

The Economics of Pricing Network Interconnection: Theory and Application to the Market for Telecommunications in New Zealand†

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Deregulation and the successful introduction of competition to the market for telephone services raise the complex issue of interconnection. Incumbent telephone companies have an incentive to maximize profits by charging entrants the highest interconnection price possible. In New Zealand, the debate over the proper terms of interconnection was brought before the courts under the country's antitrust laws. The incumbent attempted to establish "the parity principle" as the standard for interconnection. As proposed in New Zealand, the parity principle would allow an unregulated monopolist to set access charges at a level sufficient to compensate it for the financial consequences of entry. Justification for this standard lies in claims that any other interconnection rule would be inefficient. Tye and Lapuerta critique these efficiency claims. They argue that the proposed rule would frustrate goals of competition, including: constraining monopoly pricing, enhancing dynamic efficiency and encouraging technological progress. The authors reject the parity principle in favor of a proposal that compensates rival networks for terminating inter-network calls on the basis of long-run incremental cost. They explain how interconnection on these terms can simultaneously promote successful competition and efficiency in the provision of telephone service.

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Introduction

Deregulation of telecommunications is inspired by the belief that competition will prevent monopolistic behavior more efficiently than direct price regulation by the government. Compared to regulation, competition offers consumers the dynamic benefits of increased efficiency and technological progress. The New Zealand government was motivated by this vision when it recently privatized the national telecommunications company, Telecom of New Zealand ("Telecom"). Clear Communications ("Clear") promptly proposed to compete with Telecom in the provision of local telephone service. Both companies required an interconnection agreement so that the calls originating on either network could be terminated on the other. Their dispute over the appropriate terms of interconnection was litigated under the antitrust laws of New Zealand. The economic debate between Clear and Telecom encompassed issues of efficiency, successful competition, and technological progress. The current trend towards telecommunications deregulation in the United States and other nations renders the New Zealand experience an interesting preview of issues that are likely to arise elsewhere.

Telecom of New Zealand proposed "the parity principle" as the standard for its interconnection proposals. Telecom argued that an unregulated monopolist should be permitted to set access charges at a level sufficient to compensate it for the financial consequences of entry. Justification for this standard lay in claims that any other interconnection rule would be inefficient.¹ Although these efficiency claims have some application to regulated markets, they are not valid in a deregulated, competitive environment. Telecom also claimed that the parity principle was efficient because it would subsidize a Universal Service Obligation ("USO") unique to Telecom. Apart from the debate over the existence of such a burden, any USO costs can be recovered in a competitively neutral manner without altering the terms of interconnection.

We show that the parity principle as proposed in New Zealand is not unique in achieving "weak competitive neutrality," defined as competition on the basis of true efficiency differences. An interconnection regime achieves weak competitive neutrality if incumbent status confers neither an advantage nor a disadvantage with respect to prospective competition. Other interconnection rules also achieve the same weak competitive neutrality as long

1. William J. Baumol & 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., Telecom Corp. of N.Z. v. Clear Communications Ltd., [1992] 5 T.C.L.R. 166 (H.C.); see also WILLIAM J. BAUMOL & J. GREGORY SIDAK, TOWARD COMPETITION IN LOCAL TELEPHONY (1994). The parity principle is based on the theory of "contestable markets." The theory assumes frictionless entry and exit. See William J. Baumol, *Contestable Markets: An Uprising in the Theory of Industry Structure*, 72 AM. ECON. REV. 1 (1982).

as the final price of telecommunication services is not fixed by regulation.

Moreover, the parity principle fails to achieve what we define as “strong competitive neutrality.” Strong competitive neutrality requires that the price of interconnection not perpetuate monopoly rents,² that the incumbent be compensated for any legacies of regulation, and that equally efficient competitors have the same opportunity to expect³ to earn their cost of capital. The parity principle fails this test because it renders competition ineffective in reducing the monopoly rents of the incumbent. Compensating the monopolist for the financial consequences of entry only leaves consumer prices at monopolistic levels.

The incumbent monopolist and entrant do not compete on “a level playing field” under the parity principle, because the entrant is condemned to inadequate recovery of its sunk⁴ and common⁵ costs. The rule threatens to impede technological progress by constraining the entrant to indemnify incumbents for all sunk costs (even of obsolete technology) and by creating a mechanism whereby incumbents can appropriate the efficiency gains and benefits of innovation by entrants. The parity principle is inspired by the belief that voluntary negotiations can yield efficient prices. In reality, voluntary negotiations open the door to opportunistic behavior by the incumbent.

We propose an alternative approach to the interconnection of telecommunications networks that satisfies strong competitive neutrality. We describe how the incumbent can be compensated for any prior legacies of regulation or for any unique USO burden in a competitively neutral manner. Our proposed regime compensates rival networks for the cost of terminating

2. Obviously, this test would not deny the bottleneck carrier the benefits of a competitive rate of profit from ownership of the bottleneck.

3. “Expectation” does not guarantee that the cost of capital will be earned. Confusion arises if one applies common dictionary meanings of “expected”: “to look for as likely to occur or appear” or “to look for as due, proper, or necessary.” WEBSTER’S NEW WORLD DICTIONARY 492 (2d ed. 1982). We invoke the statistical meaning of expecting to earn the cost of capital. See WILLIAM L. HAYES & ROBERT L. WINKLER, STATISTICS 152 (1981) (“[E]xpected value originally meant the expected long-run winnings (or losings) over repeated play; this term has been retained in mathematical statistics to mean the long-run average value for any random variable over an indefinite number of samplings.”).

4. “Sunk costs . . . are costs that (in some short or intermediate run) cannot be eliminated, even by total cessation of production.” WILLIAM J. BAUMOL ET AL., CONTESTABLE MARKETS AND THE THEORY OF INDUSTRY STRUCTURE 280 (1982).

5. Common costs arise when several services can be provided simultaneously for less than it would cost to provide each service separately. The “stand-alone” cost is the cost of providing each service separately. The “incremental” cost of a particular service is the cost of providing the combined package minus the “stand-alone” cost of the other services. When it is more efficient to provide both services together rather than separately, the incremental costs of each service do not add up to the total cost of the combined package. The gap is called the “common costs” or “joint costs.”

inter-network calls on the basis of long-run incremental cost.⁶ We describe how our approach can foster effective competition that satisfies strong competitive neutrality.

Part I of this essay introduces the theory of the parity principle as proposed in New Zealand, including the claims that alternative pricing rules would be inefficient. Part II provides a detailed critique of these efficiency claims as well as other problems with the rule. Part III analyzes the history of the litigation between Clear and Telecom and the interconnection debate in New Zealand. It describes the claims made by academic proponents of the parity principle in New Zealand, the errors of the Courts in evaluating the rule, and the eventual resolution of the dispute. Part IV discusses our proposal for compensating rival networks for terminating internetwork calls on the basis of long-run incremental cost. Part V summarizes our conclusions.

I. The Theory of the Parity Principle

Figure 1 illustrates the theory of the parity principle.⁷ The example is drawn from Baumol & Sidak in their *Yale Journal On Regulation* article, where they claim that pricing interconnection in telecommunications is no different than pricing access for railroads. That article involves a railroad that owns the bottleneck portion of a route and that also participates in the competitive portion of a connecting route (sometimes called the “contested area”⁸). 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.⁹ Under the parity principle, these assumptions yield a price of \$7 for the bottleneck. 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 of *less* than \$3 over the competitive portion and is therefore more efficient. *Ergo*, it is argued that the

6. “Incremental” costs must be incurred to expand output by specified increments. See William J. Baumol & J. Gregory Sidak, *The Pricing of Inputs Sold to Competitors*, 11 YALE J. ON REG. 171, 176 (1994) (“Incremental cost is a generic concept referring to the addition, per unit of the additional output in question, to the firm’s total cost when the output of X expands by some preselected increment.”). We take “incremental” costs to be synonymous with call “direct” incremental cost, excluding “opportunity cost.” *Id.* at 178.

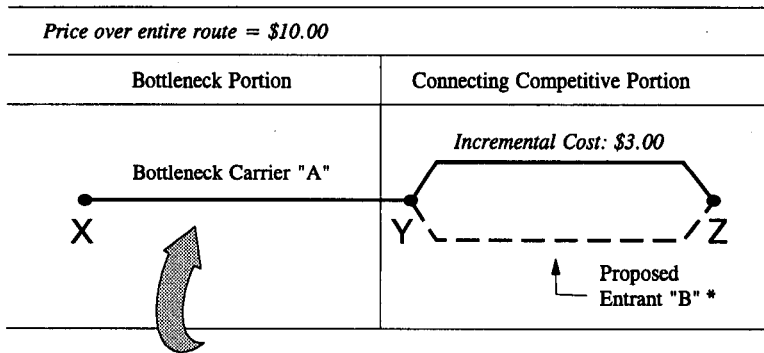
7. We assume away all the other problems in implementing the parity principle by simply taking the assumptions in the hypothetical as true. We do not believe that simple railroad models correctly characterize the telecommunications industry.

8. This example was cited in all three New Zealand decisions in *Telecom Corp. of N.Z. v. Clear Communications, Ltd.*, [1992] 5 T.C.L.R. 166 (H.C.), *rev’d*, [1993] 4 N.Z.B.L.C. 340 (C.A.), *rev’d*, [1995] 1 N.Z.L.R. 385 (P.C.).

9. Baumol & Sidak, *supra* note 6, at 185-86.

FIGURE 1

Applying the Parity Principle to the Railroad Industry



Price for Bottleneck Portion?

- Parity principle price: \$ 7.00
- Lower "regulated" price: \$ 5.50

Net Revenues Available to Entrant Over Competitive Portion

- \$10.00 - \$7.00 = \$3.00
- \$10.00 - \$5.50 = \$4.50

Source:

Baumol & Sidak, "The Pricing of Inputs Sold to Competitors" 11 *Yale Journal On Regulation* No. 1 (Winter 1994), 171.

* Baumol and Sidak do not treat carrier "B" as a proposed entrant. "B" is here designated as an entrant for direct analogy to Clear's position v. Telecom.

parity principle is a necessary condition for economic efficiency.

If the price for the bottleneck portion were set below the parity principle price, at say \$5.50, Baumol and Sidak claim that a new entrant might be able to turn a profit even if its incremental costs are higher than those of the bottleneck carrier.¹⁰ *Ergo*, prices lower than the parity principle produce inefficiency.

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. 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 labelled the “opportunity cost” of providing access. The \$7 price 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 cooperating with the connecting carrier.¹¹ The appeal of the parity principle stems largely from the indifference of the bottleneck carrier over routing decisions at this “efficient” price. Proponents of the parity principle conclude from similar illustrations that no regulatory intervention is necessary to set the terms of access.

More recently, Baumol, Ordovery, and Willig 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.¹²

In the telecommunications context, the “local loop” is the bottleneck facility, the incumbent is the firm owning the facility over which access is sought, and the entrant is the firm seeking access. The entrant requires access to the local loop to ensure that its customers can place calls with and receive calls from members of the incumbent network. This ubiquity is essential to successful competition. Once an entrant acquires customers, the incumbent also requires access to the entrant’s network in order to preserve ubiquity.

10. *Id.* at 186.

11. Figure 1 relabels the connecting carrier as a “proposed entrant” for direct analogy to Clear, but the label does not affect illustration of the rule.

12. William J. Baumol et al., *Parity Pricing and Its Critics: Necessary Conditions for Efficiency in Provision of Bottleneck Services to Competitors* 11-13 (Jan. 1996) (manuscript on file with *Yale Journal on Regulation*). A revised version of the manuscript will appear in 14 *YALE J. ON REG.* (forthcoming Dec. 1996).

However, the parity principle does not apply a symmetrical pricing scheme for access to each network. When a call originates on the incumbent's network and terminates in the entrant's, the parity principle grants the entrant the incremental cost savings of the incumbent from not having to terminate the call. The analogy to Figure 1 would involve the bottleneck carrier hiring the entrant to carry the traffic over the competitive portion of the route for \$3. When a call originates on the entrant's network and terminates in the incumbent's, the incumbent does not receive the same \$3. Rather, the parity principle grants the incumbent an amount analogous to the \$7 access price in Figure 1.

The incumbent is supposed to determine the business it might lose as a result of interconnection and charge the entrant for the consequent loss of net revenues, defined as the incumbent's "incremental revenue minus the incremental costs that this foregone sale would otherwise have brought to [the incumbent]."¹³ The rule has been characterized as a cost rule by labelling Telecom's foregone net revenues in the calculation as "opportunity costs."¹⁴ The rule is explicitly designed to leave Telecom financially indifferent to the prospect of losing business to Clear.¹⁵

Proponents of the parity principle have made different policy recommendations in different contexts, generating confusion as to exactly what the rule entails. In the United States railroad industry, for example, the parity principle has been invoked to support complete deregulation of access prices by the Interstate Commerce Commission. Proponents of the parity principle urged a reliance on voluntary negotiations between the bottleneck and connecting carriers. In the United States telecommunications industry, the parity principle has been invoked to support regulated increases in the retail price. Given an access price of \$8 in Figure 1, for example, the parity principle has been invoked in proposals to increase the incumbent's retail price to \$11. In the New Zealand debates, the parity principle was proposed as the

13. Baumol & Willig, *supra* note 1, at 23.

14. Baumol and Sidak describe the rule thus:

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.

Baumol & Sidak, *supra* note 6, at 178.

15. As Baumol and Sidak explain:

[T]he 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.

Id. at 186 (emphasis added).

standard for judging whether Telecom's access price proposals violated the New Zealand antitrust laws. Unless we specify differently, we will refer to the specific variant of the rule proposed for New Zealand when discussing the parity principle — in particular, the calculation of "opportunity cost" by using the incumbent's existing retail rates, unconstrained by regulation.

The parity principle has been illustrated and recommended largely by the use of hypothetical interconnection examples drawn from the railroad industry. Railroad interconnection problems, however, provide a poor analogy to the New Zealand telecommunications industry. These examples ignore the role of technological progress in telecommunications. The railroad examples invariably involve one firm controlling an essential route and another firm that simply replicates the service offered over a connecting route. A new service is not contemplated. In fact, the public policy concerns in the United States rail industry's transition to deregulation were excess capacity and efficient exit from the industry rather than the entry of new firms. In New Zealand, Clear did not simply propose to replicate the existing service or technology that Telecom offered over existing routes. Rather, it proposed new services and technologies. These aspects of competitive entry must be recognized in determining optimal terms for interconnection.

Hypothetical examples from the rail industry also ignore the reciprocity involved in telecommunications, because the telecommunications entrant never controls an essential route itself. The railroad examples therefore reinforce the narrow view of entrants as simply large PABX customers. Rather, if an entrant introduces an independent network, it should be acknowledged in determining the optimal pricing rules for interconnection. Interconnection necessarily involves reciprocity because the incumbent requires access to the entrant's network in order to preserve ubiquity.¹⁶

II. The Parity Principle Should Not be the Standard for the Interconnection Proposals of an Unregulated Local Exchange Carrier

A. *The Parity Principle Perpetuates Monopoly Profits*

After considerable initial confusion based on testimony before the Courts, experts in the New Zealand debate now agree:¹⁷ the parity principle alone

16. "It would be essential for Clear to make use of Telecom's basic existing network, so that Clear customers could call Telecom's customers and vice versa; 'ubiquity' is acknowledged to be essential to any such service." *Telecom Corp. of N.Z. v. Clear Communications, Ltd.*, [1993] 4 N.Z.L.R. 340, 342 (C.A.).

17. Baumol and Sidak sympathized with the Court of Appeal's rejection of the rule precisely because of the monopoly rents problem: "It is therefore understandable that the Court of Appeal ordered Clear and Telecom to renew negotiations to *set an access price that excluded any monopoly profit foregone by Telecom.*" Baumol & Sidak, *supra* note 6, at 195 (emphasis

cannot approximate the results of a competitive market in New Zealand, precisely because it indemnifies the bottleneck carrier from the financial consequences of competition.¹⁸ In an environment such as New Zealand (monopoly power without any effective price regulation), the parity principle instead perpetuates monopoly results.¹⁹ If, in Figure 1, for example, the \$10 final price is a monopoly price, the parity principle does not allow an equally efficient entrant to bring it down to competitive levels. Forced to pay an access price of \$7, the entrant can only survive by charging the same monopoly price as the incumbent. More generally, any rule leaving the monopolist indifferent to competition will fail to impose the full discipline of competition on that monopolist.²⁰ Any firm enjoying monopoly rents²¹ before the operation of

added). To add to the confusion, Baumol and Sidak subsequently appeared to support the reasoning of the Privy Council in rejecting the Court of Appeal decision with which they had previously seemed to justify. William T. Baumol & J. Gregory Sidak, *The Pricing of Inputs Sold to Competitors: Rejoinder and Epilogue*, 12 YALE J. ON REG. 177, 179-85 (1995).

More recent testimony by Professor Baumol represents an even more dramatic statement of the limitations of the rule as proposed for New Zealand. *Proceeding on Motion of the Commission to Investigate Performance-Based Incentive Regulatory Plans for New York Telephone Company* (Track 2) Case 92-C-0665 (direct testimony of William J. Baumol before the State of New York Public Service Commission on behalf of AT&T) (1994) [hereinafter Baumol AT&T Testimony].

