup>18</sup> Baumol, Ordover, and Willig<sup>19</sup> purport to show with a formal mathematical proof that the parity principle is both a necessary and sufficient condition for a “level playing field” for the incumbent and entrant.

More generally, the bottleneck carrier is supposed to determine the business it might lose as a result of interconnection and charge the connecting carrier for the consequent loss of net revenues, defined as the bottleneck carrier’s “incremental revenue minus the incremental costs that this foregone sale would otherwise have brought to [the bottleneck carrier]” (Baumol and Willig, *Economic Principles*,

---

<sup>17</sup> See Baumol and Sidak, p. 186:

...the landlord is said to have chosen to “buy” rather than “make” the *B-to-C* transportation component of the final product.... [T]he efficient component-pricing rule achieves the principle of *indifference*.... [T]he landlord is indifferent as to whether that particular transportation service is provided by itself or a rival... [emphasis added].

<sup>18</sup> William J. Baumol and Robert D. Willig, *Brief of Evidence: Economic Principles for Evaluation of the Issues Raised by Clear Communications Ltd. On Interconnection with Telecom Corporation of New Zealand Ltd* (1992), p. 37, stated that the result of charging prices below the parity principle would “inevitably...creat[e] new inefficiencies and new distorted incentives that harm consumers and the public interest.” Baumol and Sidak, p. 181, claim that the parity principle is “a necessary condition for economic efficiency, and hence for promoting the public interest. That is, product-component prices that do not follow this principle create an incentive for inefficiency whose costs consumers have to pay.”

<sup>19</sup> *Op. cit.*, pp. 151-153.

p. 23). The rule has been characterized as a cost rule by labeling in the calculation the bottleneck carrier's foregone net revenues as "opportunity costs."<sup>20</sup>

There are many problems with this hypothetical, but two stand out.<sup>21</sup> First, the hypothetical example in Figure 2 fails to prove the claimed unique efficiency properties of the parity principle even for the unrealistic examples for which it is applied. It hypothesizes the survival of an inefficient entrant when the bottleneck price is set below that dictated by the parity principle. Recall that Figure 2 assumes the inefficient entrant has incremental costs of \$4, in excess of the efficient level. According to the hypothetical, the inefficient connecting carrier could still make a profit of \$ 0.50 when the access price is set equal to the \$5.50 level.

This attempted illustration of uneconomic routing ignores the prospect of price competition by the incumbent, which the \$5.50 access price was designed to foster. An inefficient competitor cannot survive if the incumbent simply charges the competitive final price of the through service of \$8.50.

---

<sup>20</sup> *Baumol and Sidak*, p. 178:

Opportunity cost refers to all potential earnings that the supplying firm forgoes, either by providing inputs of its own rather than purchasing them, or by offering services to competitors that force it to relinquish business to those rivals, and thus to forgo the profits on that lost business.... The efficient component-pricing rule states simply that the price of an input should equal its average-incremental cost, including all pertinent incremental opportunity costs.

<sup>21</sup> Note that we pass over the admitted defect that the parity principle "cements in" monopoly profit, as the New Zealand courts put it. "Opportunity cost" as calculated includes all forgone profit, including monopoly profit. Proponents conceded this defect but argued that the cure should be to regulate the price of the final service to the consumer to purge it of monopoly profits. The two main defects discussed above were simply ignored. See, for example, Abbott B. Lipsky, Jr. and J. Gregory Sidak, "Essential Facilities," *Stanford Law Review*, Vol. 51 (May 1999): 1234-1237. Further, proponents argued that any attempt to purge monopoly profits by reducing interconnection prices would necessarily induce inefficiencies, on the grounds that ECPR was necessary for economic efficiency. We see below that this certainly is not true. Further, blaming the problem with ECPR on a failure to regulate the final price ignored the fact that, in places like New Zealand, there were no price regulators at the time. As in most applications in a transition regime, the problem there was to establish an interconnection regime so that unregulated price competition could prevail in the market for services to end-use customers. Elsewhere, proponents argued that monopoly profits would not be "cemented in" because ECPR prices would decline when "opportunity costs" declined under retail price competition from entrants. See Gregory Sidak and Daniel F. Spulber, "The Tragedy of the Telecommons: Government Pricing of Unbundled Network Elements Under the Telecommunications Act of 1966," *Columbia Law Review*, Vol. 97 (1997): 1097-1098. However, proponents of the parity principle tout it precisely because the entrant's ability to undercut the incumbent's price is necessarily limited to any efficiency advantage it might have. Baumol, Ordovery, and Willig, *op. cit.*, p. 151. ECPR then cannot permit any entrant's price competition to purge any monopoly profit. Indeed, any incumbent losing out in a "winner-take-all" competition to a more efficient entrant need only raise its retail price by the amount of the entrant's efficiency advantage (or a little less), thereby increasing measured opportunity cost and thus the price of access, to appropriate the entrant's efficiency advantage.

Paying \$5.50 for the bottleneck portion and incurring \$3 in costs on the competitive portion, any efficient firm will need only \$8.50 in retail revenues to cover costs. Competition from opening up access at the efficient price will therefore drive down the price for the entire route to \$8.50 (see Figure 2). At \$8.50 for the final price and \$5.50 for the price of access, any firm (including the incumbent) that is inefficient over the competitive portion will be driven from the market.

*Static economic efficiency and even pricing according to opportunity costs are fully consistent with pricing access at competitive levels, even in these unrealistic hypotheticals.* At a final price to customers of \$8.50, the “opportunity cost” of access will be  $(\$8.50 - 3 - 3 =) \$2.50$ . At this opportunity cost, the price of access called for by the parity principle is  $(\$3 + 2.50 =) \$5.50$ , the competitive price of access. An \$8.50 price of the final product is exactly called for by the “imputation rules” cited by Baumol and Sidak  $(\$5.50 + 3 = \$8.50)$ .

The “proof” of the necessity of ECPR for weak competitive neutrality depends on the implicit (some would say hidden at the time) assumption that a new competitive asymmetry is needed to counter the asymmetry that the entrant, but not the incumbent, engaged in “winner-take-all” price competition. In effect, the ECPR is designed to protect an otherwise efficient incumbent who is powerless to meet price competition from inefficient entrants. But the conclusions were nevertheless applied to situations (such as the U.S. rail industry and the New Zealand telecom industry) where there were, in practice, no such restraints on incumbents’ pricing.

In fact, there is little power to discriminate among alternative access pricing schemes on the basis of static efficiency when all competitors can compete on the basis of price. Even arbitrary prices of access can be justified as necessary and sufficient for a “level playing field” (as defined by ECPR) and static economic efficiency (*i.e.*, efficient routing of traffic).

To illustrate, suppose we arbitrarily assume the price of access in Figure 2 to be zero. If efficient connecting carriers can serve at an incremental cost of \$3, the incumbent will compute an opportunity cost of zero for access and impute an incremental cost (direct incremental cost plus opportunity cost) of \$3 for its own service. The retail price will fall to \$3, but static efficiency nevertheless will hold. Any inefficient carrier with \$4 of incremental costs over the competitive portion of the route cannot compete at a final price of \$3 despite the zero price of access.

Proponents of the parity principle usually at this point object that the bottleneck monopolist cannot recover its total cost (\$8.50) when the access price is set at zero. But a requirement that the monopolist recover total cost, not the principle of economic efficiency in routing choices, is what distinguishes the access price of \$5.50. Static economic efficiency plays no part in discriminating between the zero access price and the \$5.50 price. (Nevertheless, we must hold this thought, because the revenue adequacy objection is founded on what is really going on, disputes over strong competitive neutrality.)

The concept that access charges to firms seeking interconnection can become imputed incremental costs to the bottleneck carrier is critical to the entire discussion over efficient interconnection regimes.<sup>22</sup> Once this fundamental point is understood, the conclusion is inevitable: static economic efficiency (undisturbed competitive advantages going forward for competition over the competitive portion of the route) will be achieved by virtually any access mechanism as long as the incumbent competes on the basis of price and imputes an equivalent access charge to its full incremental cost of service. Any pre-existing competitive advantages or disadvantages due to true efficiency differences will therefore remain undisturbed by the access charge.

To see how restrictive the Baumol and Sidak proof of static efficiency for the parity principle really is, Tye and Lapuerta<sup>23</sup> simply retrace the “proof” of the necessary and sufficient conditions for the parity principle, replacing the parity price with an arbitrary price and removing the artificial handicap that the monopolist is unable to respond to competition with price changes after access is opened at the given price of access. For the purpose of argument, we assume the test for weak competitive neutrality—(1) a monopolist always has a profit incentive to beat a less efficient entrant’s profitable price (given the price of access offered to a less efficient competitor) and (2) the entry of more efficient competitors is allowed in a “winner-take-all” competition. We also assume that the monopolist is required to offer access to any competitor at any price that meets this test of weak

---

<sup>22</sup> Imputation is a two-way street. ECPR starts with an essentially arbitrary “opportunity cost” based on the (possibly monopoly) price of the final service and imputes it to the access price, whereas the “arbitrary price rule” starts with an arbitrary access price and imputes it to the opportunity cost. Both achieve the same weak competitive neutrality.

<sup>23</sup> “The Economics of Pricing Network Interconnection,” pp. 435-450. See also Mark Armstrong, “The Theory of Access Pricing and Interconnection,” *Handbook of Telecommunications Economics*, Martin Cave, Sumit Majumdar, and Ingo Vogelsang, eds. (North Holland, forthcoming).

competitive neutrality, and that the connecting carrier and incumbent always choose prices to maximize profits.