18. Baumol and Sidak explicitly concede this:

Suppose that, in the absence of the tenant, the landlord has monopoly power in the final-product market and earns a high rate of profit on sales. If, by supplying the input to the tenant, the landlord permits the tenant to take away some of those profitable sales, then the monopoly profit on those forgone final-product sales is indeed an opportunity cost to the landlord. According to the efficient component-pricing rule, the tenant should be required to compensate the landlord for that loss. This ensures the monopoly earnings of the landlord. It also undercuts the tenant's power to introduce effective competition into the final-product market and, thereby, its ability to reduce prices to their competitive levels.

Baumol & Sidak, *supra* note 6, at 195.

19. Professor Kahn makes the same point:

Unsurprisingly, therefore, opponents of interconnection charges proposed by telephone companies, including Justice Gault, of the New Zealand Court of Appeal, protest that the entitlement claimed by the LECs to recover the "opportunity costs" of business lost to competitors is *merely a rationalization for the continued collection of monopoly profits. They are right, it could well be.*

Alfred E. Kahn & William E. Taylor, *The Pricing of Inputs Sold to Competitors: A Comment*, 11 YALE J. ON REG. 225, 231 (1994) (emphasis added) (footnote omitted).

20. The Court of Appeal described the High Court's reasoning as "self-evident" that the parity principle would preserve monopoly rents. *Telecom Corp. of N.Z. v. Clear Communications, Ltd.*, [1993] 4 N.Z.B.L.C. 340, 343 (C.A.), *rev'd*, [1995] 1 N.Z.L.R. 385 (P.C.). The court observed:

[T]he rule would seem obviously anti-competitive. . . . It would amount to allowing a new entry into a market on condition only that the competitor indemnify the monopolist against any loss of custom. That would be at once an unreasonable use of monopoly power, a restriction on entry, and a prevention or deterrence of competitive conduct. . . . [I]t seems to me that a substantial purpose of the monopolist in laying down such a condition is to restrict competition so as to preserve its own position as far as possible.

the rule will continue to do so afterwards.

Professors Baumol and Willig clearly stated at trial that pricing interconnection at levels dictated by the parity principle would not prevent Telecom from continuing to earn monopoly rents, if they existed:

[T]he rule is not designed to remedy any shortcomings, should they exist, elsewhere in the enterprise in question.

. . . [E]fficient component pricing does not, and is not designed to, cure mispricing of any other items handled by the firm in question. For example, the rule on the pricing of components cannot be used to deal with any overpricing of final product that is alleged to be present. Any problems in such domains should be attacked with different tools suitable to their own tasks.²²

Despite such warnings, the Courts nevertheless affirmed Telecom's use of the parity principle, even though it would "cement in" Telecom's market power.²³ A key reason was that the testimony of Baumol and Willig vigorously rejected proposals to fix the problem of inflated access prices by purging them of monopoly profits or any other deficiencies. In their brief to the High Court, Baumol and Willig strongly advised against any attempt to set an access price *below* the parity principle price, even in the presence of monopoly rents.²⁴ They attempted to shift the responsibility for monopoly rents away from the parity principle; Professors Baumol and Willig recommended that monopoly rents only be handled by regulating the end price

Id.

21. Monopoly rents indicate "inefficiencies" and "profits in excess of what would represent a reasonable return (including reasonable profit) on capital invested" Telecom Corp. of N.Z. v. Clear Communications, Ltd., [1995] 1 N.Z.L.R. 385, 395-96 (P.C.).

22. Baumol & Willig, *supra* note 1, at 35, 37.

23. [1993] 4 N.Z.B.L.C. at 356 (Gault, J., concurring).

24. Baumol and Willig asserted 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 & Willig, *supra* note 1, at 37 (emphasis added). Because of the subsequent statements of the participants, there may be some confusion as to how this matter stood at trial. Thus, statements by Telecom's attorney seem relevant:

However, if such [monopoly] rents were present in Telecom's retail price Professor Baumol and Dr[.] Kahn both accepted that the implementation of the pricing rule would allow Telecom to continue to recover them. . . . Both said, however, that *the rule should not be manipulated in an attempt to deal with monopoly rents as that would cause other significant inefficiencies, for example, uneconomic bypass.* Both acknowledged that *if monopoly rents were perceived to be a problem the proper mechanism to deal with them was through some form of price cap on Telecom's final prices.*

Terence Arnold, The Courts, The Commerce Act, and the Pricing of Access to Essential Facilities: Law and Economics at Work?, Address before Law and Economics Association of New Zealand ¶ 41 (Dec. 5, 1994) (emphasis added).

of the services involved. However, there was no regulation of the consumer price for telecommunications services in New Zealand. This raises several questions: Why should regulators refrain from purging the interconnection price of monopoly rents? What is peculiar about this task that it must only be accomplished through regulation of the final price? And where are the regulators of the final price? The parity principle is even less defensible in a deregulated environment where the government has shown it prefers not to regulate the final price. If the parity principle is inappropriate, the answer is to abandon it, not blame some non-existent regulator. Setting prices based on the parity principle in New Zealand would instead perpetuate inefficient²⁵ monopoly pricing by Telecom.

Professor Kahn also supported the parity principle before the New Zealand Courts²⁶ and, like Professor Baumol, has since published statements sympathizing with the Court of Appeal's rejection of the rule as applied in New Zealand because of the monopoly rents problem.²⁷

Part of the confusion in the New Zealand debate arises from suggestions that a hypothetically more efficient entrant could still compete away the incumbent's monopoly profits under the parity principle.²⁸ However, this can not happen under the parity principle as proposed for New Zealand. Even a more efficient entrant would not be successful in lowering the final price. An entrant's superior efficiency will simply tempt the incumbent to raise the access price.

Figure 2 illustrates the incentive of the bottleneck carrier to appropriate the efficiency advantages of the entrant in a price squeeze.²⁹ It assumes the entrant has an efficiency advantage of \$1 relative to the incumbent over the competitive portion of the route. If the bottleneck price is \$7, the entrant

25. Monopoly prices yield *allocative inefficiency* by inhibiting consumption relative to the competitive level. For a discussion of the inefficiency of monopoly prices, see JEAN TIROLE, *THE THEORY OF INDUSTRIAL ORGANIZATION* 64-68 (1988).

26. Alfred Kahn, Brief of Evidence: An Economic Evaluation of the Issues Relating to the Terms of Interconnection Provided to Clear Communications by Telecom New Zealand at 30, *Telecom Corp. of N.Z. v. Clear Communications Ltd.*, [1992] 5 T.C.L.R. 166 (H.C.), *rev'd*, [1993] 4 N.Z.B.L.C. 340 (C.A.), *rev'd*, [1995] 1 N.Z.L.R. 385 (P.C.).

27. "Although efficient component pricing will ensure the retailing function (subject to competition) is performed by the most efficient of the rivals, it will not in itself achieve the other important function of competition—the erosion of monopoly profits." Alfred Kahn, *Opening up Utilities*, *ECONOMIST*, Dec. 25, 1993-Jan. 7, 1994, at 6.

28. Baumol & Willig, *supra* note 1, at 37. Earlier they write:

[I]t should be noted that efficient component prices ensure that *any excesses in the incumbent's costs of completing the final product will be a magnet for profitable entry*. . . . [E]fficient component pricing provides both a *competitive spur to the incumbent's efficiency, and a solution to any such inefficiency that nevertheless persists*.

Id. at 33 (emphasis added).

29. Again, we assume away all the other problems in implementing the parity principle by simply taking the assumptions in the hypothetical as true. See *supra* note 7.

maintains the “fruit” of its efficiency gain: it collects \$10 for the route, pays \$7 for the bottleneck, incurs \$2 in incremental costs and retains a profit of \$1. Perhaps even consumers could hope to gain from entry if the price is cut to \$9.

However, the entrant’s efficiency gain leaves the bottleneck carrier room to increase profits by raising the price of access beyond the \$7 price to almost \$8. The profits available to the entrant are reduced to the “peppercorn” necessary to preserve its incentive to enter. The entrant sacrifices most of its efficiency gains to the bottleneck carrier.

This price squeeze would not result in a regime of true competition. In competitive markets, firms retain the benefits of their efficiency gains until competitors are able to match them. However, the ability to implement a price squeeze opens the possibility of appropriating efficiency gains. The new entrant’s incentives for efficiency are therefore reduced compared to the typical competitive situation.

Proponents of the parity principle may claim that the consumer failed to get the benefits of competition over the competitive portion (or the entrant failed to realize the benefits of its efficiency gain) precisely because the monopolist charged a price for the bottleneck higher than the \$7 ostensibly dictated by the parity principle.³⁰ There are two problems with this response. First, as explained in more detail below, proponents of the parity principle have previously supported charging the higher price for access to permit the monopolist to capture the entrant’s efficiency gains under their theory of “voluntary negotiations.” Second, access prices that appropriate the entrant’s efficiency gains can be characterized as meeting the test of the parity principle. The bottleneck monopolist could use the “imputation rule” sometimes proposed in connection with the parity principle³¹ to say that the presence of

30. Baumol & Sidak, *supra* note 6, at 189 n.14. Baumol and Sidak state that this property of the parity principle refutes the demonstration of a “perfect price squeeze” in WILLIAM B. TYE, *THE THEORY OF CONTESTABLE MARKETS: APPLICATIONS TO REGULATORY AND ANTITRUST PROBLEMS IN THE RAIL INDUSTRY* 65-69 (1990). However, a careful reading of this passage clearly indicates that Tye is addressing the properties of the “voluntary negotiations” model recommended by Professors Baumol and Willig for the rail industry. Figure 2 illustrates that voluntary negotiations will indeed permit the bottleneck owner to appropriate the entrant’s efficiency gains. Indeed, that appropriation is the only incentive for voluntary negotiations by the monopolist.

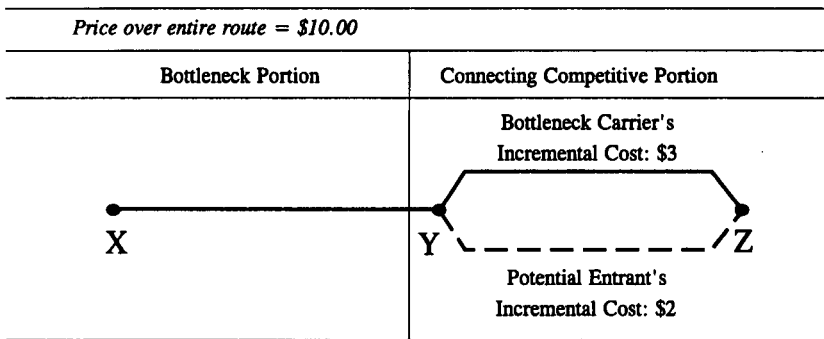
31. The “imputation rule” has been proposed in regulatory circles to support an increase in the “opportunity cost” so that the incumbent can absorb the new entrant’s efficiency gains. Baumol and Sidak reason that:

[T]he analysis underlying the rule indicates how the LEC should price the final product, intraLATA toll service, when selling that product to consumers. . . . Thus, the sale of the final product by the LEC entails a forgone access profit. The magnitude of this forgone profit, or opportunity cost, is determined by the price of the sale of access to the IXC, as governed by the efficient component-pricing rule.

Baumol & Sidak, *supra* note 6, at 198.

FIGURE 2

The Bottleneck Carrier Has an Incentive to Appropriate the Entrant's Efficiency Gains



Baumol and Sidak's Example

- Parity principle price = \$7
- Revenues available to entrant over competitive portion: $\$10 - \$7 = \$3$
- Profit to efficient entrant: $\$3 - \$2 = \$1$

Bottleneck Carrier Implements Price Squeeze

- Bottleneck price = $\$(8 - \Delta)$
- Revenues available to entrant over competitive portion: $\$10 - \$(8 - \Delta) = \$(2 + \Delta)$
- Profit to efficient entrant = $\$ \Delta$
 - ▶ *Reduced incentive to entrant for efficiency gains*

competitors willing to supply the competitive service at \$2 has increased the “opportunity cost” of access to \$8. Using the logic of this “imputation rule,” the owner of the bottleneck incurs an opportunity cost of \$8 after the entry of a more efficient competitor, because that is the “forgone access profit.” Added to the bottleneck carrier’s incremental cost, the owner of the facility uses the \$8 opportunity cost to *raise* its price to the customer to \$11. It does not cut the price to \$9.³² The parity principle cannot distinguish between combinations of access prices and end prices that leave the same margin for the competitive service. In Figure 1, the combination of a \$7 access price and a \$10 end price is indistinguishable from the combination of \$8 and \$11 that appropriates the entrant’s efficiency gains. Both satisfy the parity principle. When the incumbent raises the access price to \$8 and the final price to \$11, it simultaneously maximizes profits and channels the traffic to the more efficient entrant. The parity principle would appear to be working, but the entrant’s efficiency gains have been appropriated by the incumbent and the \$10 monopoly price to customers is perpetuated.

Many proponents of the parity principle firmly believe that the problem of granting competitive access ought to be left to the discretion of the bottleneck carrier.³³ The parity principle appeals as a solution because its proponents believe that it is the price that would result from “voluntary negotiations.”³⁴ However, voluntary negotiations do not permit the entrant to retain its efficiency gains, nor is an unregulated monopolist motivated to charge the competitive price of access.

And what if voluntary negotiations fail? The fault, according to the theory, lies with alleged obstinacy on the part of the entrant.³⁵ Professors

32. Interestingly, proponents of the parity principle advocate *requiring* an incumbent to raise the end price to restore the margin over the price of the component that is mandated by this “imputation rule.” See *Proceeding on AT&T’s Petition to Establish Conditions Necessary to Permit Effective Exchange Competition to the Extent Feasible* 15-17 (testimony of Robert D. Willig before the State of Illinois Public Service Commission on behalf of AT&T Communications of Illinois) (1994) [hereinafter Willig Testimony].

33. Supporters of the parity principle argue that any price for access less than what the carrier would voluntarily agree to would represent an anticompetitive cross subsidy. See William B. Tye, *Pricing Trackage Rights to Preserve Post-Merger Rail Competition on Equal Terms*, 24 LOGISTICS & TRANSP. REV. 317 (1988); William B. Tye, *Preserving Postmerger Rail Competition via the Parity Principle*, 26 TRANSP. J. 39 (1986) [hereinafter *Rail Competition*]. Professor Baumol has argued against government intervention in disputes over access to bottleneck facilities. He predicts voluntary negotiations will lead to use of the more efficient carrier. Verified Statement of William J. Baumol, *Iowa Power & Light Co. v. Burlington N.R.R.*, No. 40224, 1991 WL 219374 (I.C.C. Oct. 29, 1991) (brief filed Apr. 27, 1991) (dismissing action with prejudice). Support for voluntary negotiations is difficult to reconcile with statements in Baumol and Sidak that appear to support regulatory intervention. See Baumol & Sidak, *supra* note 6, at 174.

34. See generally Verified Statement of William J. Baumol & Robert Willig, *In re Seaboard Airline R.R.*, No. 21215 (I.C.C. 1993) [hereinafter *Seaboard Testimony*].

35. In *Seaboard Testimony*, Professor Willig suggests that any failure of the “voluntary negotiations” model is always the fault of the connecting carrier. *Id.* at 44. He states, for instance,

Baumol and Willig's hypothetical examples assume the bottleneck owner will restrain itself from appropriating efficiency gains by entrants. Baumol and Sidak argue that the parity principle price "gives the tenant all the fruits of whatever superiority in efficiency it may provide" as indicated by their mathematical equation.³⁶ However, that claim is inconsistent with the claim that voluntary negotiations will yield the economically efficient price.³⁷ The bottleneck owner is highly motivated in a regime of voluntary negotiations to raise the access price and execute a perfect price squeeze.³⁸

Perhaps the most compelling argument against the assertion that monopolists will voluntarily adopt the parity principle is Telecom's own behavior. Telecom did not independently seek to implement the parity principle in this case. The Courts ruled that the parity principle was a novelty imported from Professor Baumol under threat of litigation.³⁹ The Courts also ruled that Telecom sought to impose onerous non-price terms of interconnection to the essential facility that could not be justified in terms of cost.⁴⁰

that the model would fail "only from a mistake in the pricing of Railroad B's [the connecting railroad seeking access in the example] services." *Id.* at 45.

36. Baumol & Sidak, *supra* note 6, at 187.

37. Transaction costs pose another complication to the voluntary negotiations theory. A bottleneck owner will only be motivated to implement the parity principle if the efficiency gains it can capture from the prospective entrant offset the transaction costs of negotiation and cooperation. Transaction costs can tip the scale in favor of foreclosure. The bottleneck owner will prefer foreclosure unless it can offset such costs by *exceeding* Professor Baumol's parity principle price. If the transaction costs themselves exceed the efficiency advantage of the entrant, foreclosure is guaranteed.

Proponents of voluntary negotiations proclaim the efficiency of this outcome by viewing transaction costs as incremental costs. *See, e.g.*, Baumol & Willig, *supra* note 1, at 25-26. However, this ignores the possibility that choosing rules for access to the bottleneck may *change* transaction costs. In particular, transaction costs may be significantly reduced by clear rules encouraging access.

38. Baumol and Sidak's equations show the entrant can earn an additional profit equal to its efficiency gains if the parity principle is followed (and there are no sunk costs). The entrant earns $N(AIC_X - AIC_Y)$, which represents the entrant's share of traffic times the difference between the entrant's and the incumbent's incremental costs. Baumol & Sidak, *supra* note 6, at 189, Equation 7. However, the bottleneck owner can exceed the parity principle price and reduce the entrant's profits to a "peppercorn." The bottleneck owner's profits of T can be increased to $T + N(AIC_X - AIC_Y - \Delta)$. *Id.* at 187, Equation 4. Here Δ represents the "peppercorn" necessary to induce the entrant to continue operations. The price that accomplishes this transfer of profit to the bottleneck carrier is *not* the parity principle price:

$$\text{parity principle price} = (AIC) + T/M.$$

Rather, the "perfect price squeeze" price is:

$$AIC + T/M + (AIC_X - AIC_Y - \Delta).$$

Id.

39. The Privy Council determined that "[t]he Baumol-Willig Rule . . . is not a general rule of economic thinking but was coined for the purposes of this case because it was propounded by Professors Baumol and Willig." *Telecom Corp. of N.Z. v. Clear Communications, Ltd.*, [1995] 1 N.Z.L.R. 385, 394 (P.C.).

40. The Privy Council found that "the terms for interconnection set by Telecom in their proposal of 7th August 1991 as varied down to the date of trial contravened s[ection] 36," *id.* at 409, and that "their Lordships can see no grounds for differing from," the findings that Telecom's

Arguments that competition will purge the price of monopoly rents ignore the fact that the monopolist has every incentive to maximize the value of the bottleneck. Even if the monopolist allows competitive access to drive down costs, the monopolist has no incentive to allow a decreased price for the final good relative to the previous profit-maximizing level. If we are to rely on a hypothetically more efficient entrant to compete away monopoly rents, additional constraints or “complementary” rules regulating the incumbent’s behavior are required.⁴¹ The parity principle alone will not work.

B. *The Parity Principle is Neither Necessary Nor Sufficient for Economic Efficiency*

Professors Baumol and Willig claim that the parity principle is necessary for economic efficiency.⁴² They label any lower price as an “inter-firm cross-subsidy to the entrant.”⁴³ Baumol and Sidak 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.”⁴⁴ Consistent with their claims of efficiency, Baumol and Sidak refer to the parity principle as the Efficient Component Pricing Rule (“ECPR”). However, we use the term “parity principle,” which Professor Baumol originally coined.⁴⁵ To call the rule “efficient” is a misnomer;⁴⁶ despite its name, the rule as proposed for New Zealand is in general neither *necessary*⁴⁷

refusal to interconnect Clear as an ordinary DDI customer to serve the Justice Department was, as the High Court had previously noted, “a plainly anticompetitive misuse of its dominant position,” *id.* at 386.

41. Professor Baumol acknowledged on cross-examination that reducing the end price would require periodic reviews of the interconnection charge. Transcript at 766 ll.5-31, 825 l.21, 826 l.22, *Telecom Corp. of New Zealand v. Clear Communications, Ltd.*, [1992] 5 T.C.L.R. 166 (H.C.) [hereinafter High Court Transcript]. Professor Brunt also understood a supervisory mechanism would be required. [1992] 5 T.C.L.R. at 216.

42. Baumol & Willig, *supra* note 1, at 27, 31.

43. *Id.* at 34, 35.

44. Baumol & Sidak, *supra* note 6, at 181.

45. See William J. Baumol, *Some Subtle Pricing Issues in Railroad Regulation*, 10 INT’L J. TRANSP. ECON. 341, 351 (1983). During the course of the New Zealand litigation, the parity principle became known as the “Baumol-Willig Rule.”

46. See TYE, *supra* note 30; WILLIAM B. TYE ET AL., *THE TRANSITION TO DEREGULATION: DEVELOPING ECONOMIC STANDARDS FOR PUBLIC POLICIES* (1991); William B. Tye, *The Pricing of Inputs Sold to Competitors: A Response*, 11 YALE J. ON REG. 203 (1994); William B. Tye, *Pricing Market Access for Regulated Firms*, 29 LOGISTICS & TRANSP. REV. 39 (1993) [hereinafter *Pricing Market Access*]. For further discussion of alternatives to the efficient component pricing rule, see William B. Tye, *Competitive Access: A Comparative Industry Approach to the Essential Facility Doctrine*, 8 ENERGY L.J. 337 (1987).

47. If A is a *necessary* condition for B, A must always hold whenever B holds (however, A may hold even when B does not). Baumol and Sidak write: “The efficient pricing principle for product components is not only required by the competitive-market standard for defensible

nor *sufficient*⁴⁸ for economic efficiency.

In support of their claims, Baumol and Sidak pursue two distinct lines of argument. First, they analogize the parity principle to the behavior of competitive firms. Second, they explore the application of the parity principle to hypothetical examples. Neither approach proves that prices dictated by the parity principle as proposed for New Zealand are required for efficiency.

Since competitive firms are widely believed to establish efficient prices, Baumol and Sidak reason that, by analogy, so must the parity principle. The parity principle “yields a price level set in precisely the same way it would be in a perfectly competitive or a perfectly contestable market.”⁴⁹ Since “competitive prices will be consistent with economic efficiency” a presumption is established “that the component-pricing rule is indeed optimal.”⁵⁰ An analogy to competitive industries purportedly demonstrates that opportunity-cost pricing by a monopolist is economically rational: “[I]f the landlord can earn \$90,000 by using the property, the tenant will be required to make good the \$90,000 that is foregone by renting the property.”⁵¹ The analogy proves nothing. The fact that both competitive and monopoly firms perform a *similar* calculation does not prove they perform the *same* calculation. Both competitive firms and monopolists seek to maximize profits, but that does not mean that their conduct is equally efficient.

Part of the problem with the analogy is that the proponents of the parity principle use an idiosyncratic definition of “opportunity costs.”⁵² Note carefully how opportunity cost is defined: “Economists refer to the sacrifice of profit *unavoidably entailed* in an activity as the *opportunity cost* of that activity.”⁵³ By dint of this semantic device, any monopoly profit is deemed

behavior by an allegedly dominant firm. It is also a necessary condition for economic efficiency, and hence for promoting the public interest.” Baumol & Sidak, *supra* note 6, at 181. However, the rule is not *necessary* for economic efficiency. We show that other access pricing rules will accomplish efficiency, even under the narrow set of assumptions and definition of efficiency used in the hypothetical examples.

48. If C is a *sufficient* condition for D, D holds whenever C holds. The rule is not *sufficient* for economic efficiency because, in many circumstances, efficiency cannot be achieved without invoking “complementary” rules. See Baumol et al., *supra* note 12, at 3.

49. Baumol & Sidak, *supra* note 6, at 182.

50. *Id.* at 183.

51. *Id.* at 182.

52. “Opportunity cost” is a misleading and extremely confusing term in this context. Under the assumptions of Baumol and Sidak, the same customer is using the same bottleneck facility regardless of which carrier serves the competitive portion of the route. Revenues lost to the incumbent firms as a result of competition are not an opportunity cost for the use of the bottleneck facility in the true economic sense of the word, as would occur if one customer’s use of the facility displaced that of another customer’s.

53. Baumol & Willig, *supra* note 1, at 11 (first emphasis added).

an “opportunity cost”⁵⁴ and included in the price of access.⁵⁵ Indeed, monopoly profits are even deemed to be an incremental cost.

The idiosyncratic definition of opportunity cost makes it appear that the bottleneck monopolist is in reality acting like a competitive firm that is determining prices based on its incremental costs: “[I]n a competitive market an incumbent will levy on a new entrant an access charge which will not fail to cover both the direct incremental cost of providing the access and its opportunity cost.”⁵⁶

Clearly nothing of the sort happens in competitive markets.⁵⁷ It simply is not true that the parity principle “yields a price level set *in precisely the same way* it would be in a perfectly competitive or a perfectly contestable market.”⁵⁸ New entrants into competitive markets do not indemnify incumbents for the opportunity cost of reduced monopoly profits.⁵⁹ In fact, new entrants into competitive markets do not indemnify incumbents for the loss of business revenue. It is the intrinsic nature of competition that the incumbent’s position will be eroded. Baumol and Sidak’s analogy of the

54. Professor Kahn follows places the term in quotes when applied to the parity principle: “[W]e choose to surround the term with quotation marks because, in contrast with ordinary usage, it refers here not to real economic costs—foregone opportunities for the use of real resources to produce other goods and services—but losses of money profits.” Kahn & Taylor, *supra* note 19, at 229 n.8. While we do not place quotation marks around the words hereinafter, we note Kahn’s idiosyncratic definition.

55. Monopoly profits are not “unavoidably entailed” in providing the service and thus the price produced by the parity principle cannot meet even this idiosyncratic definition of opportunity cost.

56. Baumol & Willig, *supra* note 1, at 36.

57. As Kahn and Taylor put it, “[T]he Baumol and Sidak essay seems at times to move from assumption to presumption” at this point in the argument. Kahn & Taylor, *supra* note 19, at 231.

58. Baumol & Sidak, *supra* note 6, at 182 (emphasis added).

59. *Id.* Nor do competitive firms use “opportunity costs” to determine prices as defined by Professors Baumol and Willig and as apparently accepted by the Privy Council. This may be seen by asking what would happen if a competing supplier of the accessed facility entered the market in competition with its owner (contrary to our assumption here that the bottleneck owner possessed monopoly power). Would each owner use the “opportunity cost” theory to charge nothing for use of the facility? This is what the parity principle says, on the grounds that the next best alternative to the use of the owner’s facility is no use of the owner’s facility at all. Moreover, Professor Kahn rebuts the thesis that charging “opportunity costs” is consistent with competitive behavior, as accepted by the Privy Council. He notes: “[A]s the market for interconnection becomes competitive, that ‘opportunity cost’ goes toward zero, because an increase in the amount of interconnection that it provides does not reduce its retail sales equivalently.” Kahn & Taylor, *supra* note 19, at 232. Judge Gault also recognized this, observing:

[I]t seems to me that in a perfectly contestable market if there is one supplier sacrificing profit there will be a rival or potential entrant in a position to supply without sacrificing profit. . . . That the employment of the perfectly contestable standard can lead to a price incorporating monopoly profits suggests to me a contradiction.

Telecom Corp. of N.Z. v. Clear Communications, Ltd., [1993] 4 N.Z.L.B.C. 340, 356 (C.A.) (Gault, J., concurring), *rev’d*, [1995] 1 N.Z.L.R. 385 (P.C.).

landlord's rental to a tenant breaks down, because incumbent firms do not own property rights to customer access in competitive markets for which they must be compensated by entrants. Otherwise, incentive for entry into unregulated markets would be eroded.

The hypothetical examples advanced by Baumol and Sidak also fail to prove the efficiency properties of the parity principle. They hypothesize the survival of an inefficient entrant when the bottleneck price is set below that dictated by the parity principle. To illustrate, Figure 3 uses the same numbers as Baumol and Sidak, where the inefficient entrant has incremental costs of \$4, \$1 in excess of the competitive level.⁶⁰ The easiest response to this example is to simply imagine that another efficient entrant with incremental costs less than \$3 enters the market. Clearly, the new entrant can capture the traffic and knock out the inefficient firm, so that efficiency is in no way precluded by the \$5.50 price. As long as efficient entry remains possible at lower prices, the \$7 dictated by the parity principle cannot be a *necessary* condition for static economic efficiency.

Even without an additional efficient entrant, this illustration of "inefficient bypass" ignores the prospect of competition by the incumbent, which the \$5.50 access price was designed to foster. An inefficient competitor cannot survive if the incumbent charges the competitive final price of \$8.50. 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 will therefore drive down the price for the entire route to \$8.50 (see Figure 3). Any firm that is inefficient (including the incumbent) 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 competitive 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 called for by the "imputation rules" cited by Baumol and Sidak $(\$5.50 + 3 = \$8.50)$. The same result could have been reached by simply starting with a competitive price of \$8.50.

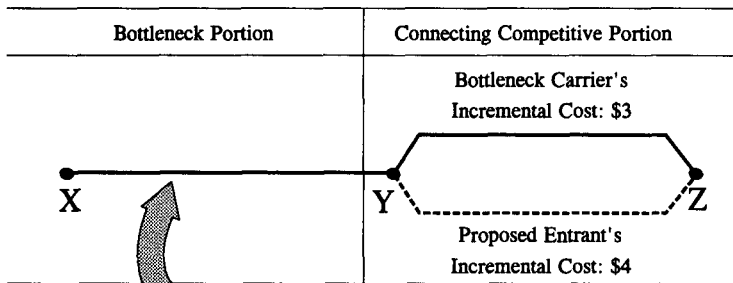
The problem with the example provided by Baumol and Sidak lies in what must be considered as either a hidden assumption or a "complementary rule" to the parity principle inconsistent with competitive markets. The example proves the efficiency of the parity principle only under the assumption

60. Note that we are assuming away all the other problems in implementing the parity principle by simply taking the assumptions in the hypothetical as true. We do not believe that simple railroad models correctly characterize the telecommunications industry.

FIGURE 3
Competition Can Prevent Inefficiency at "Access Prices"
Below the One Dictated by the Parity Principle

Professor Baumol's Example

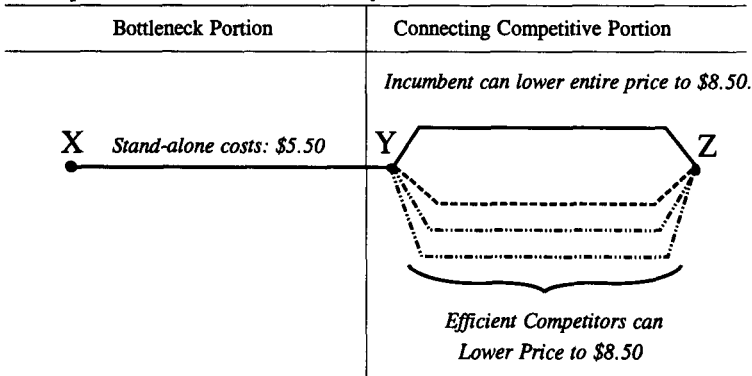
Price over entire route = \$10.00



"Regulated" Price = \$5.50

- Profits to inefficient entrant: $\$10.00 - \$5.50 - \$4.00 = \0.50

Competition Eliminates Inefficiency



Inefficient entrant cannot survive. Inefficient bypass is impossible unless:

- The incumbent insists on charging a monopoly price of \$10, and
- There are no other possible competitors.

that regulation prevents the incumbent and other possible competitors from charging less than the \$10 final price in the example. The same end is achieved if we reinterpret the parity principle as supplemented by a “complementary rule” that the retail price must remain at the level that existed prior to entry. We label the parity principal without the requirement of a fixed retail price (i.e., both competitors pay the same price of access) as “parity *per se*.”

Professor Kahn foreshadowed that other interconnection prices could be consistent with weak competitive neutrality,⁶¹ defined as a regime where ownership of the bottleneck facility should be neither an advantage nor a disadvantage with respect to competition in the “contested area” on the basis of true static efficiency differences. While defending the parity principle on behalf of Telecom, Professor Kahn concluded that the rule did not achieve its sweeping claims of economic efficiency. Efficient pricing and entry can be accomplished by what he calls “competitive parity”—requiring the entrant to pay the same price as paid by the competitive affiliate of the bottleneck carrier.⁶² It does not matter (at least insofar as “competitive parity” in the “contested area” is concerned) what the price is as long as the entrant pays the same price as the monopolist’s corporate affiliate.⁶³ Professors Kahn, Baumol and Willig cannot all be correct. If Professor Kahn is correct, it does not matter what the price of interconnection is, as far as “competitive parity” is concerned, as long as everybody pays the same price. If so, then Professors Baumol and Willig cannot be correct that the parity principle as proposed in

61. Kahn and Taylor provide the clues for such an approach:

That demonstration [Professor Baumol’s demonstration that the parity principle prevents uneconomic entry] must, however, not be permitted to obscure the fact that price combinations of \$6 and \$9, \$5 and \$8, \$4 and \$7, and \$3 and \$6 would likewise ensure that result.

. . . [T]he level of contribution incorporated in retail prices—and therefore, properly, in the wholesale, interconnection charge—must be determined, or must be assumed to have been determined, by regulators.

Kahn & Taylor, *supra* note 19, at 231-32. If these are Professor Kahn’s concerns, the simple answer is to choose the competitive price of access.