Given any proposed price of access, the only choice open to the monopolist in a “winner-take-all” competition is to beat a connecting carrier’s least profitable price. The test of weak competitive neutrality is met as long as the monopolist finds it profitable to out-compete the connecting carrier if, and only if, the monopolist is more efficient.

In the general case of Figure 2, *any* arbitrary price of access will achieve static economic efficiency in the world where there is no demand elasticity.<sup>24</sup> This is also the case where there is demand elasticity but the monopolist is more efficient, or equally efficient, in terms of incremental costs. To account for the case where there is demand elasticity and the monopolist is less efficient, we have to limit our arbitrary price to one lower than the monopoly retail price minus the incremental costs of the more efficient connecting carrier on the competitive route. Otherwise, the monopolist will have an incentive to out-compete the entrant, even though the monopolist is less efficient, by simply charging the monopoly price.

If it were not for the fact that such sophistry produced a dubious result, our theorem that arbitrary pricing of access was a necessary and sufficient condition for static economic efficiency in the supply of service (*i.e.*, efficient route choice in our hypothetical) would be capable of inflicting great harm. After all, the proof merely shows that the incumbent and entrant should pay the same price, that the price should not force a more efficient entrant to charge higher than monopoly prices, but says nothing about what that same price of access should be. In the wrong hands, practitioners of the arbitrary pricing theory would claim that their theory was the sole defender of efficiency goals, that any opposing theory could only be interpreted as espousing non-efficiency goals into the process, and that any opposing theory called for requiring the monopolist to supply access for a different price than it supplied access to itself, *etc.* (all the arguments offered in support of voluntary negotiations and the parity principle).

---

<sup>24</sup> Demand elasticity describes the situation where the quantity of a good or service demanded by consumers will vary depending on the price.

Obviously, the goal here is not to espouse arbitrary pricing of access. The point is that seemingly innocuous changes in the assumptions in these claims for unique static efficiency results can turn claimed “unambiguous” results into highly peculiar, or even arbitrary, results.

The assumption that a given price for the through service must be sustained by the monopolist is critical to the unique static efficiency claims for the parity principle in Figure 2. Baumol, Ordover, and Willig, *op. cit.*, justify the assumption of a given price on the grounds that the monopolist “cannot afford to charge a price as low as that of a rival” unless it charges for access to rivals what it is already implicitly charging to its own customers. And what is the test of what the monopolist can “afford”? The answer automatically built into the parity principle was that it could “afford” no price that produces less profit than the monopolist would make in the absence of competition. The real argument for the parity principle, then, is that there should be no price competition or threat to the monopolist’s profitability.

Demonstrations that the parity principle is a necessary and sufficient condition for economic efficiency make implicit assumptions that may be hidden to many observers. One assumption is that the only efficiency that counts is static economic efficiency—which carrier has the lowest incremental cost. Another implicit assumption is that the test for competitive neutrality must be a “winner-take-all” competitive regime—a less efficient firm as measured in terms of incremental costs must be foreclosed from the market entirely.<sup>25</sup> Even more important is the assumption that the firm seeking interconnection has no sunk or fixed costs, *i.e.*, is viable at revenues equal to incremental cost, an assumption to which we now turn.

A second major problem with the hypothetical is that under most realistic applications it does not achieve competitive neutrality with regard to recovery of total costs.<sup>26</sup> This may be observed

---

<sup>25</sup> The explanation above hypothetically assumed Bertrand competition in the spirit of showing that ECPR is not uniquely efficient under the conditions specified. More generally, the competition is likely to be a variant of Cournot competition, where firms price in excess of incremental costs and share the market, as discussed below.

<sup>26</sup> See Tye, “The Voluntary Negotiations Approach to Rail Competitive Access in the Transition to Deregulation,” *Antitrust Bulletin*, Vol. 32, No. 2 (Summer 1987): 415-450; “Pricing Market Access for Regulated Firms,” and “Reply,” *Logistics and Transportation Review*, Vol. 29, No. 1 (March 1993): 39-68, 75-80; and “The Pricing of Inputs Sold to Competitors,” *Yale Journal on Regulation*, Vol. 11, No. 1 (1994): 203-224.

intuitively by noting that incumbents always argue for ECPR while new entrants almost always oppose it. In fact, some telecom carriers do not even try to be consistent—they support ECPR when they are the incumbent monopolist and oppose it in other regulatory jurisdictions when they are the struggling fringe competitors seeking interconnection (some experts have been known to switch sides as well!). The parity principle only makes the incumbent monopolist neutral with respect to profits under monopoly and competition—it does not achieve parity between the incumbent monopolist and the entrant in terms of recovering total costs.

Indeed, an equally efficient entrant cannot recover sunk costs<sup>27</sup> under the parity principle, but would be foreclosed from the market.<sup>28</sup> We can see this by returning to Figure 2 and assuming that both carriers incur incremental costs of \$3 over the competitive portion of the route and \$2 in sunk costs. Under the \$7 price of access called for by the parity principle, an equally efficient competitor seeking access cannot recover total costs of \$5. No equally efficient entrant would ever voluntarily sink costs under such a regime. These considerations suggest that the policy regarding interconnection must turn on a richer set of considerations than mere static economic efficiency.

#### **IV. DEFINITIONS OF “WEAK” AND “STRONG” COMPETITIVE NEUTRALITY**

With the benefit of the example in Figure 2, we can see that the concept of competitive neutrality needs to be expanded beyond the initial concept of just achieving static economic efficiency to include also recognizing concerns over recovery of total costs (or what has been called “firm viability constraints”). The distinction between weak and strong competitive neutrality achieves this.

---

<sup>27</sup> Sunk costs are defined as costs previously incurred to provide the service in question but that have no salvage value upon exit from the market. They are usually not included in the measures of incremental costs used to promote ECPR.

<sup>28</sup> Note that the hypothetical either assumes that there are no sunk costs or ignores entirely the problem of their recovery. This is despite the fact that proponents of the theory usually argue that incumbents must price well above incremental costs to recover total costs.

## **A. “WEAK” COMPETITIVE NEUTRALITY**

“Weak competitive neutrality” is competition on the basis of going-forward efficiency differences. An interconnection regime achieves weak competitive neutrality if ownership of the accessed facility confers neither an advantage nor a disadvantage with respect to prospective competition on the basis of incremental costs. In practice, what this means is that the interconnection regime should always permit the most efficient firm to compete successfully via price competition—there should always be a price available to the lowest-cost carrier that will permit it to succeed in a “winner take all” competition, and that price should be profitable.

Clearly, a failure to achieve weak competitive neutrality would be a troublesome property of any interconnection regime, as it could either protect inefficient incumbents and perpetuate monopoly profits or promote inefficient entry (“uneconomic bypass”). Fortunately, weak competitive neutrality is a rather permissive standard for judging interconnection regimes, as it is satisfied by a wide variety of interconnection prices in a regime of price competition.

## **B. “STRONG” COMPETITIVE NEUTRALITY**

“Strong competitive neutrality,” on the other hand, requires that the price of interconnection not perpetuate monopoly rents, that the incumbent be compensated for any legacies of regulation, and that equally efficient competitors have the same opportunity to expect to recover their total costs, including sunk or fixed costs.<sup>29</sup> As with weak competitive neutrality, more efficient competitors should be able to reap the advantages of their efficiency gains. It turns out that, as the name suggests, strong competitive neutrality is a far more demanding test than weak competitive neutrality.

---

<sup>29</sup> A considerable debate has emerged over whether cost recovery in access disputes should be based on historical costs or the “forward-looking” total costs of a hypothetical new entrant, an issue beyond the scope of the present discussion. In competitive markets with free entry, prices tend to gravitate to the latter. However, the difficulty created if such pricing produces a systematic inability to recover historical costs under the prior regulatory regime (“stranded costs”) is addressed below. Most regulatory regimes rely on historical cost to ensure both administrative feasibility and that competitors have a fair opportunity to recover their capital costs.

### C. INDIFFERENCE COROLLARY

A test of achieving weak or strong competitive neutrality is the indifference corollary: would a firm be indifferent as to whether it bought or sold interconnection, *i.e.*, has the effect of the asymmetry due to the ownership of the accessed facility been neutralized?<sup>30</sup> As noted above, any rational firm would always choose to be the incumbent under the parity principle, thereby violating this test.

### D. GENERALIZATION TO OTHER COMPETITIVE REGIMES

We have defined weak competitive neutrality in terms of the competitive regime invoked by the proponents of the parity principle—namely “winner-take-all” (Bertrand price) competition. More generally, we must expand our concepts of competitive neutrality to other regimes akin to Cournot competition. There, two or more oligopolists share a market while pricing in excess of incremental costs. In such competitive markets, (1) all firms have an equal opportunity to recover fixed costs and (2) each competitor reaps the benefits of its efficiency advantages and bears the costs of any inefficiencies. These two properties generalize the previously identified tests for strong and weak competitive neutrality.<sup>31</sup> Considerations of dynamic efficiency (*i.e.*, efficiency over time) also must be considered in testing for competitive neutrality in such markets.

### E. REFLECTIONS AND SUMMARY

The results of our analysis of the hypothetical may now be generalized to a more profound understanding of the relevant concepts. Understanding the distinction between “weak” and “strong” competitive neutrality is the key to resolving many of the issues surrounding interconnection disputes. The economic arguments supporting the parity principle rely upon its alleged unique ability to achieve

---

<sup>30</sup> In this sense, competitive neutrality seeks to accomplish the same symmetry that “contractual equilibrium” does with regard to the sunk cost legacy of the prior regulatory regime. See John R. Meyer and Tye, “The Regulatory Transition,” *American Economic Review*, Papers and Proceedings, Vol. 75, No. 2 (May 1985): 46-51; and “Toward Achieving a Workable Competition in Industries Undergoing a Transition to Deregulation: A Contractual Equilibrium Approach,” *Yale Journal on Regulation*, Vol. 5, No. 2 (Summer 1998): 273-297, republished in *Public Utilities Law Anthology*, Vol. 11 (1988).

<sup>31</sup> For an illustration of the application of such tests, see Tye, “Pricing Rail Competitive Access in the Transition to Deregulation with the Revenue/Variable Cost Test,” *Antitrust Bulletin*, Vol. 32, No. 1 (Spring 1987): 101-135. Reprinted in *Public Utilities Law Anthology*, Vol. 10 (1987).

the choice of the carrier with the lowest incremental costs, *i.e.*, “static” economic efficiency. However, weak competitive neutrality is achievable under a wide variety of interconnection mechanisms and is virtually irrelevant to the choice of appropriate mechanism. There may be good reasons for choosing among these alternatives, but achieving static economic efficiency usually will not be one of them. The choice among these pricing schemes therefore turns on other (sometimes hidden) assumptions about what the access pricing scheme should accomplish in addition to achieving weak competitive neutrality.

Weak competitive neutrality is an amazingly robust property of interconnection regimes. But, perhaps paradoxically, it is so robust that it has little discriminatory power to tell us what the appropriate regime ought to be. For this determination, we need to consider an additional dimension that is recognized in strong competitive neutrality.

The lesson is to beware of claims that interconnection disputes can be resolved by reference to a purported unique ability to achieve economic efficiency, as embodied in weak competitive neutrality. The parity principle achieves unique results only because it supplements the goal of weak competitive neutrality with the requirement that the monopolist be indemnified from the loss of profit resulting from the introduction of competition—a strange constraint to impose on a transition regime. Instead, the goal of strong competitive neutrality supplements the goal of weak competitive neutrality with true parity, including an equal opportunity for recovery of total costs.

Some readers will accept this rather simple result (though it is one with profound consequences) as an obvious property of an access pricing scheme. The weak form of competitive neutrality will almost always be accomplished in an access pricing scheme, because the incremental costs of both entrants and incumbents will be raised by the same amount—the interconnection charge—as long as the incumbent competes on the basis of price and “imputes” the charge to its incremental costs. The economically appropriate interconnection mechanism must be based on something other than weak competitive neutrality—the real question is what the “tie-breaker” ought to be.

## **V. HYPOTHETICAL EXAMPLES ILLUSTRATING THE ROBUSTNESS OF WEAK COMPETITIVE NEUTRALITY**

There is nothing new or remarkable about the weak competitive neutrality of most interconnection schemes. After all, there are numerous examples of raising revenue through competitively neutral methods. Sales taxes are one example. They create no artificial competitive advantages and disadvantages as long as they are borne equally by all competitors, and they can be designed to recover as little or as much as desired (up to some level representing the monopoly price).

Consider a group of merchants selling oriental rugs in a highly competitive market at a bazaar. Assume that all merchants are price takers and only earn a competitive rate of return, so that the same rug would sell for the same price. They seek to pay the rent on a previously-constructed facility that will be used by all merchants. Obviously, if one merchant had to pay the cost of the building, that merchant would be at a competitive disadvantage. If all merchants assess themselves an equal sales tax that they pay into an escrow fund to pay the rent, all merchants are free to compete on equal terms on the basis of their true efficiency differences going forward. The sales tax the customer pays on a rug of equivalent price is the same regardless of which merchant he or she patronizes. And the competitive neutrality is the same whether we assess the levy on the merchants (who include it as a cost of business in their prices) or on the customers directly. The same result holds even if only one merchant is obligated legally to pay the rent, but is allowed to assess on all other merchants an actuarially fair sales tax (access charge) that exactly offsets the per unit liability. Finally, customers get the benefits of true efficiency gains as a result of competitive pressures on the rug merchants, despite the requirement to pay the rent.

The sales tax analogy also points to the “robustness” of weak competitive neutrality. The playing field will be level regardless of whether the sales tax is one percent or five percent or any other amount—as long as the tax is indeed recovered in a uniform, non-discriminatory manner. Thus, the narrow goal of preserving forward-looking relative efficiency differences does not, by itself, require any particular access price (whether for the bazaar or for the costs of providing the bottleneck facility).

The parity principle supplements the principle of static economic efficiency with the assumption that the incumbent monopolist should be insulated from price competition. A better approach instead is to supplement the concept of weak competitive neutrality with that of “strong” competitive neutrality. Strong competitive neutrality includes weak competitive neutrality, but not vice versa. As we have demonstrated, a wide range of access pricing rules can achieve weak competitive neutrality. This rather profound result permits us to concentrate on strong competitive neutrality, which is the much more important and useful condition. This result also tells us where to look for hidden assumptions in “proofs” of unique achievement of economic efficiency. Under strong competitive neutrality, competition will be fairer and will allow equal dynamic competition for new products and services that require investments, as well as efficient operations.

## **VI. APPLICATION OF CONCEPTS OF COMPETITIVE NEUTRALITY**

### **A. AUSTRALIA: APPLICATION TO RECOVERY OF ACCESS DEFICIT**

<sup>32</sup>

This application of the concept of competitive neutrality arose from economic arguments that were made to the Australian Competition and Consumer Commission (ACCC) in the course of its consideration of access undertakings proposed by Telstra for the terms of its supply of interconnection services.

These same arguments arose in the course of the arbitration of disputes between Telstra and other carriers over the price of PSTN origination and termination services. The ACCC arbitrated these disputes at first instance. Telstra then initiated an appeal of the ACCC’s determinations to the Australian Competition Tribunal,<sup>33</sup> although these proceedings were withdrawn prior to any decision

---

<sup>32</sup> This discussion relies heavily on the economic principles in the non-confidential portions of the Affidavit of William B. Tye (December 10, 2002) and the Second Affidavit of William B. Tye (March 2002), Commonwealth of Australia, Trade Practices Act 1974, filed on behalf of ACCC, before the Australian Competition Tribunal, in re Application by Telstra Corporation Ltd. for Review of a Final Determination of the ACCC Made on 11 September 2000 in Respect of an Access Dispute.... This case was settled, so I have chosen to illustrate the relevance of competitive neutrality by reference to the public record in the proceeding. Thus it does not address all of the issues before the Tribunal, especially many of the arguments over economic efficiency.

<sup>33</sup> It was in the course of these proceedings that the ACCC sought my opinion.

being made. In this paper, I do not refer to material that was provided in the course of these arbitration hearings other than what is publicly available, as the hearings were conducted in private and subject to confidentiality restrictions.

The views on the so-called “access deficit contribution” in particular invoked the concept of competitive neutrality. The contentious issues that were raised by the carriers were summarized by the ACCC as follows:

From the ACCC’s forward looking modeling of the customer access network (local loop) it appears that the access provider incurs a greater cost in giving access to the network than it can possibly recover from the line rental and connection revenue under applicable legislative retail price controls. This is described as the access deficit (AD). The increment to the access price in respect of the access deficit is described as the access deficit contribution (ADC).

What implications are there for the inclusion or omission of an ADC for economic efficiency in use of or investment in the services or for the telecommunications network by which the services are provided? What would be the implications for competition in the downstream markets? Should an ADC be allowed?

How should an access deficit be calculated?

Given that the access deficit is incurred in the course of providing a range of telecommunications services, how should it be apportioned between those services?

This issue therefore concerns:

- The proper methodology for calculating the access deficit (AD)<sup>34</sup>;
- If such a deficit exists, whether it should be recovered in part by charges for the domestic PSTN originating and terminating services through an access deficit contribution (ADC); and
- If so, the proper method for calculating the appropriate amount to be recovered

---

<sup>34</sup> The term “access” is sometimes used to refer to two different features of the Australian telecommunications network. As the ACCC’s report (*A Report on the Assessment of Telstra’s Undertaking for the Domestic PSTN Originating and Terminating Access Services*, July 2000, hereinafter “July 2000 Report”) states, Telstra supplies interconnecting telecommunications carriers with access to its domestic PSTN. But the Report (p. 22) also notes that the PSTN in part consists of a “customer access network,” or “CAN,” which connects each end-use customer to the network. Because of the central issue of the access deficit contribution to this discussion, I am using “access” only in the second sense. I use terms like “interconnection,” “interconnection services,” and “domestic PSTN originating and terminating services” to describe the services at issue here which Telstra provides to carriers seeking to compete with Telstra in long-distance and other markets. These terms are intended to be synonymous with “declared PSTN services” as used in the July 2000 Report.

in the charges for the domestic PSTN originating and terminating services.

The July 2000 Report by the ACCC concluded that there is indeed an AD and it should be recovered, at least in part, through an ADC. Both of these propositions, however, were disputed, to differing degrees, by the carriers. Although there were many issues, a chief dispute centered on the appropriate amount of the ADC, an issue which cannot be separated from the “distribution key” (*e.g.*, minutes vs. calls) for apportioning the AD among Telstra’s services (domestic PSTN originating and terminating vs. all other PSTN services).

Having determined the total AD, the ACCC apportioned it among the services based on a 50/50 weighted average of end-use customer minutes and calls. The decision was based on the lack of a compelling rationale for the proposed alternatives, the results of the Commission’s “sanity test” of the end results, and the desire to achieve a nondiscriminatory apportionment of the burden.