62. This part of Professor Kahn’s “competitive parity” rules could be supported by an analogy to a group of airlines seeking access to a monopoly airport facility. As long as they all pay the same rental rate for airport access it does not matter that the airport charges monopoly prices, insofar as competition on equal terms is concerned. This observation may be true as far as it goes, but not very helpful in the present circumstances. The facilities of the LEC cannot readily be segmented into the “contested area” and the bottleneck facility, each managed by a separate subsidiary of the bottleneck monopolist. Professor Kahn undoubtedly has in mind a situation more akin to the divestiture of the Bell Operating Companies from AT&T, which was designed to achieve the competitive parity that his rule seeks to implement. See Alfred E. Kahn, *Deregulation of the Public Utilities—Transitional Problems and Solutions* (Apr. 28, 1995) (unpublished manuscript, on file with the *Yale Journal on Regulation*) (presented at the Utility Markets Summit, Wellington, New Zealand). No such divestiture or even intercorporate segmentation is contemplated in New Zealand.

63. Kahn & Taylor, *supra* note 19, at 228 (“[T]he *absolute level* of the charge is irrelevant to the ability of the non-integrated rival to compete with the LEC.”).

New Zealand is *necessary* for economic efficiency. In fact, weak competitive neutrality offers little power to discriminate among alternative access pricing schemes on the basis of static efficiency. Even arbitrary prices of access can be justified as necessary and sufficient for a level playing field and static economic efficiency.

To illustrate, suppose we arbitrarily assume the price of access in Figure 3 to be zero. If efficient entrants can enter 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 \$3,⁶⁴ but weak competitive neutrality as defined by the parity principle (static efficiency) nevertheless will hold.⁶⁵

Proponents of the parity principle would object that the bottleneck monopolist cannot recover its total cost (\$8.50). But a requirement that the monopolist *must* recover total cost, and not the principle of weak competitive neutrality and static economic efficiency, 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.

The exposition of the parity principle by its proponents can easily confuse someone untrained as an economist. This confusion has unfortunately not been corrected by Baumol, Ordover, and Willig who (1) protest that they have been misinterpreted because they only claimed that parity is a necessary and not sufficient condition for efficiency,⁶⁶ (2) claim that parity and a “level playing field” are necessary to achieve economic efficiency,⁶⁷ and (3) claim that the parity principle is “*necessary and sufficient* for a level playing field” (their variant of weak competitive neutrality).⁶⁸

We can resolve the paradox by seeing how restrictive the proof of static efficiency for the parity principle really is. We 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. For the purpose of argument, we assume the parity principle’s test for weak competitive neutrality—whether a

64. A price of zero for access does not cover its incremental cost of \$3 for the bottleneck portion. As explained in more detail below, this would have to be cured with a “complementary rule” that the price of access exceed its incremental cost.

65. Too high a bottleneck price will prevent competition by placing a price squeeze on the unintegrated competitor. However, too low a price will threaten adequate recovery of the costs of the bottleneck.

66. “[T]he Privy Council in London, in delivering the final judgement . . . [adopted] the position we had taken all along.” Baumol et al., *supra* note 12, at 3, n.1.

67. *Id.* at 4.

68. *Id.* at 12 (emphasis added).

monopolist always has a profit incentive to (1) beat a less efficient entrant's profitable price (given the price of access offered to a less efficient competitor) and (2) allow entry of more efficient competitors, 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 competitive neutrality, and that the entrant 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 an entrant's least profitable price. The test of weak competitive neutrality is met as long as the monopolist finds it profitable to out-compete the entrant if, and only if, the monopolist is more efficient.

In the general case of Figure 3, *any* arbitrary price of access will achieve weak competitive neutrality in the world where there is no demand elasticity.⁶⁹ This is also the case where there is demand elasticity but the monopolist is the more efficient, or equally efficient, in terms of incremental cost. To account for the case where there is demand elasticity and the monopolist is less efficient, we limit our arbitrary price to one lower than the monopoly retail price minus the incremental costs of the more efficient entrant in the contested area. Otherwise, the monopolist has an incentive to out-compete the entrant, even though the monopolist is less efficient. We prove these results by proceeding with the same three cases used in the "proof" of the efficiency of the parity principle.⁷⁰

When the incumbent and entrant are equally efficient, an arbitrary price of access is clearly sufficient for static economic efficiency because it does not matter whether the entrant or the incumbent serves the customer. Therefore, it does not matter what the price of access is, given the parity principle's test for weak competitive neutrality (most efficient competitor always gets the business).⁷¹

If the incumbent is the lowest incremental cost producer, the result is the same although not quite as obviously. If the incumbent always has a profit incentive to undercut the entrant's minimum profitable price at every arbitrary price of access, then an arbitrary access price is both a necessary and sufficient condition for weak competitive neutrality as defined by the theory. The incumbent will be able to profitably undercut any price offer by the entrant

69. Demand elasticity describes the situation where the quantity of a good or service demanded by consumers will vary depending on the price. *See, e.g.*, RICHARD G. LIPSEY, AN INTRODUCTION TO POSITIVE ECONOMICS 100 (1983).

70. Baumol & Sidak, *supra* note 6, at 185-86.

71. There is no economic rationale for competition among equally efficient competitors (the usual competitive market standard) once static economic efficiency is elevated to the primary goal of competition in a regime of "winner-take-all."

required to pay an arbitrary access price, since the arbitrary access price will only increase the entrant's existing competitive disadvantage:

$$IC_E + A > IC_I, \quad (1)$$

where:

IC_E = "direct" incremental cost of the entrant in the "contested area,"

IC_I = "direct" incremental cost of the incumbent in the "contested area,"

A = arbitrary price of access.

Now we introduce the concept of demand elasticity. Define A_1^* to be the monopolist's "opportunity cost" computed at the incumbent's monopoly price (P_1^*):

$$A_1^* = P_1^* - IC_I. \quad (2)$$

Assume first that the price of access is arbitrarily set at less than the monopolist's profit maximizing level:

$$A_1^* > A. \quad (3)$$

The incumbent can profitably out-compete the inefficient entrant at any price P_1 that satisfies the following equation:

$$IC_E + A > P_1 > IC_I + A. \quad (4)$$

The incumbent will maximize profits by out-competing the entrant. The incumbent will earn A if it equals or exceeds the entrant's minimum profitable price offer of $IC_E + A$ and will earn:

$$P_1 - IC_I > A \quad (5)$$

if it does not (see Equation (4)). Since higher prices for the final product are more profitable, subject to a price constraint of $IC_E + A$ (the entrant's minimum price), the incumbent will always find it profitable to undercut the less efficient entrant. This offer can only be matched by the entrant's price (P_E) at a loss to the entrant:

$$P_E < IC_E + A. \quad (6)$$

This follows from Equation (4) where $P_1 = P_E$.

Assume now that

$$A_1^* \leq A, \quad (7)$$

The price of access is arbitrarily set above or equal to the monopolist's opportunity cost computed at the maximum profitable price. Therefore, if the monopolist matches or exceeds the entrant's lowest possible price, we have

$$P_1 \geq A + IC_E. \quad (8)$$

The monopolist does better to undercut the entrant's minimum price and charge

$$P_1^* = A_1^* + IC_I \quad (9)$$

to maximize profits. Since A_1^* is more profitable than A by assumption, P_1^* must always be more profitable than a price that satisfies Equation (8). Therefore, any arbitrary price of access will produce a minimum profitable price by a less efficient entrant that can always be profitably undercut by the incumbent in

a “winner-take-all” competition.

If the incumbent is the highest incremental cost producer, we now demonstrate that any arbitrary price of access less than or equal to the price that appropriates all of the entrant’s efficiency advantages at the incumbent’s monopoly price will produce a minimum profitable price by the entrant that will never be undercut profitably by the incumbent, and all access prices at higher levels will always be profitably undercut. Let:

$$A^{**} = P_1 - IC_B \quad (10)$$

We will show that any arbitrary access price less than A^{**} is a necessary and sufficient condition for weak competitive neutrality.

Assume $A^{**} \geq A$. We have by assumption:

$$IC_I + A > IC_B + A \quad (11)$$

Therefore, the incumbent cannot profitably undercut any price by the entrant P_E such that:

$$IC_I + A > P_E > IC_B + A \quad (12)$$

Any demand forthcoming at a retail price by the entrant meeting this test will be captured entirely by the entrant. The reason is that the incumbent will earn A if it does not match the price and

$$P_I - IC_I < A \quad (13)$$

if it matches or undercuts the entrant’s price. This follows from Equation (12), where $P_I = P_E$. The incumbent’s profit maximizing strategy is to price always in excess of the entrant when the price of access is equal to or below A^{**} . The monopolist will always be motivated to fully impute the access price (A) to its own higher cost service if the access price is less than or equal to the level necessary to appropriate the more efficient entrant’s competitive advantages at the monopoly price.

When $A > A^{**}$, the monopolist will always have an incentive to undercut the more efficient rival for the same reason as shown in the proof above.

Therefore, if the entrant is more efficient than the incumbent, any arbitrary price of access less than or equal to the monopoly retail price minus the entrant’s incremental cost is both necessary and sufficient for efficiency. If the monopolist is more efficient than the entrant, then any arbitrary price whatsoever is necessary and sufficient for efficiency. QED.

Anticipating the possible complaint that these arbitrary prices of access do not achieve efficient prices (P_E and P_I) for the final product, we reply that our arbitrary pricing rules are only necessary and sufficient conditions for static efficiency and weak competitive neutrality, and can not be blamed for not being a cure-all. To the objection that the incumbent will have no incentive to supply access unless forced to do so if A is less than the incremental cost of access, again we reply that our rules only look at static efficiency in the supply of service in the contested area. Obviously, the rule of arbitrary pricing must be supplemented with appropriate “complementary rules” to cure these

other deficiencies. Finally, we could “cook” the results to generate a desired access price from among the set of arbitrary ones by choosing the appropriate set of “complementary rules,” perhaps only implicitly, and by rejecting other “complementary rules” as intolerable burdens on economic efficiency.

If it were not for the fact that the above sophistry produces a dubious result, our theorem that arbitrary pricing of access is a necessary and sufficient condition for static economic efficiency in the supply of service in the “contested area” would be capable of inflicting great harm. 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. It 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, that any opposing theory called for requiring the monopolist to supply access at a different price than that at which it supplied itself, etc.

Obviously, our 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 supposedly unambiguous results into highly peculiar or even arbitrary results.

Baumol, Ordover, and Willig have recently offered their own set of “ancillary provisos” that promise to render the parity principle both unobjectionable and meaningless.⁷² It is hard to quarrel with a rule that simply requires all competitors to pay the same price for access (parity *per se*), subject to whatever complementary rules are required to avoid the adverse consequences of its application standing alone. Parity *per se*, shorn of its defects (e.g., application to the retail pricing of an unregulated monopolist), then becomes the “stone in the stone soup” of access pricing. Parity *per se* sits at the center of the pot, surrounded by arguments about what “ancillary provisos” are necessary to make it produce a competitive result.

In the New Zealand dispute, the assumption that a given price for its final product must be sustained by the monopolist was critical to the static efficiency claims for the parity principle. Baumol, Ordover, and Willig 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.⁷³ What is the test

72. Baumol et al., *supra* note 12, at 21-25.

73. “[S]uch an inefficiency will clearly occur whenever the prospective supplier who incurs the lower real incremental cost in providing the final product cannot afford to charge a price as low as that of a rival with a higher incremental cost of supplying the output in question.” *Id.* at 4.

Baumol et al. argue that such an inefficient outcome can be avoided only by the monopolist’s charging its rivals for access the amount it is already implicitly charging its own

of what the monopolist can “afford”? The answer built into the parity principle as proposed in New Zealand is that the monopolist can “afford” no price that produces less profit than it would make in the absence of entry. This is indeed a strange, permanent constraint to impose on a pricing regime designed to achieve a transition to deregulation and effective competition.

We cannot agree with the standard of weak competitive neutrality encompassed in the parity principle, nor can we agree that all of the difficulties with the parity principle can necessarily be cured by constraining the optimal choice of retail price to the customer. We conclude rather that the “winner-take-all” vision of the competitive equilibrium is an inappropriate test of weak neutrality for most of the emerging network industries to which the theory has been applied.

Demonstrations that the parity principle is a *necessary and sufficient* condition for economic efficiency make implicit assumptions that may be hidden to most 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 weak 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. Since an equally efficient entrant cannot recover sunk costs, that firm would be foreclosed from the market as well. In fact, if there are sunk costs, an efficient entrant will enter the business only if it does not know that the rule will be applied (the case of the U.S. rail industry).

The parity principle imposes a definition of weak competitive neutrality that is not imposed on other oligopolistic industries. There, multiple firms sell at prices in excess of incremental costs. Any firm with an incremental cost disadvantage bears the full cost of that handicap, yet is not barred entirely from the market. If dynamic benefits of competition are ignored, it will almost always be possible to argue static efficiency gains from eliminating competitors in oligopolistic industries.⁷⁴ But this test for weak competitive neutrality is not the correct standard in an industry with rapid technological change seeking a successful transition from regulation or public ownership to effective competition.

customers. They conclude from the parity principle that:

[The] price that the bottleneck-owner firm charges itself for bottleneck input is simply the price the firm charges to the final-product customer, minus the incremental cost to that firm of the remaining inputs of the final product [T]he price that the bottleneck owner implicitly charges itself for [the] bottleneck input [is] the price at which competing final-product should be entitled to purchase bottleneck input.

Id. at 10.

74. N. Gregory Mankiw & Michael D. Whinston, *Free Entry and Social Inefficiency*, 17 *RAND J. ECON.* 48, 48-58 (1986).

To illustrate this point, Baumol and Sidak⁷⁵ propose that the parity principle be used to compute prices for electric utilities opening up their transmission systems to competitive access. Assume that regulators accept that electric utilities were “exactly analogous” to railroads and every utility was instructed to apply the logic of Figure 1 to price access at its opportunity cost. Each utility could have a different final price, incremental cost, and opportunity cost. Believing that the necessary and sufficient conditions for static efficiency and weak competitive neutrality had been satisfied, regulators might be led to believe that the task is over.

However, the “winner-take-all” model of competition, with its use of the incumbent’s incremental cost as the benchmark for measuring entrants’ efficiency, breaks down when there is more than one monopolist and mobility of entrants. In a competitive market for the “contested area” (electricity generation), the task of a common competitive price in all service territories is to give appropriate efficiency signals. Instead, the parity principle assigns different revenues to entrants based on the monopolist’s avoided incremental costs. The efficiency of both incumbents and entrants in a particular service territory should be measured against this common competitive price—not the incremental cost of the incumbent—just as in any competitive market. Rather than foreclosing a less efficient entrant, the price of access should encourage both entrant and incumbent to supply electricity if price exceeds their incremental costs. All inefficient competitors, incumbents and entrants alike, will fully bear the costs of their inefficiency, the appropriate standard for weak competitive neutrality in a competitive market.

Different prices for the “contested area” for different service territories give customers different, incorrect signals for the price of the unbundled service in the “contested area”. It is difficult to see how all these problems with the price of power could be cured by changing the price of the final service as claimed by the parity principle.

Of course, it might be possible to cure the parity principle with a “complementary rule” that forces all prices for electric generation (at the same time and place) into equality. But that solution raises the question as to why one should not simply dispense with measuring the incumbent’s opportunity costs, create a competitive wholesale market to which all suppliers have access under conditions which achieve weak and strong neutrality as defined here, and let competition on equal terms take its course.

We supplement the concept of weak competitive neutrality with that of “strong” competitive neutrality. Strong competitive neutrality arises when an interconnection regime allows equally efficient competitors an equal

75. WILLIAM J. BAUMOL & J. GREGORY SIDAK, TRANSMISSION PRICING AND STRANDED COSTS IN THE ELECTRIC POWER INDUSTRY (1995).

opportunity to expect to earn their cost of capital, compensates the incumbent for any legacies of regulation, and purges the interconnection price of monopoly rents (if any). 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 neutrality, which is the much more important and useful condition. This means competition will be more fair and will allow equal dynamic competition for new products and services that require *investments*, as well as efficient operations. The parity principle, as proposed in New Zealand, fails the test even in the unrealistic hypothetical examples offered in its support.

Baumol, Ordoover, and Willig use their proof that the parity principle is necessary and sufficient for competition on equal terms for a *given* retail price to conclude that all skeptics of parity as they define it must be imposing some non-efficiency objectives onto the access pricing scheme. But this is the same fallacy that confused (1) a proof of the necessary and sufficient conditions for efficiency given these restrictive assumptions with (2) more general proof of efficiency. Since other rules will also achieve static efficiency, it does not necessarily follow that critics of parity are abandoning efficiency goals for other pursuits or that there must be “demonstrable efficiency costs” associated with other proposals.

It may be true in some cases that skeptics object to the sole focus on efficiency. But this does not capture the gravamens of the most compelling objections to the rule. The objections really are to: (1) making a narrow concept of static efficiency the centerpiece of access pricing without conceding just how permissive this standard really is; (2) constraining the application of the rule with implicit assumptions that prevent it from accomplishing richer definitions of efficiency; (3) erroneously alleging that richer and more realistic definitions of the problem impair economic efficiency; (4) demonstrating antipathy or even extreme hostility to the use of access pricing to force monopoly incumbents to price competitively in the face of entry and preferring instead direct control on the retail price level; (5) alleging that the monopolist cannot “afford” to charge the lower retail prices that would be forced to meet competition at access prices lower than those called for by the parity principle. In reality, access pricing can achieve the broader goals of efficiency espoused by its critics without sacrificing the idea of competitive neutrality, broadly defined.