The carriers invoked a number of efficiency arguments for competing distribution keys. An interesting property of these arguments is that carriers seeking interconnection had call lengths different from those of the incumbent supplier of interconnection services. As a result, whether calls (“flag fall charges”) or minutes was used as the basis for prorating the AD had a significant effect on the absolute level of the interconnection charges.<sup>35</sup>

The place to start in understanding the necessity to include a provision for the ADC in the price of domestic PSTN originating and terminating services is to identify the relevant applicable legal and economic principles. I review the legal guidelines not as an expert at law, but because the economic principles must be guided by the legal constraints.

As explained by the ACCC’s July 2000 Report, under Part XIC of the Trade Practices Act 1974, “declaration” of a service, such as the interconnection service, requires an incumbent carrier such as Telstra to provide the service to other carriers. In summary, declaration of the interconnect service means that, should Telstra be requested by another carrier to supply the service, Telstra is required

---

<sup>35</sup> Apportionment of the AD on the basis of calls would substantially increase the amount of the AD imposed on domestic PSTN originating and terminating services as compared with apportionment based on minutes, increasing the amount for 2000-01 from \$83 million to \$144 million. ACCC, July 2000 Report, p. 25.

to:

- Supply the declared service;
- Take all reasonable steps to ensure that the technical and operational quality of the service supplied to the service provider is equivalent to that which the access provider is supplying to itself;
- Take all reasonable steps to ensure that the fault detection, handling and rectification which the service provider receives in relation to the declared service is of equivalent technical and operational quality as that provided by the access provider to itself;
- Permit interconnection of its facilities with the facilities of the service provider;
- Take all reasonable steps to ensure that the technical operational quality and timing of the interconnection is equivalent to that which the access provider provides to itself;
- If a standard is in force under s. 384 of the Telecommunications Act 1997, take all reasonable steps to ensure that the interconnection complies with the standard;
- Take all reasonable steps to ensure that the service provider receives interconnection fault detection, handling and rectification of a technical and operational quality and timing that is equivalent to that which the access provider provides to itself;
- Provide particular billing information to the service provider; and
- Supply additional services in circumstances where a declared service is supplied by means of conditional-access customer equipment.<sup>36</sup>

From an economic point of view, these provisions for “mandatory interconnection” are necessary to achieve a successful transition to effective competition. Moreover, if the supplier of declared services cannot agree with the carrier seeking interconnection, ACCC must arbitrate the dispute. This, too, is necessary, because incumbent carriers have a strong economic incentive to deny interconnection or to allow it on terms that frustrate the development of effective competition.

Section 152CR of the Trade Practices Act contains the relevant criteria to be applied in making a determination in arbitration of an access dispute under Part XIC of that Act. This section provides that:

1. The Commission must take the following matters into account in making a determination:
  - a. Whether the determination will promote the long-term interests of end-users of carriage services or of services supplied by means of carriage services;
  - b. The legitimate business interests of the carrier or provider, and the carrier's or provider's investment in facilities used to

---

<sup>36</sup> ACCC, July 2000 Report, p. 15.

- c. supply the declared service;  
The interests of all persons who have rights to use the declared service;
  - d. The direct cost of providing access to the declared service;
  - e. The value to a party of extensions, or enhancement of capability, whose cost is borne by someone else;
  - f. The operational and technical requirements necessary for the safe and reliable operation of a carriage service, a telecommunications network or a facility;
  - g. The economically efficient operation of a carriage service, a telecommunications network or a facility.
2. The Commission may take into account any other matters that it thinks are relevant.

The Act therefore permits the ACCC to consider a wide variety of factors in arbitrating access disputes. It has wisely determined that the interests of end users, Telstra, and competitive carriers are best balanced by establishing interconnection charges that achieve effective competition, while permitting Telstra to pursue its legitimate business interests in achieving revenues adequate to recover the costs of an efficient supplier of domestic PSTN originating and terminating services and a risk-adjusted return on the PSTN assets.

The Commission's pricing methodology properly started with the "direct costs of providing access to the PSTN services." Apart from any legal requirements, this is appropriate because all parties have a strong interest in the incumbent supplier (Telstra) recovering the costs of an efficient supplier of interconnection services. While there may be disputes over the details of measuring these costs, the requirement follows as a matter of basic economic regulatory principles<sup>37</sup> (as well as, of course, the relevant governing Act).

Even more controversial than the measurement of the cost of the domestic PSTN originating and terminating services is the "access deficit contribution" (ADC). The possible need for such a contribution is a legacy of the historical cross subsidy inherent in low basic rates for local service, to be offset by a cross subsidy from toll services such as long distance. More recently, the AD has been imposed by price controls on Telstra.

---

<sup>37</sup> Consult virtually any textbook on regulatory economics, such as James C. Bonbright, *et al.*, *Principles of Public Utility Rates* (Arlington, VA: Public Utilities Reports, 1988).

The term “competitive neutrality” was used to characterize various proposals in this proceeding, often without a clear understanding of its meaning.<sup>38</sup> Properly defined, competitive neutrality can be a very useful guiding principle in assessing proposed access prices, *e.g.*, in an undertaking, or in the course of arbitration of disputes. Under the indifference corollary, competitive neutrality requires that supplying domestic PSTN originating and terminating services to competitors is neither an advantage nor a disadvantage in competing in markets subject to competitive entry, *i.e.*, the interconnection prices and rules are neutral to the outcome of the competitive fray for long-distance services and the like. Put differently, a carrier seeking to compete for long distance and the like would be indifferent between being the buyer or the seller of domestic PSTN originating and terminating services under the competitive neutrality principle.

In the cases at issue, the principle of strong competitive neutrality helps to distinguish among the proposed alternatives, so as to balance the interests of the buyer and seller of interconnection services. It is clear that the access deficit (again assuming correct measurement) is itself not competitively neutral, in that it is incurred only by the supplier of domestic PSTN originating and terminating services. There may well be a variety of sources for the revenues needed for the cross subsidy. For present purposes, I assume, however, that even an efficient supplier of access would have to charge above the costs of domestic PSTN originating and terminating services to cross subsidize the AD. Unless entrants’ services are also required to cross subsidize the AD, strong competitive neutrality may be violated. In the alternative, there may be an incentive for “uneconomic bypass,” *i.e.*, even inefficient entrants can compete effectively for long-distance services and the like because they (unlike the incumbent supplier of interconnection) would not be obligated to contribute to the AD.

Having said that, the problem is that a monopoly supplier of domestic PSTN originating and

---

<sup>38</sup> Experts for the carriers defended their proposals in terms of “competitive neutrality” initially without clearly defining the term. Another illustration, provided by the Productivity Commission, *Telecommunications Competition Regulation*, March 2001, p. 17, stated that “competitive neutrality” would require the inclusion of something akin to the “local call surcharge” in the price of interconnection. The Commission does not define precisely what it meant by the term, but it states that the result would be that “the access deficit for Telstra’s sales to its own divisions would be the same as rivals.” However, if this is how the Commission defines the term, it is not a reliable standard for determination of the level of interconnection charges. Any arbitrary price would achieve this standard if, and only if, it were implemented by a mandatory internal transfer price system requiring that “the access deficit for Telstra’s sales to its own divisions would be the same as rivals.” Such a standard thus tells us nothing regarding the appropriate magnitude of the charge.

terminating services has an incentive not only to charge interconnection prices to fund the AD, but to add monopoly profits as well, unless constrained by regulation. Indeed, the supplier of interconnection has an incentive to impose a “price squeeze” on competitors by charging interconnection prices high enough to prevent even efficient entrants from recovering their total costs.<sup>39</sup> The task then is to identify an interconnection price consistent with enabling the recovery of the AD, but that is not so high as to preclude competition by efficient entrants or to encourage uneconomic bypass of the PSTN.

Proposals to achieve this balance may be thought of as attempts to achieve strong competitive neutrality. Efficient buyers and sellers of interconnection must both have a fair opportunity to recover total costs. The pricing regime should generally incorporate at least two features. First, any asymmetric burden on the incumbent must be carefully measured to prevent under- or over-recovery. Second, transparent “imputation rules” or transfer prices can be used to ensure that the monopolist’s recovery mechanism in its own prices is competitively neutral.<sup>40</sup>

Considerations of weak competitive neutrality are likely to be less significant than implied by the carriers’ arguments. However, an important asymmetry should be recognized. We have proven that a wide range of interconnection fees can achieve weak competitive neutrality. Nevertheless:

- (a) Elevated interconnection prices can violate both weak and strong competitive neutrality by enforcing a “price squeeze” against carriers seeking interconnection, thereby foreclosing economic efficiency in the short run, and appropriate entry decisions in the long run.
- (b) By the same token, the rate structure (the per-call and per-minute rates) for establishing interconnection charges may not be a matter of indifference as to competitive neutrality. The structure can frustrate both weak and strong competitive neutrality if it determines the total level of charges which entrants

---

<sup>39</sup> Interestingly, the Commission’s July 2000 Report, p. 20, states that the legislative history of the Act precludes the monopolist’s recovery of “consequential costs,” which it appears to equate to the “opportunity costs” that are the central feature of the ECPR.

<sup>40</sup> Note that the Tye and Lapuerta proof that arbitrary prices of access achieved weak competitive neutrality in the circumstances of Figure 2 relied upon the assumption that the bottleneck owner imputed the arbitrary access price to its own incremental costs and prices. “Imputation rules” have been devised that would require, for example, that the carrier supplying interconnection charge no lower than its TSLRIC for competitive services plus the interconnection charges to competitors.

must surmount to compete effectively.