A separate efficiency argument made on behalf of the parity principle concerns an alleged Universal Service Obligation (USO) unique to the incumbent. The argument is that the incumbent’s obligation to provide unprofitable service to remote areas requires a cross-subsidy from more lucrative services. Unless the parity principle is applied, inefficient companies

can enter and turn a profit by targeting lucrative services only. Cost-based interconnection policies are then criticized as encouraging uneconomic entry to evade the cross-subsidy and imposing an unfair competitive disadvantage on the incumbent. Even apart from situations where an imagined burden is used by incumbents to impose unjustified anticompetitive policies, the USO becomes a rationalization for anticompetitive interconnection prices that go far beyond what is necessary to correct for any asymmetry. However, any burden from a USO can be handled in a competitively neutral manner independent of the interconnection regime. This involves three steps:

1. Developing a verifiable estimate of the magnitude of the required cross-subsidy;
2. Limiting the distortion of the access price and the distribution of the subsidy to only that level required to achieve competitive neutrality (in both the favored and disfavored markets); and
3. Developing a pro-competitive access policy independent of the cross-subsidy mechanism.

If the USO required additional funding on an annual basis, such funding should be conducted on non-discriminatory terms. The United Kingdom's Office for Telecommunications (OFTEL) has proposed creative mechanisms for dealing with the universal service obligation in that country. The proposal involves quantifying the amount of burden, if any, and funding it through a separate account to which all telecommunications services contribute periodically on a non-discriminatory basis.⁷⁶ The advantage of this proposal lies in its clarity. The account cannot be tapped for unrelated purposes, cannot be funded exclusively by one network provider, and can be accessed equally by any competitor that provides services deemed to be burdensome. Under this approach, the entrant would receive credit for the residential customers it supplied. Because competitively neutral schemes⁷⁷ are possible in conjunction with any interconnection proposal, the USO provides no unique justification for the parity principle.

In a dynamic industry such as telecommunications, regulators should choose an interconnection pricing policy to achieve the dynamic benefits of

76. Professor Willig has supported a similar "competitively neutral" funding of the incumbent's service obligations. Willig Testimony, *supra* note 32, at 5.

77. For an examination of the competitive neutrality properties of various recovery mechanisms for such burdens in a regulatory transition, see William B. Tye & Frank C. Graves, *The Economics of Negative Barriers to Entry: How to Recover Stranded Costs and Achieve Competition on Equal Terms* (Feb. 1996) (unpublished manuscript, on file with the *Yale Journal on Regulation*).

competition. Static efficiency gains and competitive prices to customers will probably take care of themselves in most circumstances, because static economic efficiency (and even access pricing based on opportunity costs, if that term is given the broad meaning employed more recently by its proponents) is a surprisingly robust property of access schemes that successfully induce competition. But common sense should have told us all along that competitive prices and economic efficiency are fully compatible.

C. *The Threat to Effective Competition*

The failure to purge interconnection prices of monopoly rents is not the only weakness of the parity principle. An even greater danger is that the parity principle will threaten competitive pricing and efficient entry in the relevant market because it does not achieve competition on equal terms.

The parity principle is biased because it assigns the incumbent ownership of the profit and the revenues needed to recover its sunk costs. The entrant has to “buy” the customers by paying the incumbent the foregone profit and sunk cost for each customer obtained.⁷⁸ In the Clear dispute, this notion of ownership took an extreme form in Telecom’s insistence that the opportunity cost of foregone profit include all future consumers of local loop services.⁷⁹

Anticompetitive consequences of the rule arise chiefly from the central role of sunk costs in network industries such as telecommunications. Under such circumstances, the rule *requires*⁸⁰ that the incumbent implement a price squeeze (i.e., Telecom will have to price interconnection so as to squeeze Clear’s revenues down to incremental costs). Competitors who capture business must reimburse the incumbent for the revenues necessary to amortize the monopolist’s sunk costs. Because all firms must price in excess of incremental costs, no firm would voluntarily sink costs to build a telecommunications network knowing it would be exposed to such a price squeeze. The rule in

78. Likewise, Professor Kahn has noted that the parity principle does not achieve competition on equal terms. Rather, he argues that the rule’s preferential treatment of the incumbent is justified by principles found in traditional rate-of-return regulation: “*The treatment under our rules of the incumbent telephone company and its would-be rivals is indeed asymmetrical. The justification is that the former are and have been thoroughly regulated public utility enterprises . . .*” Kahn & Taylor, *supra* note 19, at 236 (emphasis added).

79. Professor Baumol was asked on cross-examination, “[A] levy applying your opportunity cost principle is designed to maintain Telecom’s present benefits *and future expectations*?” He replied, “That’s right.” High Court Transcript, *supra* note 41, at 790 1.25 (emphasis added).

80. As Professor Willig notes, the model *requires* a price squeeze on an unintegrated competitor: “A dominant firm can *execute a perfect price squeeze* and thereby earn all the monopoly profits available in the market for the package of complementary products.” J.A. Ordovery et al., *Nonprice Anticompetitive Behavior by Dominant Firms Towards the Producers of Complementary Products*, in ANTITRUST AND REGULATION 115, 116 (Franklin Fisher ed., 1985) (emphasis added).

effect creates a first-mover advantage, since only the first firm to sink investments will ordinarily be allowed to recover these costs.

The problem that sunk costs pose for competition on equal terms can be explored by imagining identical investments by the incumbent and the entrant in a new service. We assume both firms are equally efficient, which is normally an ideal situation for effective competition. The investments are significant, but after they are made the future incremental costs become minimal. The day after the entrant makes its investment, the parity principle requires an access price equivalent to the incumbent's revenues less the minimal incremental cost of the incumbent's service. *The parity principle price will leave no revenues for an equally efficient entrant to recover its sunk investment, because a first-mover advantage is implicitly built into the rule.* Under the rule, the entrant will have no incentive to undertake the investments necessary to compete, despite its equal, or even greater, efficiency.

Figure 4 shows how the parity principle will prevent effective competition on equal terms in the relevant market, by violating strong competitive neutrality, as defined above. In the example, the costs of the proposed competitor and bottleneck owner are broken down into fixed and variable costs totalling \$2. Fixed costs are associated with investment in equipment, while variable costs refer to operating costs once the equipment is installed. Prior to entry, the concept of long-run incremental cost would include *both* the fixed and variable costs of the investment. However, the *day after* entry, the fixed costs in equipment investment have already been sunk.⁸¹

81. In endorsing the parity principle before the High Court, Baumol and Willig often uses the term "incremental costs" without clearly specifying whether the term refers to the long-run or the short-run. At critical points in the argument, undefined terms such as "pertinent costs" are used in describing the costs of the incumbent monopolist that are avoided by use of the competitor's services. Baumol & Willig, *supra* note 1, at 29. Baumol, Ordovery, and Willig define incremental cost to include "the requisite capital," without defining that term. Apologists for the parity principle take this ambiguity as evidence that the Rule is not designed to indemnify the monopolist for its sunk costs in the "contested area," and that the incumbent's recovery of sunk costs is not guaranteed. However, Baumol and Willig conclude that "[A]ll its [the bottleneck owner's] costs are covered one way or the other." *Id.* at 23. Baumol and Willig's brief states that the price of access should be reduced by "the incremental cost that *this foregone sale* would otherwise have brought to Telecom New Zealand," because "incremental cost by definition includes no portion of fixed cost." *Id.* (emphasis added). Baumol and Willig clearly rebuts the inference that the monopolist should not be indemnified for its sunk costs in the "contested area" and claim that one of the benefits of the Rule is to prevent the entrant from duplicating the incumbent's sunk costs:

It is true that an entrant may need to replicate some of the incumbent's activities or facilities, and that the costs of such duplication may render the entrant unprofitable. But, if that is the case under efficient component pricing, then the requisite replication of costs correspondingly renders the entry inefficient and ultimately harmful to consumers and to society.

Id. at 36. This effectively rebuts contentions made from time to time that deny the finding of Judge Cooke of the Court of Appeal that the parity principle "would amount to allowing a new entry into the market on condition that the competitor indemnify the monopolist against any loss

FIGURE 4
The Parity Principle Will Prevent
Effective Competition in the "Contested Area"

<i>Price over entire route = \$10.00</i>	
Bottleneck Portion	Connecting Competitive Portion
	<i>Costs of Incumbent</i> Fixed Cost: \$1.00 <u>Variable Cost: \$1.00</u> Total = \$2.00
X	
	<i>Costs of Potential Entrant</i> Fixed Cost: \$1.00 <u>Variable Cost: \$1.00</u> Total = \$2.00



The Day of Entry:

- Entrant purchases necessary production equipment.
- Incremental cost:
 Fixed cost (equipment investment) + variable cost = \$2.00



The Day After Entry:

- Equipment investment costs are now sunk.
- Post-investment incremental cost = variable cost = \$1.00
- Based on the post-investment incremental cost,
 bottleneck carrier uses the parity principle to set price of access at \$9.00.

Result: Applying the parity principle would force the entrant to lose \$1.00 per unit and, realizing that, the entrant would never enter the market in the first place.

of custom." *Telecom Corp. of N.Z. v. Clear Communications, Ltd.*, [1993] 4 N.Z.B.L.C. 340, 343 (C.A.), *rev'd*, [1995] 1 N.Z.L.R. 385 (P.C.). *See, e.g.*, Arnold, *supra* note 24. Certainly, every court took Baumol's and Willig's brief to stand for full indemnification of all sunk costs, and proponents of the parity principle criticize alternatives precisely because they fail to indemnify the incumbent for its sunk costs and deny entrants those same revenues. *See Baumol & Sidak, supra* note 6, at 201; Kahn & Taylor, *supra* note 19, at 235-38.

Incremental costs will therefore include only the \$1 operating cost of the equipment. Given a \$10 price over the entire route, the bottleneck owner maximizes profits by using the parity principle to raise the bottleneck price to $(\$10 - 1 =)$ \$9, appropriating the sunk costs of the entrant's investment. The result stifles competition because it leaves the entrant no incentive to undertake the necessary investments. Once the entrant has invested in equipment, the monopolist has the incentive to raise its price and allow an entrant recovery of no more than the incremental costs of the competitive service.

The impact of the parity principle on the *monopolist's* fixed costs is quite different. The monopolist calculates the parity principle price by deducting from its revenues its incremental costs over the competitive portion of the route. If the service over the competitive portion involves sunk costs, they will *not* be deducted in determining the parity principle price; only variable costs will be deducted.⁸² In the more general case where the monopolist has already sunk costs and the entrant is seeking access, the established incumbent monopolist can usually foreclose competitive entry under the parity principle simply by requiring all incumbents to indemnify it for its sunk costs prior to competitive entry. As noted, the monopolist is indemnified under the rule for his sunk costs strictly by virtue of his arrival at the market first.

Introducing the more realistic assumption of sunk costs into the access pricing problem creates a conflict between true competition on equal terms (or true competitive neutrality, including the strong degree discussed above) and the monopolist's indifference to competition after costs are sunk. Both tests cannot be met. Proponents of the parity principle for New Zealand implicitly resolved this conflict by allowing a first-mover advantage to the incumbent monopolist. They chose the monopolist's indifference to competition (and the associated indemnification of all sunk costs) over true competitive neutrality (i.e., equal opportunity for both carriers to recover sunk costs in the contested area of the market).

Indeed, one of the economic advantages cited for the parity principle is that it will deny the entrant the revenues "an entrant may need to replicate some of the incumbent's activities or facilities"⁸³ and thereby "discourages inefficient entry."⁸⁴ "[A]ll [the incumbent's] costs are covered one way or the other" under the rule,⁸⁵ clearly indicating that the rule intends to indemnify the incumbent monopolist for all sunk costs. Kahn and Taylor make it quite clear that they believe that the claimed static efficiency benefits of the

82. In the telecommunications industry, the price for interconnection dictated by the parity principle would represent nearly the entire price over the route. This is because the variable costs associated with carrying a call are very small.

83. Baumol & Willig, *supra* note 1, at 36.

84. *Id.* at 17.

85. *Id.* at 34.

parity principle follow from indemnifying the incumbent for its sunk costs because those revenues are denied to entrants.⁸⁶

We find it difficult to reconcile such clear statements of intentional first-mover advantage conferred on the incumbent under the parity principle with statements that the parity principle seeks to achieve a level playing field⁸⁷ and “competitive parity” between incumbents and entrants⁸⁸. The parity principle does not prevent a “price squeeze.” Indeed, it *mandates* one on the theory that the revenues needed by the competitor to recover its sunk costs are the bottleneck owner’s “opportunity costs.”⁸⁹

Proponents of the parity principle have responded by claiming that similar price squeezes can occur in competitive markets, even where a “bottleneck” carrier is not vertically integrated into the competing portion of the route.⁹⁰ However, that competition might be suppressed in other situations does not render such conduct efficient. It does not excuse the parity principle for requiring such an outcome. Squeezing the entrant’s revenues down to incremental costs in the presence of large sunk costs is simply not a competitive pricing standard. A competitive market would never produce such a result.⁹¹ Moreover, in competitive markets, entrants do not pay the sunk

86. Kahn and Taylor state:

The non-marginal, common or fixed costs of incumbent telephone companies and competitors alike are irrelevant to the efficient distribution of the contested business among them. The only relevant determinant is their comparative marginal costs, and that is the basis on which the rules of competitive parity and efficient component pricing would ensure that efficient outcome.

. . . [I]f, in order to enter the market, the would-be competitor must itself incur common, fixed costs of supplying a number of services, some portion of which it must recover in the price of the competitive service, production by two firms, each of them incurring significant fixed costs, is socially inefficient. If the incumbent telephone companies could profitably retain the competitive business at prices covering only their marginal costs but the challengers require some larger markup, in order to recover for themselves some of their fixed, common costs, then it is inefficient for society to make it possible for the latter to do so; it would involve the wasteful duplication and incurrence of new, additional common costs of facilities and activities already provided by the incumbent. As Baumol and Sidak point out, the total costs incurred by society would be inflated by the additional fixed costs incurred by the entrants, even though they might require no larger contribution than the LECs to the recovery of those costs.

Kahn & Taylor, *supra* note 19, at 237-38 (citation omitted).

87. Baumol & Sidak, *supra* note 6, at 198.

88. Kahn & Taylor, *supra* note 19, at 227.

89. The parity principle also forecloses competition because it *requires* an anticompetitive cross subsidy between the competitive and the monopolized sector. By charging \$9 for the use of the bottleneck in Figure 5, the monopolist is in effect only charging \$1 for the competitive service, well below its long-run incremental cost of \$2. For further explanation of the cross subsidy inherent in the parity principle, see *Rail Competition*, *supra* note 33, at 77.

90. *Id.*

91. With regard to Telecom’s claims for indemnification even for lost new business, Judge Gault stated that “[t]hat without doubt is something only a monopolist could assert” Telecom Corp. of N.Z. v. Clear Communications, Ltd., [1993] 4 N.Z.L.B.C. 340, 356 (C.A.), *rev’d*, [1995]

costs of the incumbent as a price of access in order to make them indifferent to entry.⁹² When a new hotel is built, the investor does not send a check to existing hotels in the neighborhood to compensate them for lost business. The incumbent's recovery of sunk costs can be eroded by entry in a competitive market.

Another alleged justification for preferential treatment of the incumbent's sunk costs lies in regulatory economics. One feature particular to regulatory economics is "uneconomic bypass." Uneconomic bypass typically concerns the prospect that the utility's loss of sales volume will raise rates for captive customers. The utility's rates are set to recover its sunk costs over all units of output. As the utility loses business, the regulator will increase rates in order to recover the same costs over a lower volume. The inequity stems from the ability of some customers, such as large industrial users or municipalized territories,⁹³ to leave the service territory while other consumers are held "captive" to the utility. Thus, captive customers may be injured by the departure of others. Setting an access price that protects the sunk costs of the utility helps avoid this problem.⁹⁴ However, the typical uneconomic bypass problem cannot occur in competitive industries. In competitive industries, an incumbent's loss of sales volume does not trigger an automatic price increase threatening to harm "captive" consumers. Instead, competitive companies are more likely to *decrease* their prices in response to increased competition.

A second circumstance warranting preferential treatment for an incumbent involves transitions from a regime of rate base/rate of return regulation where investors had not been previously compensated for the risk that assets would be "stranded" as a result of transition to competition.⁹⁵ This appears to be

1 N.Z.L.R. 385 (P.C.).

92. The District of Columbia Circuit explained that:

[I]f a company can charge a former customer for the fixed cost of its product whether or not the customer wants that product, and can tie this cost to the delivery of a bottleneck monopoly product that the customer must purchase, the products are as effectively tied as they would be in a traditional tying arrangement.