In addition, we must consider other likely efficiency losses associated with inflated interconnection prices. Even apart from the effect on prices charged end users (where a pass through would cause losses of traffic by end users) and the possible loss of dynamic efficiency gains due to diminished competition, inflated interconnection prices can create a strong incentive for “uneconomic bypass” of the PSTN.<sup>41</sup> The “local loop” is potentially in competition with competitive carriers who provide their own telephony, internet access, and television via cable or satellite access. These options become particularly attractive to large employment complexes, government facilities, shopping centers, and apartment complexes under common management and the like. A few minutes walking around the streets of any major city will confirm that bypass of the PSTN is no idle threat. In the July 2000 Report, the Commission noted interconnection charges represent a significant portion of the cost of average retail prices and are likely to have “a material impact on the prices charged to end-users.”<sup>42</sup>

#### **B. NEW ZEALAND: ECPR FOUND UNNECESSARY FOR EFFICIENT INTERCONNECTION REGIME**

In New Zealand, the “Efficient Component Pricing Rule” (ECPR) became known as the Baumol-Willig Rule, and was justified as the unique solution to achieving weak competitive neutrality, with alleged “proofs” that any alternative regime would impose efficiency losses.<sup>43</sup> At first, its proponents made far reaching claims for the success of the theory.<sup>44</sup> More recently, the government has dealt rather harshly with the theory:

---

<sup>41</sup> Of course, as the debate over the U.S. Federal Communications Commission’s (FCC’s) access regulations illustrates, understated prices of access, combined with mandatory unbundling, can create disincentives to competition from facilities-based entrants. See T. Jorde, G. Sidak, and D. Teece, “Innovation, Investment, and Unbundling,” *Yale Journal on Regulation*, Vol. 17 (2000): 8, and G. Sidak and D. Spulber, “Deregulation and Managed Competition in Network Industries,” *Yale Journal on Regulation*, Vol. 15 (1998): 124-125.

<sup>42</sup> July 2000 Report, p. 34; see also *ibid.*, p. 36.

<sup>43</sup> See Tye and Lapuerta, “The Economics of Pricing Network Access in the Market for Telecommunications in New Zealand,” prepared for the Minister of Commerce and the Minister of Communications on behalf of Clear Communications, Ltd., February 17, 1995; and “The Economics of Pricing Network Interconnection in the Market for Telecommunications in New Zealand,” International Telecommunications Society, *Interconnection: The Key to the Network of Networks*, New Zealand, April 10-12, 1995.

<sup>44</sup> William J. Baumol and J. Gregory Sidak, “The Pricing of Inputs Sold to Competitors: Rejoinder and Epilogue,” *Yale Journal on Regulation*, Vol. 12 (1995): 179-185.

To summarize, the BW rule [the “Baumol-Willig” rule, as the parity principle was known] was solely designed to achieve the goal of productive efficiency. In the simplest, static and no-uncertainty contexts the rule achieves this goal. However, if other factors are introduced, such as uncertainty and sunk costs, or if the dynamic benefits of competition are considered, the BW rule may, in fact, deter efficient entry.

...Together [this and other] considerations raise concerns about the appropriateness of the BW rule for pricing interconnection in the New Zealand regulatory environment [emphasis added].<sup>45</sup>

In response to the Privy Council’s endorsement of the Baumol-Willig rule in an environment with no price regulation,<sup>46</sup> a statute was recently passed to provide for some regulatory control of the telecommunications carriers, including appointing a commissioner with power to resolve interconnection disputes. In a schedule to the Act, the Courts’ endorsement of ECPR was overruled and its use banned in New Zealand.<sup>47</sup>

---

<sup>45</sup> The New Zealand Ministry of Commerce and Treasury, *Regulation of Access to Vertically-Integrated Natural Monopolies* (August, 1995), p. 33.

<sup>46</sup> As we have seen above, the proof of the unique efficiency claims for ECPR relies on the implicit assumption of constraints on the incumbent’s ability to compete on price (not true in New Zealand), while the complaint that ECPR “cements in” monopoly prices was met with proposals for a “supplemental rule” (Baumol, Ordover, and Willig, *op. cit.*) to purge monopoly prices by price controls on retail services (also non-existent in New Zealand). The Court then accepted the Baumol-Willig claim that any interconnection prices other than ECPR would necessarily induce inefficiencies, thereby giving a free hand to incumbent monopolists.

<sup>47</sup> The Telecommunications Act 2001, Schedule 1, Clause 2 states:

2 Application of Baumol-Willig rule

(1) To avoid doubt, the Baumol-Willig rules does not apply in respect of any applicable initial pricing principle or any applicable final pricing principle that provides for a forward-looking cost-based pricing method as a possible pricing principle.

(2) For the purposes of subclause (1), the Baumol-Willig rule means the pricing rule known as the Baumol-Willig rule as referred to in *Telecom Corporation of New Zealand Ltd v. Clear Communications Ltd* (1994) 6 TCLR 138, PC.

Note fn. 39 above, where the ACCC interprets a similar prohibition in the legislative history.

**C. U.S. ELECTRIC UTILITIES: WEAK COMPETITIVE NEUTRALITY COMPATIBLE  
WITH WIDE RANGE<sup>48</sup> OF STRANDED COST RECOVERY MECHANISMS**

The problem of “stranded costs” was undoubtedly the most vexatious issue confronting customers, utilities, investors, and regulators in the electric utility industry.<sup>49</sup> Even when all parties could agree that a transition to more competition and less regulation would be desirable, stranded costs seem to be a major roadblock to structuring a successful transition.<sup>50</sup> A major pillar of this roadblock was the belief among some observers that recovery of stranded costs is incompatible with competitive markets and an impediment to a successful transition to deregulation.<sup>51</sup>

What are these “stranded costs”? There are numerous definitions and disagreements over how to define “stranded costs.” For the purposes of this discussion, “stranded costs” are defined to be investments or cost commitments (*i.e.*, “sunk costs”) made by incumbents in the prior regime of cost-of-service regulation that cannot expect to earn their cost of capital and/or be recovered from

---

<sup>48</sup> This discussion draws heavily on Tye and Frank C. Graves, “The Economics of Negative Barriers to Entry: How to Recover Stranded Costs and Achieve Competition on Equal Terms in the Electric Utility Industry,” *Natural Resources Journal*, Vol. 37 (Winter 1997): 175-250.

<sup>49</sup> See Benjamin A. Holden, “Shift to Deregulation May Cost Electricity Industry \$135 Billion,” *The Wall Street Journal*, August 7, 1995, p. B4; and “Moody’s Report Predicts \$135-Billion in Stranded Costs Over Next 10 Years,” *Electric Utility Week*, August 14, 1995, p. 3. This figure represents 80 percent of the equity base of the electric utility industry, according to the Moody’s Investor’s Service, “Stranded Costs Will Threaten Credit Quality of U.S. Electrics,” August 1995.

<sup>50</sup> See Benjamin A. Holden, “Power Plays: California’s Struggle Shows How Hard It Is to Deregulate Utilities,” *The Wall Street Journal*, November 28, 1995, pp. A1 and A11, and “California Regulators Approve Plan to Deregulate Market for Power by ‘98,” *The Wall Street Journal*, December 21, 1995, p. A2.

<sup>51</sup> Typical of these claims, David W. Penn, “Where Have You Gone, Dr. Kahn?,” *The Electricity Journal*, December 1994, pp. 2-3, asserts:

Stranded cost payments have anticompetitive effects. They will delay or prevent desired new competition—by erecting a barrier to entry for alternative suppliers and trades; by discriminatorily favoring and shielding certain individual competitors; by artificially giving an entrenched competitor a paid-off asset with which to compete with rivals; and by distorting transmission prices if such generation charges are placed there....

Putting generation stranded cost charges on transmission is indeed a tying arrangement....

See also Robert Michaels, “Unused and Useless: The Strange Economics of Stranded Investment,” *The Electricity Journal*, October 1994, pp. 12-22 and Johannes P. Pfeifenberger and Tye, “The Not-So-Strange Economics of Stranded Investments,” *The Electricity Journal*, November 1994, pp. 3, 80.

customers under the proposed new rules of competitive access to utility systems.<sup>52</sup> Stranded costs are also sometimes referred to as “transition costs.”

This definition of stranded costs means to convey the common sense idea that stranded costs represent “negative barriers to entry”<sup>53</sup> that arise from competitive handicaps that originate purely because only incumbents are burdened with the sunk costs arising in the past regulatory regime. They do not arise from the true efficiency advantages or disadvantages of incumbency. Stranded costs thus represent an artificial competitive asymmetry in favor of entrants that would not arise in a purely competitive market.<sup>54</sup> Entrants<sup>55</sup> obviously suffer no such handicaps from the legacy of regulation, in the absence of a stranded cost recovery mechanism.

How shall we know “competitive neutrality,” a “level playing field,” or “competition on equal terms” when we see them? Again, the indifference corollary seems appropriate: the test for “strong” competitive neutrality is that the stranded cost recovery mechanism, combined with the obligation of the incumbent to amortize the sunk cost legacy from the past regulatory regime with the revenues provided by the recovery mechanism, should in combination be neither a competitive advantage nor

---

<sup>52</sup> By this definition, we do not intend to depart from conventional definitions of stranded costs and methods for measuring their magnitude.

<sup>53</sup> “Barriers to entry” are generally defined in economics as cost advantages held by incumbents over entrants. We have dubbed the reverse situation to be one of “negative barriers to entry.” By definition, the sunk-cost disadvantages arising from incumbency in the transition to deregulation are the stranded costs.

<sup>54</sup> William J. Baumol, Paul L. Joskow, and Alfred E. Kahn, “The Challenge for Federal and State Regulators: Transition from Regulation to Efficient Competition in Electric Power,” submitted to the Federal Energy Regulatory Commission, Docket No. RM95-8-000, *et al.*, December 4, 1994, identify the following mutually non-exclusive categories of stranded costs:

The three main categories of potential stranded costs are: (1) past investments in utility-owned generation whose total costs exceed the prices that either do prevail in markets that are already competitive or would prevail in that event; (2) power purchase contracts (most often with non-utility companies), which the utilities were forced to undertake, based on forecasts of costs and prices that have turned out to be too high; and (3) regulatory assets—including deferred taxes, costs of post-retirement employee benefits, nuclear decommissioning costs and other expenses capitalized for ratemaking purposes such as DSM—which could similarly not be recovered in competition with generators not similarly burdened.

See also Steven C. Anderson, *et al.*, “Electricity Transition Costs,” Harvard Electricity Policy Group, John F. Kennedy School of Government, Harvard University, October 22, 1993 (Draft).

<sup>55</sup> We use the term “entrant” here generally to describe firms that seek to serve customers in a service territory newly opened to competitive access. The “incumbent” is the prior certificated utility which previously served the customer. The entrant may well be an incumbent firm in an adjacent service territory—one which in fact may have incurred stranded costs in connection with providing that service as well.

disadvantage as far as incumbents and entrants are concerned. Again, “weak” competitive neutrality means only that both incumbents and entrants should be free to compete for both existing and new load on the basis of their competitive advantages or disadvantages arising from true efficiency differences going forward.

Intuitively, we may thus propose the following “smell test” for the strong competitive neutrality of a stranded cost recovery mechanism. Given the combination of (1) the burden of amortizing the sunk costs of the past regulatory regime, (2) the revenues from the offsetting stranded cost recovery mechanism for the incumbent, and (3) no competitive advantages or disadvantages arising from other sources (*i.e.*, assume “all else equal”), would an investor prefer to be the entrant or the incumbent? If the stranded cost recovery mechanism produces indifference to this choice, it has achieved strong competitive neutrality, insofar as the recovery mechanism is incurred. All competitors would bear the full competitive advantages or disadvantages arising solely from differences in non-stranded costs, *i.e.*, true efficiency differences.

Not surprisingly, the efficiency arguments over stranded cost recovery are simply the same argument over preserving the relative true cost advantages of competitors going forward that we saw in the railroad and telecom interconnection disputes. Thus, the narrow goal of preserving forward-looking relative efficiency differences does *not*, by itself, require any particular degree of recovery of sunk costs.<sup>56</sup> Strong competitive neutrality does, for all the reasons given above.<sup>57</sup>

Another related issue arises when critics of stranded cost recovery sometimes claim that investors in electric utilities need not be afforded an expectation of stranded cost recovery during the transition because they have been previously compensated for the risks of stranded assets.<sup>58</sup> As it turns out, the

---

<sup>56</sup> As further evidence that ECPR is about protecting incumbents from the loss of profit from competition, J. Gregory Sidak and Daniel F. Spulber (“Deregulatory Takings and Breach of the Regulatory Contract,” *New York University Law Review*, Vol. 71, No-4 (October 1996) : 978 - 981; and *Deregulatory Takings and the Regulatory Contract: The Competitive Transformation of Network Industries in the United States* (Cambridge: Cambridge University Press, 1997)) explicitly make claims for the parity principle on the grounds that it helps ensure stranded cost recovery.

<sup>57</sup> See Tye and Graves for an extensive discussion with illustrated examples.

<sup>58</sup> For this claim, see Irwin M. Seltzer, “Stranded Investment: Who Pays the Bill?,” Remarks delivered at Southwestern Electric Exchange, American Enterprise Institute, Washington, DC, March 30, 1994. See also Stelzer, “Restructuring the Electric Utility Industry: Further Tentative Thoughts,” *The Electricity* (continued...)

economic principles of asymmetric risk imply that even if: (1) investors are fully cognizant of the risks, (2) capital market prices fully reflected such risks, and (3) regulators always set the allowed rate of return equal to the true cost of capital, it is mathematically impossible for investors to have been previously compensated automatically for these risks.<sup>59</sup>

#### **D. U.S. RAILWAYS: REVENUE ADEQUACY TRUMPS COMPETITION AND COMPETITIVE NEUTRALITY**

The U.S. Surface Transportation Board's ("the Board") announcement<sup>60</sup> that it would review its prior decision in *Central Power and Light Co. v. Southern Pacific Transportation Company*, Docket No. 41242, *et al.*, served December 31, 1996, once again highlighted the issue of rail competitive access. The Board dismissed each of the cases on the grounds (except for the challenge to the joint rate in one case) that the defendant carriers were not required to publish "local rates" for the bottleneck portions of the involved traffic. In each of these cases, the rail service involved delivery by a "bottleneck carrier" of coal to an electric generating station. The shippers sought to have the Board require each bottleneck carrier to provide a trainload or unit-train local rate for transportation over the bottleneck segment to an interchange point of the shipper's choosing. The shippers would then combine this service and rate with that of one or more competing origin carriers, thereby achieving source competition not previously available.

The carriers' response was to argue that (1) the shippers must instead satisfy the Commission's "competitive access" rules,<sup>61</sup> (2) the carriers cannot legally be forced to establish a local rate for the bottleneck portion, (3) the shippers must challenge only the reasonableness of the rate for the entire origin-to-destination movement, and (4) regulating the rates for service over a bottleneck would

---

<sup>58</sup> (...continued)

*Journal*, October 1994, pp. 36-41, for a revision of some of these views.

<sup>59</sup> See A. Lawrence Kolbe and Tye, "It Ain't In There: The Cost of Capital Does Not Compensate for Stranded-Cost Risk," *Public Utility Fortnightly*, Vol. 133, No. 10 (May 15, 1995), pp. 26-28; and "Compensation for the Risk of Stranded Costs," *Energy Policy*, Vol. 24, No. 12 (1996): 1025-1050.

<sup>60</sup> *Ex Parte* No. 575, *Review of Rail Access and Competition Issues*, February 20, 1998. See also Bruce Ingersoll, "Board Appears Ready to Seek Rail Remedies," *The Wall Street Journal*, April 20, 1998, p. A20.

<sup>61</sup> 49 CFR 1144.5. See *Intramodal Rail Competition*, 1 I.C.C. 2d 822 (1985), *aff'd sub nom. Baltimore Gas & Electric Co. v. United States*, 817 F.2d 108 (D.C. Cir. 1987).

“directly threaten the industry’s ability to price differentially and recover its full costs.”<sup>62</sup>

The Board ruled that “the bottleneck carrier is not required to establish a local rate for the bottleneck segment” (except where the shipper has obtained a contract from the non-bottleneck carrier for that portion of the movement).<sup>63</sup> The Board relied upon its view that “Congress ended the “open-routing’ system” and cited the desire to free carriers to “rationalize their route structures making maximum use of efficient routings and eliminating others.”<sup>64</sup>

In responding to complaints that the alternative avenue of relief offered to shippers—the Board’s “competitive access” regulations—“stacked the deck” against the shippers, the Board noted:

We cannot declare in advance just what must be shown to make a competitive access case justifying the prescription of a new through route. No shipper has brought such a case to date....

\* \* \*

The competitive access rules were designed to protect the railroads’ freedom to rationalize their systems and maximize service over their most efficient routes, legitimate goals that both Congress and this Board clearly endorse. However, they were not designed to defeat legitimate competitive efforts by other rail carriers and shippers by permitting bottleneck carriers to foreclose more innovative, advantageous, and efficient service [footnote omitted].<sup>65</sup>

The conceptual underpinnings of the Board’s position on competitive access is an economic model that supports a belief that a system of “voluntary negotiations” among carriers will dictate what routing choices will be offered to shippers and “whether individual railroads will compete with one another when asked by individual shippers to do so.”<sup>66</sup>

The alternative to such a system of voluntary negotiations has repeatedly been characterized as one leading to economically inefficient routing choices. Such a belief that only voluntary negotiations will lead to economically efficient routing choices has been supported by numerous economists.<sup>67</sup> Any

---

<sup>62</sup> Board Decision, slip decision, p.3.

<sup>63</sup> Board Decision, slip opinion, p.5.

<sup>64</sup> Board Decision, slip decision, p. 6, citations omitted.

<sup>65</sup> Board Decision, slip decision, p.9.

<sup>66</sup> Board Decision, p.11.

<sup>67</sup> See “Statement of Economists,” Before the Surface Transportation Board, Docket No. 41242, *et al.*, (continued...)

shipper seeking an alternative to this scheme of voluntary negotiations will face elaborate testimony claiming that any interference with the workings of the voluntary negotiations theory will necessarily promote economic inefficiency and cross subsidy to an uneconomic competitor.<sup>68</sup> So far, these arguments have succeeded in keeping the U.S. rail industry one of closed access.

Nevertheless, at the most basic level of the theory itself, the theory of voluntary negotiations does not lead to the parity principle despite claims of its proponents. The theory of voluntary negotiations goes a step further than ECPR and permits the carrier who controls interconnection to appropriate the entrant's efficiency advantages (if any).<sup>69</sup> Even if the parity principle possessed the unique properties of economic efficiency claimed for it, there is no reason to believe therefore that it would be achieved merely via voluntary negotiations.