Cajun Elec. Power Coop. v. FERC, 28 F.3d 173, 178 (D.C. Cir. 1994). While we do not agree with the Court that recovery of stranded cost is necessarily anticompetitive as a theoretical matter, Figure 4 would represent the type of situation that alarmed the Court.

93. In the United States, a customer can sometimes acquire special rights for purchasing electricity by declaring itself a municipality under applicable regulations. See "*Sham Municipalizations*" *Seen Arising to Circumvent Retail Wheeling Bans*, *ELECTRIC UTIL. WKLY.*, Apr. 4, 1994, at 17.

94. On the potential for uneconomic bypass in a regime of rate regulation, see William B. Tye, *The Economics of Public Convenience and Necessity for Regulated Industries*, 60 *TRANSP. PRAC. J.* 143 (1993).

95. See William B. Tye & Johannes P. Pfeifenberger, *The Not-So-Strange Economics of Stranded Investment (A Reply)*, 7 *ELECTRICITY J.* 3, 80 (1994); Reply Testimony of A. Lawrence Kolbe and William B. Tye, Proposed Rules: Recovery of Stranded Costs by Public Utilities and Transmitting Utilities, 18 *CFR* § 35 (Aug. 15, 1994) (No. RM94-7-000) (statement on file with the *Yale Journal on Regulation*).

Professor Kahn's concern when he emphasizes that regulated utilities operate "under an arrangement that is supposed to assure them a fair opportunity to recover a return on and of their prudently undertaken investments, in exchange for regulatory limitations on their earnings."⁹⁶ However, the current investors in Telecom are not part of a traditional regulatory compact. Telecom was privatized through a sale of shares to the public with full knowledge that the company was subject to competition. Both the risks and rewards of competition were factored into the demand for the shares. Under competition, cost recovery is determined by the ability to satisfy the consumer more efficiently. Cost recovery does not rely on which competitor first entered the market. Applying the parity principle introduces asymmetrical treatment, without a regulatory compact to show for it.

If anything, the parity principle should be most welcome among regulatory authorities. Regulators may be inclined to treat the incumbent preferentially because it operates under both regulatory constraints and assurances. Nevertheless, the adverse consequences of the parity principle have persuaded several regulatory authorities not to adopt it.⁹⁷

Proponents of the parity principle have argued that private contracts can protect entrants from the price squeeze inherent in the parity principle. The entrant's total costs include future fixed costs in equipment investment. They have argued that a long-term contract signed *before* investments are undertaken could guarantee the future recovery of these costs.⁹⁸ Interestingly enough, a contract to protect sunk costs would *suspend* the parity principle throughout the life of the contract.

This suggested contractual solution requires a "complementary rule" preventing the parity principle from being applied for the duration of the contract. Otherwise, the contract can itself be undercut by the logic of the parity principle. The owner of the bottleneck will have an incentive to engage in opportunistic behavior after the connecting carrier incurs sunk costs, whatever the contract might say. Indeed, bottleneck carriers have in the past successfully argued that such contracts should be revoked precisely because they are inconsistent with the parity principle.

Figure 4 shows how the logic of the parity principle can be used against a long-term contract that seeks to protect the sunk costs of entrants. For the

96. Kahn & Taylor, *supra* note 19, at 236.

97. *In re* Expanded Interconnection with Local Telephone Company Facilities; Amendment of the Part 69 Allocation of General Support Facility Costs, 7 F.C.C.R. 7369 ¶ 144 (1992); OFFICE OF TELECOMMUNICATIONS [ENGLAND], A FRAMEWORK FOR EFFECTIVE COMPETITION (1994); *In re* Application of MFS Intelenet of Maryland Inc. for Authority to Provide and Resell Local Exchange and Interexchange Telephone Service, No. 71155 (Md. P.S.C. Apr. 25, 1994).

98. See, e.g., *Seaboard* Testimony, *supra* note 34. For another example of this view, see David Reiffen & Andrew N. Kleit, *Terminal Railroad Revisited: Foreclosure of an Essential Facility or Simple Horizontal Monopoly?*, 33 J.L. & ECON. 419 (1990).

purpose of argument, the courts are assumed to adopt the parity principle as the optimal pricing rule. The prospective entrant correctly anticipates that the fixed costs of its investment will be threatened by the parity principle once the investment is made. Given a \$10 price for the entire route, the entrant will therefore demand a long-run contract for access to the bottleneck at \$8, leaving sufficient revenues of \$2 to recover all costs of the investment contemplated. (Indeed, prior to sinking costs, the price of access justified by the parity principle would be $(\$10 - 2 =) \8 .) To get past the hurdle of requiring entrants to indemnify the bottleneck owner for its sunk costs, assume that these customers are brand new and, therefore, the bottleneck carrier has incurred no sunk costs. With a contract in hand,⁹⁹ the investments are sunk by both carriers.

Herein lies another threat of the parity principle to effective competition. Once the contract is signed, the bottleneck carrier has a strong incentive to turn around and break the contract as soon as the entrant's investments are made.¹⁰⁰ The principle of indifference is immediately violated after investments are sunk, because the monopolist's indifference is short-term by nature. (Note that the monopolist earns \$1 more on all traffic that moves wholly over its own system than when it provides access to a competitor at the contract price of \$8.) Some of the chief proponents of the parity principle would justify breaking such a contract precisely because it violates the parity principle!¹⁰¹ Endorsed in public policy, the parity principle thus becomes the rationale for undercutting efficient contractual solutions to the competitive

99. To make the example even more realistic, assume that the contract was signed at this price because regulators required competition on equal terms as we would define it. This is exactly what has happened in at least one case in the U.S. rail industry.

100. The incentives for opportunistic behavior in similar situations are discussed by Klein, Crawford, and Alchian:

An appropriable quasi-rent is not a monopoly rent in the usual sense, that is, the increased value of an asset protected from market entry over the value it would have had in an open market. An appropriable quasi-rent can occur with no market closure or restrictions placed on rival assets. Once installed, an asset may be so expensive to remove or so specialized to a particular user that if the price paid to the owner were somehow reduced the asset's services to that user would not be reduced. Thus, even if there were free and open competition for entry to the market, the specialization of the installed asset to a particular user (or more accurately the high costs of making it available to others) creates a quasi rent, but no "monopoly" rent.

Benjamin Klein et al., *Vertical Integration, Appropriable Rents, and the Competitive Contracting Process*, 21 J.L. & ECON. 297, 299 (1978).

101. A bottleneck railroad recently argued that contracts signed with the connecting carrier in the past were inconsistent with the parity principle. These contracts were signed pursuant to a regime of regulation designed to prevent the *price squeeze*—in other words, the very contractual solution to the incentives for a price squeeze inherent in the parity principle. The contractual solution was said to be inefficient precisely because it prevented the bottleneck carrier from following the parity principle. See generally *Seaboard* Testimony, *supra* note 34.

access problem.¹⁰²

Proponents of the parity principle do not directly address the important temporal element in measuring incremental costs and the problems of sunk cost recovery. Rather, confusion arises from the different definitions assigned to "incremental cost." In their brief to the High Court, Baumol and Willig state that "incremental cost includes incremental opportunity cost."¹⁰³ Not surprisingly then, confusions over the multiple meanings given to opportunity cost have simultaneously infected the meaning of "incremental cost," with profound significance to the prices called for under the opportunity cost theory.

The price of access based on "opportunity cost" is defined as Telecom's "incremental revenue minus the incremental costs that this foregone sale would otherwise have brought to Telecom New Zealand."¹⁰⁴ The results of the pricing rule thus depend critically on the definition of incremental costs from the foregone sale. Unfortunately, a review of the writings in support of the parity principle permits a variety of definitions. At certain critical points of the argument, undefined terms such as "pertinent costs"¹⁰⁵ cloud the picture as to exactly what is to be deducted from the incumbent's revenues to determine the price of access.

Baumol and Willig state that "incremental cost [is] the amount by which the firm's total cost increases when it supplies the product or service."¹⁰⁶ At times, they convey the strong impression that incremental costs should be calculated only for a small increment of volume at issue and without consideration of the fixed or sunk costs incurred to provide the service in the contested area.¹⁰⁷ This prevents the computation of the long-run per-unit incremental costs of providing the entire competitive service, defined as follows: "The *total service incremental cost of the entire service*, call it service X, is defined as the difference in the firm's total costs with and without service X supplied."¹⁰⁸ A requirement to recover revenues in excess of incremental costs by the monopolist is asserted to recover a "net contribution towards its fixed and common costs,"¹⁰⁹ although it is unclear as to whether these costs are incurred in supplying the bottleneck service, the competitive service, or are joint costs of both services. In multi-product industries, such as telecommunications, with large sunk costs, the differences between these

102. For a discussion of the "contractual equilibrium," see John R. Meyer & William B. Tye, *Toward Achieving Workable Competition in Industries Undergoing a Transition to Deregulation*, 5 YALE J. ON REG. 273 (1988).

103. Baumol & Willig, *supra* note 1, at 24.

104. *Id.* at 23.

105. *Id.* at 29.

106. *Id.* at 10.

107. *Id.* at 23-24, 31-32.

108. Baumol AT&T Testimony, *supra* note 17, at 10.

109. *Id.* at 29.

costing concepts is considerable. The rule by which these costs are determined greatly affects price.

It is thus very easy to find quotations suggesting that the “pertinent costs” used to calculate the price of access are the shortest of the short run, based on small increments (not an entire service), and inclusive of no recovery of fixed or sunk costs in supplying the competitive service. Before concluding that incremental cost is only a short-term concept, however, we note that it is equally possible to find language indicating exactly opposite conclusions. Baumol and Sidak use the “average incremental cost” in their formal derivation of the rule.¹¹⁰ Since this “includes any fixed cost that must be incurred on behalf of that product alone,”¹¹¹ it would appear that “product specific fixed costs”¹¹² are supposed to be included in the calculation. In his AT&T testimony, Professor Baumol assumed that *all* costs were incremental costs.¹¹³ Baumol, Ordover, and Willig, state that incremental costs include “the requisite capital,” without defining what that means.¹¹⁴

Baumol and Sidak address the ambiguity of how to treat the incumbent’s fixed and sunk costs with the following cryptic statement: “Despite these possible distinctions, readers will lose little in following the logic in the remainder of our discussion if they treat average-incremental cost and average-variable cost as synonyms.”¹¹⁵ Given the fact that most of the incumbent’s costs of the local loop are likely to be “product specific fixed (sunk) costs,” this problem cannot merely be assumed away.

D. *The Threat to Technological Development*

One well-known way firms compete is through technological innovation, which ultimately renders old technologies obsolete. Where technological innovation erodes the value of an incumbent’s sunk costs, the parity principle ensures their protection. At the same time, the parity principle may prevent an equally efficient entrant from recovering the revenues necessary to survive.

The hypothetical railroad examples offered in Baumol and Willig’s brief submitted to the High Court do not consider the possibility of differing services or improved technology. Rather, the goal is simply to carry railroad traffic between two points “Y” and “Z” at minimum incremental cost. Once

110. Baumol & Sidak, *supra* note 6, at 177-79.

111. *Id.* at 177.

112. *Id.*

113. Baumol AT&T Testimony, *supra* note 17, at 16.

114. Baumol et al., *supra* note 12, at 10 (“The analysis underlying the parity principle . . . tells us that the price that the bottleneck-owner firm charges itself for bottleneck input is simply the price the firm charges to the final-product customer, minus the incremental cost to that firm of the final product, including the requisite capital.”).

115. Baumol & Sidak, *supra* note 6, at 177.

the prospects for new technology and different services are introduced, however, several defects of the parity principle become apparent. The parity principle reduces the benefits of new technology to consumers and can deter entrants from introducing new technology altogether.

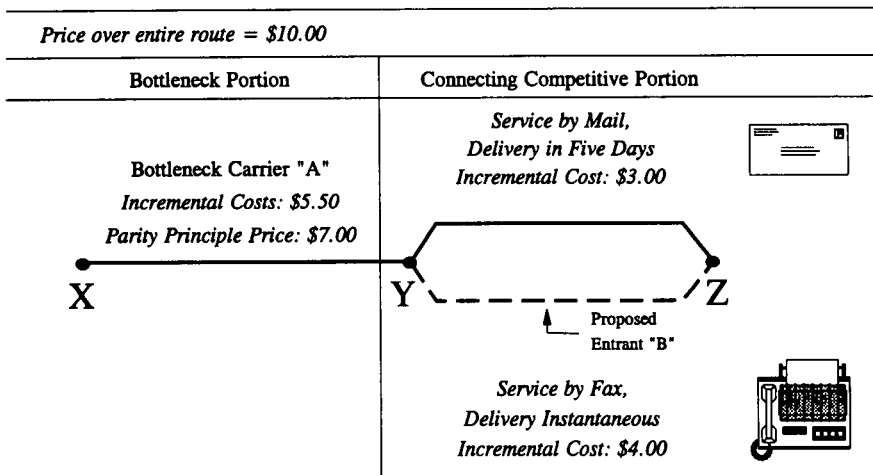
We introduce the possibility of divergent technologies to the typical hypothetical examples concerning the parity principle. The incumbent has an older technology that is both low in performance and low in incremental cost. Figure 5 converts the rail example into a message delivery service and assumes the incumbent can deliver a particular document by mail at an incremental cost of \$3. Delivery takes several days. The proposed entrant has access to fax technology that can deliver the message instantaneously, but at an incremental cost of \$4. Because different services are involved, a simple comparison of incremental costs does not tell which technology is more efficient.

A dynamic analysis reveals how the parity principle will impede efficient new technology altogether if any significant risks are involved in its introduction. Most technological innovations involve risk of one sort or another; it is not known whether the market will bear a sufficiently attractive combination of price and volume to cover the costs of the new technology. Failure occurs when the new technology cannot command sufficient revenues to cover its costs. The entrant will introduce the new technology only if the expected gains in the event of success more than offset the expected losses in the case of failure. Risky new technology will never be introduced under the parity principle because the incumbent can confiscate the entrant's benefits under the successful scenario. The incumbent can always constrain the entrant to receiving revenues no more than enough to cover incremental costs. Facing no upside in the successful scenario and a prospect of losses in case of failure, the rational entrant will avoid innovation and stay with established technologies.

Figure 5 illustrates the risk/reward imbalance created by the parity principle in the introduction of new technology. Prior to the introduction of new technology, the incumbent charges \$10 for the service and incurs an incremental cost of \$3 over the competitive service and charges \$7 for access. If the fax technology proves successful, it will command a premium price of \$13 for the entire service with incremental costs of only \$4. If it fails, it cannot compete with the \$10 price of the old technology and the entrant exits the market at a loss of investment. If the price of access were constant at \$7, the successful entrant would retain benefits of \$2 ($\$13 - \$4 - \$7 = \2). We assume that the \$2 more than compensates the innovator for risk of loss of his investment.

Witnessing the success of the technology, however, the bottleneck carrier can now raise the access price to \$9. In fact, the bottleneck carrier can be expected to claim that a price of \$9 is required by the parity principle. The

FIGURE 5
The Parity Principle Can Impede
the Development of New Technology



Opportunistic Behavior:



Entrant bears risk, charges \$13 for total service.



Risk resolved, bottleneck carrier raises access price to \$9 (\$13 - \$4). Entrant's benefits are therefore eliminated.

Monopoly Pricing:

- At same \$10 price as old technology, all benefits of fax technology are passed on to consumers.
- However, new technology cannot survive.
- At "regulated" bottleneck price of \$5.50, entrant can charge \$10, benefit consumers and make profit.

bottleneck carrier will claim it could receive \$13 in total revenues and incur \$4 in incremental costs if it provided the same new technology as the entrant.¹¹⁶ Under this logic, the bottleneck carrier's total opportunity cost, and hence the parity principle price, are \$9. The entrant's profit in the event of technological success is thus reduced to \$0, with the added discouragement of potential losses if the technology is not adopted.

It is easy to see how any successful outcome of the new technology will lead to a bottleneck price appropriating all the entrant's benefits. Technological progress is impeded by eliminating the prospects of benefits that are necessary to motivate risk taking. Instead of appropriating merely sunk investment costs the incumbent essentially appropriates the risk premium that motivated the introduction of new technology. Once the technology has proven successful, the risk costs are essentially "sunk" and permit an opportunistic price squeeze just as when the more tangible fixed costs of an investment are sunk.

Proponents of the parity principle may argue that new technology will be introduced as long as the bottleneck carrier is allowed to adopt a "make or buy" approach. They may assert that Telecom would always have the incentive to subcontract any technological innovation from Clear if it were indeed valuable. As explained in detail above, proposed contractual solutions can be unstable and the parity principle itself can be used to undermine them. The only alternative to contractual solutions is to rely upon the incumbent alone for technological progress. However, economic theory shows that dominant incumbents can have reduced incentives to introduce new technology.¹¹⁷ Furthermore, experience has shown the important role of new entrants and competition in motivating technological progress. Fundamentally, the make or buy analogy ignores Clear's desire to become a *competitor* as opposed to a supplier.

Even under a purely static analysis, the monopoly pricing permitted under the parity principle can reduce the benefits of the new technology to consumers. Under competition, all the benefits of the technology and the efficiency advantages are eventually passed on to consumers. The parity principle, by contrast, permits the incumbent to appropriate these benefits for itself.