Even more troubling, the economic theories in support of closed access in the rail industry stand in stark contrast to the common prescriptions in the telecommunications, pipeline, and electric utility

---

<sup>67</sup> (...continued)

*Central Power & Light Company v. Southern Pacific Transportation Company*, October 21, 1996. The statement relied on two alleged consequences of a more open-routed rail system: (1) it would deny the railroads the opportunity to earn adequate revenues and (2) shippers would have an incentive to promote inefficient traffic routings.

<sup>68</sup> For sympathetic views, see Henry McFarland, "The Economics of Vertical Restraints and Relationships Between Connecting Railroads," *The Logistics and Transportation Review*, Vol. 23, No. 2 (June 1987): 207-222; David Reiffen and Andrew N. Kleit, "Terminal Railroad Revisited: Foreclosure of an Essential Facility or Simple Horizontal Monopoly?," *The Journal of Law and Economics*, Vol. XXXIII, No. 2 (October 1990): 419-438; Andrew N. Kleit, "Problems Come Before Solutions: Comment on Pricing Market Access for Regulated Firms," *The Logistics and Transportation Review*, Vol. 29, No. 1 (March 1993): 69-74; David Reiffen, "Partial Ownership and Foreclosure: An Empirical Analysis," *Journal of Regulatory Economics*, Vol. 13 (1988): 227-244; and Paul A. Cunningham and Robert M. Jenkins III, "Railing at 'Open Access'," *Regulation*, Vol. 20, No. 2 (1997): 42-47. On the other hand, for unsympathetic views, see Curtis M. Grimm and Robert G. Harris, "Vertical Foreclosure in the Rail Freight Industry: Economic Analysis and Policy Prescriptions," *ICC Practitioners' Journal*, Vol. 50 (July-August 1983): 508-531; Curtis M. Grimm, *et al.*, "Foreclosure of Railroad Markets: A Test of Chicago Leverage Theory," *The Journal of Law and Economics*, Vol. XXXV (October 1992): 295-310; and Louis Kaplow, "Extension of Monopoly Power Through Leverage," *Columbia Law Review*, Vol. 85, No. 3 (April 1985): 515-556.

<sup>69</sup> See Tye, "The Pricing of Inputs Sold to Competitors: A Response," *The Yale Journal on Regulation*, Vol. 11, No. 1 (1994): 203-224 and Tye, *The Transition to Deregulation* (New York: Quorum Books, 1991), Chaps. 6.3 and 7.3. Voluntary negotiations go beyond mere indemnification to the bottleneck carrier for the financial consequences of competition (as required by the parity principle) by permitting the bottleneck carrier to appropriate the connecting carrier's efficiency gains (if any), as well as the net revenues in excess of the connecting carrier's incremental costs. See also Tye, "The Voluntary Negotiations Approach to Rail Competitive Access in the Transition to Deregulation," *Antitrust Bulletin*, Vol. 32, No. 2 (Summer 1987): 415-450.

industries—which call for “unbundling” service elements to open up access of former monopolies to competition in the transition to deregulation.<sup>70</sup> Interestingly, some of the strongest supporters of closed access via voluntary negotiations in the rail industry have nonetheless been open supporters of granting to telecommunications entrants *forced* access, such as to “unbundled network elements” of local exchange carriers (LECs).<sup>71</sup> Is there something unique about railroads that justifies exactly opposite treatment than for other network industries? Put another way, if any interference in voluntary negotiations by rail carriers necessarily leads to inefficiency, how does one justify such intervention to establish terms of access in the telecommunications, pipeline, and electric utility industries?

The discussion of Figures 1 and 2 points to serious errors in the economic logic supporting voluntary negotiations as the uniquely efficient solution to rail competitive access issues. The static economic efficiency issue, which has been heretofore the centerpiece of the debate, should simply be put aside. Once again, we must focus our attention on the hidden assumptions in the debate. Should competition policy require that bottleneck carriers be indemnified from the financial consequences of competition (*i.e.*, should the debate over competition start with a requirement that the bottleneck carrier not engage in price competition)? This revisits the oldest debate in the economics of the rail industry: is there an inherent conflict between competition and revenue adequacy, *i.e.*, is rail competition inherently “cut-throat” and “destructive”?<sup>72</sup> The real issue is, and has always been, whether railroads are a

---

<sup>70</sup> See Curtis M. Grimm and Robert G. Harris, “Competition Access Policies in the Rail Freight Industry, with Comparisons to Telecommunications,” in David Gabel and David F. Weiman, eds., *Opening Networks to Competition: The Regulation and Pricing of Access* (Boston: Kluwer Academic Publishers, 1998), pp. 137-157; and Lawrence J. White, “The Deregulation of the Telephone Industry: The Lessons from the U.S. Railroad Deregulation Experience,” *Global Competition and Integration*, Ryuzo Sato, *et al.*, eds. (Boston: Kluwer Academic Publishers, 1999). U.S. policy is also at variance with emerging developments in Europe. See Frank N. Wilner, “Competitive Access: Lessons from Great Britain,” *Journal of Transportation Law, Logistics and Policy*, Vol. 65, No. 2 (Winter 1998): 182-191.

<sup>71</sup> In *Verizon Communications v. FCC*, 535 U.S. \_\_\_\_ (2002) (“Verizon Communications”), the U.S. Supreme Court recently upheld the FCC’s use of a “forward-looking” costing methodology to calculate the prices new entrants must pay for interconnection services. It strongly agreed that even if lower prices resulted, they were constitutionally permitted and consistent with the *Telecommunication Act of 1996*’s objective of encouraging entry in competition with monopolistic carriers providing local telephone service (see fns. 20 and 27, especially). The Court also agreed with the FCC’s rejection of ECPR and Ramsey pricing on the grounds that the resulting prices would be incompatible with those objectives.

<sup>72</sup> Use of Bertrand models of competition tend to lead to such conclusions, because it can be proved that the theory leads to prices equal to marginal costs. More reasonable assumptions, such as Cournot competition (and related models such as Chamberlain’s model of product differentiation), tend to lead to outcomes where equilibrium prices exceed marginal costs.

unique hostile environment for intramodal competition.<sup>73</sup>

In its review of the Board's decisions, the U.S. Court of Appeals relied on various statutory factors and the usual deference to agency expertise to uphold the Board's refusal to require bottleneck carriers to offer interconnection services. Among the reasonings it cited with approval was the threat of competition to the "bottleneck" carrier's financial health:

[R]equiring carriers to provide separately challengeable rates on bottlenecks would prevent them from exploiting bottlenecks and charging rates up to SAC [stand alone cost] for complete origin-to-destination service. In the Board's view, this would impede the industry's efforts to achieve revenue adequacy, which is necessary for long-term capital investment and, ultimately, for a safe and efficient rail system....

[T]he Board determined that exploiting bottlenecks by refusing to provide separately challengeable bottleneck rates also assists carriers in achieving revenue adequacy....

[A]llowing the bottleneck carriers to negotiate through rates and joint rates for origin-to-destination service enables them, rather than the shippers, to take advantage of the competition between non-bottleneck carriers. After negotiating competitive rates for the non-bottleneck carriage, the bottleneck carriers will be able to charge the bottleneck shippers up to SAC for the entire route, rather than just over the bottleneck.<sup>74</sup>

In short, the playing field was deliberately tilted in favor of incumbent bottleneck railroad carriers, and against carriers seeking interconnection, to prevent shippers from realizing the benefits of intramodal competition. Interconnection disputes in the U.S. rail industry ultimately were resolved by reference to a belief that the chief goal of regulatory policy was to enhance industry profitability. Competition among carriers on neutral terms was viewed as the enemy of this objective. But at least regulators admitted what was really going on: "revenue adequacy" trumped competition and competitive neutrality.

---

<sup>73</sup> For further discussion, see Verified Statement of Alfred E. Kahn, Docket No. 41242, *et al.*, November 27, 1996, and Response of William J. Baumol and Robert D. Willig to the Verified Statement of Alfred E. Kahn, December 13, 1996, in that same proceeding.

<sup>74</sup> *MidAmerican Energy Co. v. STB*, 169 F.3d 1099 (8<sup>th</sup> Cir. 1999). See also *Union Pacific R.R. v. STB*, 202 F.3d 337 (D.C. Cir. 2000). Interestingly, the Supreme Court in *Verizon Communications* quoted with approval the FCC's rejection of ECPR and Ramsey pricing precisely because the resulting high prices for the most critical bottlenecks would stifle competition. *Slip opinion*, p. 45.

## E. REGULATORY ASYMMETRY IN OTHER INDUSTRIES <sup>75</sup>

The U.S. rail regulators' decision to tilt the playing field in favor of bottleneck owners contrasts dramatically with the deliberate decision to employ regulatory asymmetry in the U.S. telecommunications industry. There, continued regulatory restraints (rate base/rate of return regulation of revenues, determination of rate reasonableness, cost justifications, entry and service abandonment, tariff filings, geographic service restrictions, reporting requirements, *etc.*) were imposed on an incumbent carrier, but not new entrants, during a transition from a regulated monopoly to a regime of effective competition. Such asymmetric regulation is often accompanied by a determination that the former incumbent monopolist enjoys "dominant" status, while its unregulated competitors do not.<sup>76</sup>

In the early stages of an industry's transition to competition, residual asymmetric regulation of the former incumbent is generally defended on two grounds: (1) to protect consumers from monopolistic behavior because not all markets will move to effective competition at the same pace; and (2) to provide a "helping hand" to entrants by deliberately handicapping the incumbent during the transition period.<sup>77</sup> In other words, asymmetric regulation has been justified as a means of protecting fledgling firms and new entrants from the full rigors of the market place and, potentially, from unfair attempts by the incumbent to exploit the advantages of incumbency. However, this variant of the "infant industry" argument justifies asymmetric regulation only as a transition measure.

Deliberate attempts to tilt the marketplace, even temporarily, in favor of entrants have been

---

<sup>75</sup> This section relies heavily on the "Economic Implications of the Proposed Hughes-PanAmSat Transactions," Statement of William B. Tye and Johannes P. Pfeifenberger before the Federal Communications Commission, December 2, 1996.

<sup>76</sup> As noted above, incumbents and entrants were treated asymmetrically with regard to access to unbundled network elements in the U.S. telecommunications markets under the 1996 Act. The Supreme Court in *Verizon, Slip opinion*, p. 63, defended the FCC's pricing rules by noting that "[t]he Act ... proceeds on the understanding that incumbent monopolists and contending competitors are unequal."

<sup>77</sup> Such handicaps could be accomplished, for example, by creating deliberate lags in the ability of incumbents to cut prices in response to competition by imposing tariff filing requirements and preventing selective rate cuts to meet competition. Asymmetric regulation of this sort could conform to the assumption implicit in Figure 2 above that the incumbent was handicapped in its ability to compete on the basis of price. However, it would be odd to first deliberately handicap the incumbent by asymmetric pricing rules, only to take away that advantage by imposing ECPR on the entrant.

controversial, to say the least.<sup>78</sup> Proponents of asymmetric regulation justify it as a cost that is offset by the short-term benefits of consumer protection and the long-term benefits of a successful transition to effective competition. Regardless of one's views about the efficacy of asymmetric regulation during the transition, there is general agreement about the adverse consequences when asymmetric regulation has outlived its usefulness. Once new competitors have grown up (or should have grown up), continuing to impose regulatory constraints on the incumbent, but not on its competitors, will not only harm the incumbent but also impose considerable costs on customers.

Costs of obsolete asymmetric regulation take two forms. The first is pure efficiency losses. Those losses are not ancillary to the scheme—after all, the main point of the “helping hand” is to prevent incumbents from winning on the merits by granting artificial advantages to entrants. To the extent that asymmetric regulation works as intended, the costs of distorting the competitive process (by temporarily tilting the playing field against incumbents) are hoped to be offset by (1) the short-term benefits of protecting customers and new entrants from monopolistic behavior in the early stages of the transition; and (2) the long-term benefits of effective competition realized after the transition. Once effective competition is established and customers no longer need protection from the former incumbent, continued asymmetric regulation increases the cumulative costs of competitive distortions and decreases the long-term benefits by delaying full competition.

The second form of costs is “regulatory gaming.”<sup>79</sup> This means that asymmetric regulation creates a vested interest by the entrants in increasing asymmetric regulatory impediments and perpetuating those

---

<sup>78</sup> See David E.M. Sappington and Dennis L. Weisman, “Competition, Regulation, and Deregulation” in *Designing Incentive Regulation for the Telecommunications Industry* (Cambridge, MA: The MIT Press, 1996), Chapter 8, p. 201. Sappington and Weisman cite a number of other studies which question the efficacy of asymmetric regulation, such as Dennis L. Weisman, “Transition to Telecommunications Competition Amid Residual Regulatory Obligations,” *Public Utilities Fortnightly* (August 6, 1987): 14-18. One of the more widely cited pieces is John Haring, “Implications of Asymmetric Regulation for Competition Policy Analysis,” FCC, Office of Plans and Policy, Working Paper Series No. 14, December 1984. Alfred E. Kahn, in “The Uneasy Marriage of Regulation and Competition,” *Telematics*, Vol. 1, No. 5 (September 1984): 1-17, states that one of the difficulties with what he calls “competitive handicapping” is that “we could not rationally permit entry without also permitting price competition.”

<sup>79</sup> The “search for protection” has been elsewhere characterized as a form of “rent-seeking” for supra-competitive returns via the political, regulatory, or legal system. See William J. Baumol and Janusz A. Ordover, “Use of Antitrust to Subvert Competition,” *Journal of Law and Economics*, Vol. 28, No. 2 (May 1985): 248. It has also been labeled a variant of “raising rivals’ costs.” See Stephen C. Salop and David T. Scheffman, “Raising Rivals’ Costs,” *The American Economic Review*, Vol. 73, No. 2 (May 1983): 267-271.

impediments long after they have served their purpose. Entrants thus may oppose all relaxation of regulatory restraints, engage in regulatory delays designed to frustrate competitive response of incumbents, engage in sham litigation, form lobbying groups, *etc.*, in order to continue to handicap the former incumbent and postpone the onset of full competition. Management efforts are devoted to hamstringing the incumbent instead of achieving success on the merits in the marketplace. Former monopoly incumbents, in turn, are forced to devote considerable resources to overcoming these efforts. These results have been well-documented in the economic literature<sup>80</sup> and are virtually undisputed. Indeed, they have been relied upon by the FCC<sup>81</sup> in decisions to grant non-dominant status, regulatory forbearance,<sup>82</sup> and the like.

In addition, the Commission has expressed concern that some aspects of asymmetric regulation, such as a former incumbent's tariff filing requirements, will frustrate price competition and may even facilitate tacit collusion by providing competitors with information about price changes before they take effect.<sup>83</sup> Thus, in most circumstances where regulators have chosen to violate competitive

---

<sup>80</sup> See, for example, William J. Baumol, "Enterprising Litigation and Entrepreneurs Enmeshed in the Law" in *Entrepreneurship, Management and the Structure of Payoffs* (Cambridge, MA: The MIT Press, 1993), Chapter 4.

<sup>81</sup> In ¶35 of the *Partial Relief Order* of August 15, 1996, granting Comsat partial "streamlined tariff relief," the Federal Communications Commission noted:

We find that a waiver of the tariff requirements...is in the public interest for Comsat space segment services not only because our current tariff procedures are more extensive than necessary in this circumstance, but also because these requirements delay the availability of new services and possible price reductions and introduce regulatory uncertainty into the marketplace.

The FCC cited its previous decision:

[W]e believe we can help encourage price competition by removing regulatory requirements that might discourage innovative price reductions, such as the longer notice period applicable only to AT&T among U.S. international carriers. (FCC 96-209, Order, *In the Matter of Motion of AT&T Corp. to be Declared Non-Dominant for International Service*, before the FCC, May 14, 1996 ("AT&T International Classification Order," ¶87).

<sup>82</sup> The importance of eliminating unnecessary regulation was recognized by the new Section 10 of the Communications Act of 1934, as added by the 1996 Act, which states that the Commission must forbear from imposing any regulation "in any or some...geographic markets" if it determines that: (1) enforcement of such regulation is not necessary to ensure that rates are just and reasonable or not unjustly or unreasonably discriminatory; (2) enforcement of such regulation is not necessary for the protection of consumers; and (3) forbearance from applying such provision is consistent with the public interest.

<sup>83</sup> See *AT&T International Classification Order*, ¶8:

[A]spects of dominant carrier regulation may hinder competition under current market conditions if applied to a carrier that no longer has market power. In particular, the longer tariff-filing notice periods applicable to AT&T as a dominant carrier subject to price cap regulation may have potential anticompetitive consequences once AT&T is no longer dominant. The longer notice

(continued...)

neutrality by asymmetric regulation, the justification was as a temporary transition, and the tilt was against, not in favor of, incumbents.

## VII. CONCLUSIONS

Economists love to make arguments based on efficiency grounds. But we have seen that the particular variant of static efficiency as accomplished by weak competitive neutrality has poor ability to discriminate among interconnection regimes. It is time for economists to more explicitly incorporate into their models what everybody else already knows—the real issue is who gets the net revenues (or profits) from prices in excess of incremental costs.<sup>84</sup> And the job of competitive neutrality is to ensure that ownership of interconnection facilities is truly neutral in that regard.

---

<sup>83</sup> (...continued)

periods for AT&T, still by far the largest carrier in this relatively concentrated market, can serve as a price signaling device that facilitates the other carriers' ability to price just on par or slightly below the AT&T levels. It also means that AT&T cannot react as quickly and certainly as its competitors in making bids to business customers. In essence, the disparity in notice periods slows rivalry in the market because the bidding for significant business customers is a major competitive stimulus in the market. *Once AT&T's competitors have the facilities, operating agreements, and market credibility necessary to compete for large business customers, as they now do, then restricting the competitiveness of the largest carrier only reduces competitive performance in the market.* [Footnote omitted, emphasis added]

<sup>84</sup> See Mark Armstrong, "The Theory of Access Pricing and Interconnection," *Handbook of Telecommunications Economics*, Martin Cave, Sumit Majumdar, and Ingo Vogelsang, eds. (North Holland, forthcoming):

[W]ithin the framework of this chapter the aim of the formula is *not* to recompense the incumbent for lost profit, but rather to give entrants the correct entry signals. For instance, if this opportunity cost element of the access charge were put into general public funds rather than paid to the incumbent, the efficiency aspects of the ECPR would be undiminished.

We have seen that this is exactly the problem: ECPR's failure to account for the fact that who gets the money does indeed matter—a great deal—for long-run firm viability, benefits to end-use customers, and a successful transition. Nevertheless, Armstrong points to a variety of considerations of efficient competition that supports prices other than ECPR and to the inapplicability of ECPR in a regime of price competition.