Assume in Figure 5 that the \$10 price charged by the bottleneck carrier for its service is a monopoly price exceeding the total costs of the service by

116. If the innovation is not patentable, access pricing can be used by the incumbent to shorten the time and reduce the expense of duplicating the entrant's innovation. Under ordinary circumstances, the incumbent can raise the price of access faster than it can respond competitively, thus eliminating the lag which the entrant would rely upon for recovery of development expenses. For patentable innovations, the protection afforded by the patent is vastly undercut by the prospect that the bottleneck owner will raise the price of access to appropriate the benefits.

117. See ITS Paper, *supra* note †, app. A.

\$1.50. The parity principle extends this \$1.50 monopoly profit to the new technology as well. Customers would receive all the relative benefits of the new technology if the entrant charged the same \$10 for the entire service. However, this is not sustainable because the \$7 access fee renders the technology unprofitable if the entrant charges the same price as that of the old technology.

The opportunity costs under the parity principle can be viewed as a tax on new technology collected by the monopolist. Figure 5 shows true incremental costs of the entire fax technology of only \$9.50, (\$5.50 for the bottleneck services plus \$4 for the fax), yet the new technology must be able to sustain a price of \$11. That is, the new technology must have sufficient benefits to compensate for both its higher incremental costs and for the \$1.50 in monopoly profits of the incumbent. The consumers only receive the residual benefit above and beyond this tax. Under a regulated price of \$5.50 based on the incremental cost of access, the incentives for introduction of the technology are greater: the new technology can survive, earn a profit for the entrant and pass along benefits to consumers at a \$10 price for the entire service.

The result is the same even if the new technology generates new business. Baumol and Sidak paint a more benign picture of the parity principle by arguing that incremental business volume generated by the entrant is not an opportunity cost: “[A]n entering IXC [inter-exchange carrier] is likely to devote effort to expanding the market, using the access to serve at least some new business that entails no reduction in LEC (local exchange carrier) volume, and may even bring a bit of additional traffic to the LEC. In that case, the pertinent opportunity cost to the LEC of the supply of access will be lower than if the added IXC volume is added directly and fully at the expense of LEC sales.”¹¹⁸ However, if the innovation is not patented, the incumbent can always argue it would have introduced the new technology if the entrant had not. Any new business stimulated by the technology can therefore be recast as a true opportunity cost subject to the parity principle (see discussion above regarding appropriation of efficiency gains). Instead of the “make or buy” decision, the incumbent will argue it “could have made” the technology and therefore should be allowed to “buy” it at a price equivalent to the incremental costs of the entrant.

Kahn and Taylor have characterized many of the dynamic objections to the parity principle as “infant industry” arguments.¹¹⁹ Perhaps many infant industry arguments have been raised in other contexts, but the above examples are not among them. The examples assume the new technology has a higher incremental cost, but can command correspondingly higher prices. The

118. Baumol & Sidak, *supra* note 6, at 197.

119. Kahn & Taylor, *supra* note 19, at 232-35.

examples show how the threat of opportunism can stifle new technology and how the possibility of monopoly profits under the parity principle can channel the benefits of new technology disproportionately to the incumbent, even though the entrant introduces the technology.

III. The Interconnection Dispute Between Clear and Telecom

A. *Procedural History*

In a move designed to direct the telecommunications industry away from monopoly control, the New Zealand government opened the network telecommunications market to competition on April 1, 1989.¹²⁰ Prior to that, Telecom had been a protected state-owned monopoly providing local exchange and interexchange toll service throughout New Zealand.¹²¹ In September 1990, state ownership of Telecom was dissolved when the Government sold shares in Telecom's assets to a consortium of private investors that included Bell Atlantic, Ameritech, Freightways Holdings Limited and Fay Richwhite Holdings Limited.¹²² One share was retained by the Minister of Finance on behalf of the Government. This share, the Kiwi Share, ensures the right of the Government to obligate Telecom to certain service provisions (the "Kiwi Share Obligation"). It caps standard residential rental increases to the rate of inflation as long as Telecom's profitability is not unreasonably impaired.¹²³

Consistent with the Government's desire for competition in the supply of telecommunications services, other providers have either entered or have declared their intent to enter the market. In October 1990, Clear Communications Ltd. was declared a network operator under the Telecommunications Act of 1987.¹²⁴ Subsequently, Clear entered the market for toll services and has been successful in competing with Telecom in these markets. Clear quickly garnered ten percent of the long distance toll market. More recently, Clear's market share growth has slowed down, although as of 1995 it had some twenty-two percent of the toll market. Bell South also entered the New Zealand telecommunications market with cellular technology.

Clear also sought to enter the market for competitive local telephone service. Clear intended to serve principally business customers in the Central Business Districts ("CBDs") of the larger New Zealand cities, although Clear is not restricting itself to this market. Clear is in direct competition with

120. *Telecom Corp. of N.Z. v. Clear Communications, Ltd.*, [1992] 5 T.C.L.R. 166, 170 (H.C.), *rev'd*, [1993] 4 N.Z.B.L.C. 340 (C.A.), *rev'd*, [1995] 1 N.Z.L.R. 385 (P.C.).

121. *Id.*

122. *Id.* at 169.

123. *Id.* at 183.

124. *Id.* at 170.

Telecom, the incumbent local exchange carrier ("LEC"). Clear's network offers a number of services different from those currently provided by Telecom, including a service called "Gateway." This is a "Centrex" type service especially designed for large volume users, which makes it distinctive from Telecom's competing product offering.

To ensure ubiquity in local service, Clear sought an interconnection agreement with Telecom. In New Zealand, neither the rates charged consumers nor those charged other telecommunications networks for interconnection to the Public Switched Telephone Network ("PSTN") are immediately subject to regulatory oversight.¹²⁵ A breakdown in negotiations between the parties resulted in litigation over the price of interconnection to the PSTN. Clear sued Telecom under New Zealand's antitrust statute, section 36 of the Commerce Act of 1986. Section 36(1) of the Commerce Act provides:

No person who has a dominant position in a market shall use that position for the purpose of (a) Restricting the entry of any person into that or any other market; or (b) Preventing or deterring any person from engaging in competitive conduct in that or in any other market; or (c) Eliminating any person from that or any other market.¹²⁶

In response, Telecom retained Professors Baumol and Willig and revised its interconnection proposal to conform with the parity principle.

Judge Ellis and Professor M. Brunt of the Wellington Registry of the High Court of New Zealand (the trial court) recognized that Telecom's characterization of Clear's operations as a large Private Automatic Branch Exchange ("PABX") was an "essential feature" of Telecom's refusal to recognize Clear "as a network competitor".¹²⁷ However, they found that Telecom's proposed "parity principle" was not in violation of section 36(1), although Telecom's prior actions were.¹²⁸ The Court of Appeal of New Zealand reversed, on the grounds that Telecom's proposed pricing rule would violate section 36 because the price of interconnection would include monopoly rents and insulate Telecom from any adverse consequences of entry.¹²⁹ The Court of Appeal also determined that Telecom's pricing rule was incompatible

125. However, price control may be invoked by the Government under Part IV of the Commerce Act of 1986. Commerce Act, No. 5, § 36, 1986 N.Z. Stat. 71 (1986).

126. § 36(1), 1986 N.Z. Stat. at 95.

127. Telecom Corp. of N.Z. v. Clear Communications, Ltd., [1992] 5 T.C.L.R. 166, 176 (H.C.), *rev'd*, [1993] 4 N.Z.B.L.C. 340 (C.A.), *rev'd*, [1995] 1 N.Z.L.R. 385 (P.C.).

128. *Id.* at 218-20.

129. "I cannot accept a[s] appropriate pricing that would cement in any monopoly profits Inclusion in any access levy of a monopoly profit component must affect the price at which Clear can enter the market and so affect the vigour of its competitive conduct." *Id.* at 358.

with “light-handed regulation.”¹³⁰

Shortly thereafter, Baumol and Sidak published an article that “sympathized” with the Court of Appeal’s rejection of the parity principle. They agreed that the parity principle itself could not solve the monopoly rents problem. Rather, the parity principle relied upon regulation of the end-price to prevent monopoly profits, and such regulation was absent from New Zealand. “It is therefore understandable that the Court of Appeal ordered Clear and Telecom to renew negotiations to set an access price that excluded any monopoly profit foregone by Telecom.”¹³¹

The Court of Appeal, however, was subsequently overturned by the Judgment of the Lords of the Judicial Committee of the Privy Council, delivered on 19 October 1994.¹³² The Privy Council attempted to separate the issue of monopoly rents from that of abusive conduct. Aside from the monopoly rents objection, it believed the parity principle could not be deemed abusive. It read Section 36 more narrowly than the Court of Appeal and relegated the monopoly rents issue to Part IV of the Commerce Act.¹³³ Under this interpretation, Telecom’s proposed pricing rule could not violate section 36 even if it indemnified the incumbent for the financial consequences of entry.¹³⁴

Telecommunication services to customers in New Zealand are almost completely deregulated and there is little support for instituting any formal reregulation.¹³⁵ All parties preferred a negotiated contractual solution to the problem,¹³⁶ but some sort of government policy direction was required.¹³⁷

130. *Id.* at 359.

131. Baumol & Sidak, *supra* note 6, at 195.

132. *Telecom*, [1995] 1 N.Z.L.R. 385, *rev’g* [1993] 4 N.Z.L.B.C. 340 (C.A.).

133. “The Court of Appeal took the view that s[ection] 36 had the wider purpose, beyond producing fair competition, of eliminating monopoly profits currently obtained by the person in the dominant market position. Their Lordships do not agree.” *Id.* at 407.

134. The reasoning of the Privy Council was as follows:

The principal question remains, as it always was, whether the actual or potential presence of monopoly rents vitiates the validity of the Baumol-Willig model for the purposes of s[ection] 36. . . . Their Lordships are of the view that, apart from the risk of monopoly rents, the Baumol-Willig Rule does provide a proper model for demonstrating what would be charged by the hypothetical supplier in a perfectly contestable market. . . . It follows that the risk of monopoly rents has no bearing upon the question whether the application of the Baumol-Willig Rule prevents competition in the contested area. If both Telecom and Clear are charging their customers the same amount in the area in which they are not competitors (i.e. point alpha [the point where Clear’s network joins Telecom’s] onwards) this does not have any effect on their relative competitiveness in the area in which they compete (i.e. up to point alpha).

Id. at 405, 407 (emphasis added).

135. Nor have the Courts expressed any appetite for setting prices. “We are not a price fixing authority.” *Telecom*, [1993] 4 N.Z.L.B.C. at 344.

136. HON. MAURICE WILLIAMSON (MINISTER OF COMMUNICATIONS) & HON. PHILLIP BURDON (MINISTER OF COMMERCE), PRIVY COUNCIL JUDGEMENT: LOCAL ACCESS

Until the government report questioning the efficacy of the Baumol-Willig rule, private negotiations without a framework other than section 36 had proven fruitless; each party remained exposed to opportunistic behavior by the other. The central dilemma was therefore to determine the terms of interconnection that would best enhance competition and efficiency consistent with the government's preference for effective competition with minimal regulatory intervention.¹³⁸

In a recent edition of this *Journal*, William J. Baumol and Gregory Sidak¹³⁹ sought to resolve supposed misunderstandings about their position and report on more recent developments in the litigation between Clear Communications and Telecom of New Zealand over competitive access in telecommunications in New Zealand. At the time of the Privy Council decision, it appeared that the issue had been resolved in favor of a total victory for what Baumol and Sidak call the Efficient Component Pricing Rule ("ECPR" or the "Baumol-Willig (BW) Rule" as it came to be known in New Zealand).

However, the Privy Council's decision created immediate concern over the implications for a successful transition to competition and demands that these be addressed by direct government action. On November 4, 1994, the Minister of Communications and the Minister of Commerce of New Zealand announced:

The Government has instructed officials to examine the public policy implications of the Privy Council judgment on the local access interconnection case between Telecom and Clear Communications. . . .

. . . The Ministers say this examination would cover both the implication of the Baumol-Willig pricing rule for interconnection in telecommunications and the *wider implications* of the Privy Council's judgment on section 36 of the Commerce Act.

. . . *The Government is keen to ensure that the dynamic benefits of competition continue to develop to the advantage of*

INTERCONNECTION (Nov. 9, 1994) [hereinafter WILLIAMSON & BURDON NEWS RELEASE] ("The Ministers emphasize their expectation that parties should resume negotiations.")

137. The High Court noted that "[i]f the Baumol-Willig Rule is implemented there would be a need for careful design of the administrative mechanism. Regular reviews would be necessary to adjust for shifting prices and costs." *Telecom Corp. of N.Z. v. Clear Communications, Ltd.*, [1992] 5 T.C.L.R. 166, 216 (H.C.), *rev'd*, [1993] 4 N.Z.B.L.C. 340 (C.A.), *rev'd*, [1995] 1 N.Z.L.R. 385 (P.C.).

138. *See* [1993] 4 N.Z.B.L.C. at 345 (Gault, J., concurring) (quoting Dec. 1991 Government Policy Statement).

139. Baumol & Sidak, *supra* note 17.

users.¹⁴⁰

In August 1995, the Ministry of Commerce and the Treasury of New Zealand issued a preliminary report based on that inquiry.¹⁴¹ In it, the government expressed major reservations about the use of the ECPR as a regulatory and legal principle during a successful transition to deregulation:

1. ECPR assumes that the only competitive problem is to prevent uneconomic entry in a regulatory regime where prices to end users are set optimally by regulators;¹⁴²
2. However, in a regime of effective competition for service to end users, inefficient entry will not be a problem if access prices are simply established at competitive levels;¹⁴³
3. Cross-subsidies to achieve universal service should be separated from the problem of establishing competitive access prices and the subsidy mechanism should be competitively

140. WILLIAMSON & BURDON NEWS RELEASE, *supra* note 136 (emphasis added).

141. N.Z. MINISTRY OF COMMERCE & TREASURY OF N.Z., REGULATION OF ACCESS TO VERTICALLY-INTEGRATED NATURAL MONOPOLIES (1995) [hereinafter August 1995 Report].

142. The August 1995 Report noted that “[t]he BW rule originated in a regulatory context in which the final prices of the monopolist are controlled. In this context (putting aside for the moment any dynamic benefits of competition) economically efficient interconnection pricing can be achieved solely by ensuring that inefficient firms do not enter the market.” *Id.* at 2.

The government went on to note that:

The BW rule is designed to be applied to monopolies where both final product price and the intermediate access or interconnection price are regulated.

. . . In this context, provided the regulator is doing its job, the final product prices will be set efficiently. There is no need to rely upon competition to achieve this goal. Given that allocative efficiency has been achieved by other means, a primary remaining goal for the interconnection pricing rule is productive efficiency. Putting aside complications such as sunk costs, uncertainty and dynamic effects from competition, productive efficiency can be achieved by simply ensuring that inefficient firms are not able to successfully enter the market. The BW rule achieves this goal of keeping inefficient firms out of the market.

Id. at 28.

143. The August 1995 Report stated that:

However, if the downstream market can support more than a few firms, *the normal forces of competition can be relied upon to drive inefficient firms out of the market.*

Moreover, in a context in which final prices are not regulated, the BW rule will not restrain the ability of the monopolist to charge monopoly rents on the natural monopoly portion of the business.

Id. at 2 (emphasis added). The government went on to note that: “The undesirable effects of regulation may be kept to a minimum by limiting regulation to the natural monopoly facility and allowing competitive pressures to discipline the monopolist in the up- or downstream market.”

Id. at 5. The report concluded that government’s policy fits within the general category of “price restraints on access or interconnection to the natural monopoly facility.” *Id.*

- neutral;¹⁴⁴
4. Cost-based rules may be superior to ECPR in establishing competitive access prices;¹⁴⁵
 5. Contrary to the teachings of ECPR, there is no one access pricing rule that fits all situations;¹⁴⁶
 6. ECPR fails to consider the consequences of sunk costs and the dynamic benefits of competition;¹⁴⁷

144. The August 1995 Report stated that:

In the case of telecommunications, it may not be possible to choose the interconnection pricing rule in such a way as to achieve both the goal of economic efficiency and the goal of efficient handling of the cost of a social obligation (such as the Kiwi Share). Therefore, *these two goals are separated*. The question of the economically efficient access pricing rule in the absence of the social obligation is considered first, followed by the question of the efficient method of handling the social obligation itself.

Id. at 7-8 (emphasis added) (citation omitted). The report went on to note that:

A method of handling social obligations should, primarily, seek to promote economic efficiency. In this context economic efficiency is promoted by estimating and allocating the costs of the obligation amongst the parties in such a way as to minimise the overall economic distortions created by the obligation. In particular, this will involve *allocating the costs of the obligation in such a way that no firm is given a competitive advantage or disadvantage*.

Id. at 9 (emphasis added).

145. The August 1995 Report noted that “[c]ertain of these pricing rules, such as the ‘cost-based rules’ in options (a) [pricing at short-run or long-run marginal cost] and (b) [pricing at long-run average incremental costs]. . . may do better than the BW rule at achieving both of the goals of productive and allocative efficiency.” *Id.* at 8 (emphasis added).

146. The August 1995 Report stated that:

The appropriate access price in any given circumstance will depend upon a large number of factors including the information available to the regulator, the cost structure of the monopoly firm and whether or not the monopoly facility is likely to be capacity constrained. The most appropriate rule in any given context will depend upon the factors specific to the industry and the nature of the access problem involved.

Id. at 8 (emphasis added).

147. The August 1995 Report further stated that:

In these simple examples, the BW rule achieves the goal of permitting entry if and only if the entrant is more efficient than the incumbent. *However, if we consider slightly more complicated models this is no longer the case.*

. . . *The BW rule may, in fact, block efficient entry in those industries where entry involves large sunk costs* (e.g., telecommunications). The presence of large sunk costs and uncertainty about the future has the combined effect of deterring entry unless the expected returns exceed the required return on capital. The additional required return effectively raises the ‘hurdle’ that a potential entrant must overcome for entry to be worthwhile. An interconnection price set according to the BW rule will therefore deter some efficient entry.

. . . Furthermore, the BW rule may fail to achieve productive efficiency for another reason: *the BW rule fails to take into account the dynamic benefits of competition*. Competition in itself, can be expected to yield productive efficiency benefits.

. . . Therefore, even in the context for which the BW rule was designed, a slightly lower access price may promote economic well-being in certain

7. All these considerations raise serious questions about the applicability of ECPR to the situation in New Zealand.¹⁴⁸

Very shortly after the issuance of the New Zealand government report criticizing the Baumol-Willig rule, Clear and Telecom announced that the litigation had been settled and that an agreement on interconnection pricing had been reached.¹⁴⁹ Although the pertinent litigation in New Zealand is now over, the issues raised by this debate are extremely current both in the United States and around the world.¹⁵⁰ It is not clear what policies the New Zealand government would apply to future interconnection disputes, either between Clear and Telecom or with other potential entrants. Furthermore, the Privy Council decision has implications for a host of countries attempting to introduce competition in telecommunications. It has legal relevance for Commonwealth countries subject to the jurisdiction of the Privy Council, even though the experts upon whom the Privy Council relied have since questioned much of its economic logic, if not the opinion itself.

B. *The Errors of the High Court and Privy Council*

The High Court and the Privy Council addressed arguments that the parity principle would perpetuate monopoly profits. Although an equally efficient competitor cannot lower the prices to customers under the parity principle, the High Court and the Privy Council speculated that an entrant with efficiency advantages relative to Telecom would be able to do so. The Court of Appeal remarked:

circumstances.

Id. at 29 (emphasis added) (citations omitted).

148. The August 1995 Report stated:

To summarize, the BW rule 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.

Id. at 33 (emphasis added).

149. TELECOM CORP. OF N.Z. & CLEAR COMMUNICATIONS, CLEAR AND TELECOM REACH INTERCONNECTION HEADS OF AGREEMENT (Sept. 6, 1995).

150. See, e.g., Alexander C. Larson et al., *Competitive Access Issues and Telecommunications Regulatory Policy*, 20 J. CONTEMP. L. 419 (1994); Daniel F. Spulber, *Deregulating Telecommunications*, 12 YALE J. ON REG. 25 (1995); Symposium, *Recent Competition Issues in Telecommunications*, 40 ANTITRUST BULL. 455 (1995); John J. Keller, *AT&T Targets Home Markets of Baby Bells: Division with Five Regions Will Coordinate Assault in Local Phone Services*, WALL ST. J., Dec. 5, 1995, at A3.

The argument for Telecom, skillfully put by counsel and witnesses and *largely accepted by the High Court*, is that the difficulty is overcome because, if Clear is more efficient than Telecom, Clear will be able to attract business by charging its customers less: hence Telecom in its turn will have to charge its customers less, to remain competitive: *hence the 'opportunity cost' for which Telecom is to be compensated will fall.*¹⁵¹

While the Court of Appeal rejected this logic, the Privy Council accepted it fully.¹⁵² Indeed, the Privy Council went so far as to say: "It is to be noted that it has not been established by Clear (*nor can it be regarded as a serious risk*) that Telecom's charges will be so high that Clear will be unable to enter the CBD market at all."¹⁵³

Based on the testimony of proponents of the parity principle in the New Zealand litigation, the Privy Council reasoned that there would be competition on equal terms in the "contested area," i.e., the part of the market where

151. Telecom Corp. of N.Z. v. Clear Communications, Ltd., [1993] 4 N.Z.B.L.C. 340, 343 (C.A.) (emphasis added), *rev'd*, [1995] 1 N.Z.L.R. 385 (P.C.). The Court of Appeal also clearly stated that Baumol and Willig's brief to the High Court stood for the proposition that competition under the parity principle would erode monopoly profits:

Professor Baumol reconciled his rule with economic efficiency and the objectives of competition law by reliance upon the dynamics of the competitive process. He said that to counter Clear's entry into the market Telecom, if enjoying monopoly profits, would lower its prices. The amount of the reduction would no longer represent lost opportunity and so the charges to Clear would be reduced. This process would continue until any monopoly profits were competed away.

Id. at 357.

152. The Privy Council was clearly led to believe that monopoly profits would not be a problem under the parity principle as applied in New Zealand (where there is no price regulation of the monopolist):

[T]he Rule envisages that if Clear is the more efficient provider of the service to point alpha it will be able to charge less for calls for this sector, thereby undercutting Telecom's price for the totality of the call. This competition in the contested area, it is said, will force Telecom to reduce its prices, thereby *diminishing its opportunity costs and correspondingly diminishing the amount of the access levy it can charge to Clear. This process of forcing down the price charged by Telecom to Clear will continue until any element of monopoly profit is "competed out" of Telecom's charges.*

. . . But it [Telecom] is not acting uncompetitively in charging its opportunity cost since that is what it would have charged in a fully competitive market.

. . . The superior efficiency of one or the other in the only sector in which Clear has chosen to compete (local services for business users in CBDs [Central Business Districts]) will dictate commercial success in that area. The High Court was satisfied that such competition would occur and that as a result *any monopoly profits would be competed out.*

Telecom Corp. of N.Z. v. Clear Communications, Ltd., [1995] 1 N.Z.L.R. 385, 397, 406, 407 (P.C.).

153. *Id.* at 407 (emphasis added).

entrants such as Clear would seek to compete.¹⁵⁴ The Privy Council in fact ruled that the existence of monopoly profits was irrelevant to the issue of competition on equal terms:

It follows that the risk of monopoly rents has no bearing upon the question whether the application of the Baumol-Willig Rule prevents competition in the contested area. If *both* [emphasis in original] Telecom and Clear are charging their customers the same amount in the area in which they are not competitors (i.e. point alpha onwards) *this does not have any effect on their relative competitiveness in the area in which they compete* (i.e. up to point alpha).¹⁵⁵

In short, the Privy Council concluded that the parity principle is a *necessary and sufficient* condition for competition on equal terms, regardless of what the final price to the consumer happens to be.¹⁵⁶ However, there is a clear emerging consensus that competitors are not treated symmetrically under the parity principle.¹⁵⁷

154. The Privy Council relied heavily upon Baumol and Willig's brief to the High Court to conclude that Clear and Telecom would be on a "level playing field" under the parity principle, *even* if the price of interconnection contained monopoly profits:

Professor Baumol accepted that this model enabled Telecom to secure, by way of payment from Clear, the continued receipt of any monopoly rents present in its existing charging rents. . . . Professor Baumol did not regard the possible presence of monopoly rents in the charges levied by Telecom on Clear as invalidating his model. . . . [P]rovided that Telecom also charged its customers on the same basis, there was a *level playing field* in the area in which Telecom and Clear would compete. . . . [I]f both Telecom and Clear (and therefore indirectly their respective customers) were charged the same amount for use of the rest of the PSTN, in the area in which they were competing they would be competing on equal terms whatever the amount charged. *Clear could compete in the contested area on equal terms.*

Id. at 395-96 (emphasis added).

155. *Id.* at 396 (emphasis added). "The High Court usefully defined the point at which Clear's network joins Telecom's PSTN as 'point alpha.'" *Id.*

156. This claim is made more recently by Baumol et al.

The parity price for a bottleneck input is both necessary and sufficient in order for the playing field to be level, i.e., for the maximum difference between the remunerative prices of the perfect-substitute final-products of the two firms, the bottleneck-input provider (B) and its final-product competitor (C), to be exactly equal to the difference in their incremental costs for the remaining input portions of their competing final product supply.

Supra note 12, at 11.

157. Professor Baumol more recently explicitly rejected the Privy Council's conclusions that monopoly profits are irrelevant and that the parity principle creates a "level playing field":

Under a scenario entailing monopoly earnings on the provision of access to the interexchange carriers, along with an imputation policy that precludes price discrimination by the LEC [the parity principle], *the parity principle will not really treat the LECs and the IXCs evenhandedly.* The former will be guaranteed a

The Privy Council's belief that competition will erode monopoly profits under the parity principle is mistaken. If the monopolist is indemnified by the parity principle against the results of competition, and if "opportunity cost" is defined to include monopoly rents, no amount of competition from the firm seeking access can purge the access price of monopoly rents.¹⁵⁸ The efficiency advantages of an entrant, rather than eroding the monopoly rents of the incumbent, simply generate the temptation to increase the access price. Increases in the access price are permitted under the parity principle as long as the end price is increased correspondingly. Complementary rules would be required to avoid this danger.

We also point out an inconsistency that appears to have escaped the notice of the Privy Council. The parity principle was alleged to preserve the indifference of the incumbent to entry. The argument that a hypothetically more efficient entrant could lower the final price to consumers, however, assumed a competitive threat. Under the parity principle, the Privy Council reasoned "if Clear competed successfully in the contested area at a lower price to its customers, Telecom *would be forced* to reduce its prices to customers."¹⁵⁹

However, recall the demonstration of the incumbent's indifference to cooperation with the entrant. In Figure 1, the same example offered by proponents of the parity principle, the incumbent's indifference is preserved no matter what the entrant chooses to charge as a final price to consumers. In fact, the entrant could simply give away the service to consumers for free and the incumbent would be no worse off than when it charged the full \$10 price and handled the business independently. The incumbent would still receive the \$7 access charge and avoid the \$3 in incremental costs over the competitive segment. The notion that Telecom would *be forced* to reduce prices in an

monopoly profit, while the latter will be prevented from earning more than zero economic profit from their toll service if they are just as efficient as the LEC.

. . . The price of access under the parity principle is clearly extremely generous to the LEC, because it *permits the owner of the facilities, in this case the LEC, to earn from the access user a profit equal to the full profit that the LEC earns on the bundled combination of access and message transport* when it sells the final toll-service product to the ultimate customer. In other words, it offers the LEC a profit on access alone, when sold to an IXC equal to the profit the LEC earns on the two services of access and transport together, when it itself supplies final product.

Baumol AT&T Testimony, *supra* note 17, at 18-19 (emphasis added).

Professor Kahn has also rebutted the misconception that the entrant and monopolist are treated symmetrically: "*The treatment under our rules of the incumbent telephone company and its would-be rivals is indeed asymmetrical.* The justification is that the former are and have been thoroughly regulated public utility enterprises." Kahn & Taylor, *supra* note 19, at 236.

158. Baumol AT&T Testimony, *supra* note 17, at 4-5, 17-18; *see also* Baumol & Sidak, *supra* note 6.

159. [1995] 1 N.Z.L.R. at 396 (emphasis added).

attempt to attract traffic back from Clear contradicts the parity principle's fundamental test of indifference. In Figure 2, we demonstrated that the incumbent would prefer to simply channel the traffic to a more efficient entrant and raise the access price. Even if this reality was never suggested to the courts, they had sufficient basis to note the tension between simultaneous claims of indifference (when the parity principle was alleged to achieve efficiency) and competitive response (when monopoly profits were supposed to erode).

The Privy Council relied upon testimony by Professors Baumol and Willig that any attempt to correct even admitted problems with the parity principle by reducing the price of interconnection would inevitably lead to economic inefficiency. Opportunity costs must be defined in terms of incremental revenue "that this foregone sale would otherwise have brought to Telecom New Zealand,"¹⁶⁰ not some other theoretically perfect price to the customer. They were very clear on this point and repeated it twice in their brief to the High Court. Because understanding this point is critical to the entire current debate over the parity principle, we quote at length the Court's rationale:

This completes the analysis of the efficiency role of the component pricing principle. We have now seen that *its working is perfectly general*. It *always* assigns the supplier's task to the firm that can do it most efficiently, and a lower price than that set in accordance with the principle (as can result if prices are set on an arbitrary basis) is always an invitation to an interfirm cross-subsidy and the assumption of the supplier's role by a firm that is not the most efficient provider. This result should really not come as a surprise.

. . . . Requiring that component pricing deviate from the competitive market standard, and from the equivalent efficiency principle, even for reasons that are well-intended (e.g., if it were thought that the opportunity costs reflected misguided company policies), would nonetheless be incorrect. Component prices forced below the sum of incremental and opportunity costs, as we have shown, can lead to entry that raises social costs, without creating more efficient supply of the components at issue. *The result would inevitably be the creation of new inefficiencies and new distorted incentives that harm consumers and the public interest.*¹⁶¹

The theory of the parity principle may be the first instance in the history

160. Baumol & Willig, *supra* note 1, at 23.

161. *Id.* at 35, 37 (emphasis added).

of economic thought that any competitor paying less than a full monopoly price for a vital raw material for its business has been deemed to receive an "interfirm cross-subsidy."¹⁶² Nevertheless, based on these concerns, the Privy Council fully accepted the logic that the parity principle should be followed even if it meant charging monopoly prices to competing carriers and the general public.¹⁶³ It did so because proponents of the parity principle

162. *Id.* at 35; see also Baumol & Sidak, *supra* note 6, at 179.

163. The Privy Council reasoned that:

[I]f the price charged by Telecom to Clear for use of the PSTN was less than the component price charged by Telecom to its own customers, this would *tend to produce inefficiency in the competition in the contested area*. The aim of competition is to produce for the customer the most efficient system of supply in the contested area. If Clear is not charged the same amount for the use of the PSTN as Telecom is charging itself (and therefore its customers) then *Clear can be less efficient than Telecom in the contested area* (i.e. the provision of the local service to customers) and still undercut Telecom's prices for a similar service.

[1995] 1 N.Z.L.R. at 396 (emphasis added).

More recently, however, Professor Baumol has disputed this logic and asserted that it is appropriate to reduce the price of access if it is inflated by monopoly profits. See also Baumol & Sidak, *supra* note 6, at 195. In his testimony on behalf of AT&T, Professor Baumol appears to recommend pricing below the levels called for by the parity principle, if such is required:

There is a way that *will* deal effectively with the problem [that "the parity principle by itself does nothing to eliminate such monopoly profits"]. This simply requires the LEC to price access *at the incremental cost it incurs in supplying that access plus no more than a reasonable contribution* to coverage of the RBOC's [Regional Bell Operating Company's] fixed and common costs. Here, it should be noted, however, that this incremental cost must include the appropriate return to the LEC's investment in access.

Baumol AT&T Testimony, *supra* note 17, at 18 (second emphasis added).

The exact meaning of this proposal depends on the meaning given by Professor Baumol to "the incremental cost it incurs in supplying that access," a "reasonable contribution to the RBOC's fixed and common costs," and the "appropriate return to the LEC's investment in access." Each of these is a potential code word for reinserting monopoly-inflated opportunity costs into the price of interconnection, on top of true incremental costs.

Considerable ambiguity has been created by the multiple meanings given to "incremental cost" in various testimony and writings. If in Professor Baumol's above proposal, "incremental cost" refers to "direct" incremental cost, then it would represent a major departure from the parity principle because the starting point for pricing interconnection would not include opportunity costs. See Baumol & Willig, *supra* note 1, at 26 (defining "direct" incremental costs). If "incremental cost" means "full" incremental cost, however, Professor Baumol's proposal on behalf of AT&T would make no sense as a means of purging the price of access of monopoly profits. *Id.* at 25 (defining "full" incremental costs). Certainly, such a meaning of "incremental" cost would do nothing to purge the price of interconnection of the offending monopoly profits.

Furthermore, if he means "direct" incremental cost, Professor Baumol's proposal is similar to that made by Clear in its recent response to Telecom's offer. Clear proposed as its pricing rule that "Charges should be based on average incremental costs plus a reasonable contribution to the fixed and common cost of the network." CLEAR COMMUNICATIONS, LTD., NEW ZEALANDERS CONTINUE TO MISS OUT (Mar. 9, 1995). Professor Baumol's AT&T testimony may well also represent a proposal by Professor Baumol to conform to the Judgment of Cooke, with which he concurred in his article in the *Yale Journal on Regulation*. That Judgment called for the following:

The most that can be done is to state a principle, which can only be that Telecom is entitled to a fair commercial return for granting Clear use of the network assets, without regard to the present monopoly. This means that *opportunity cost should*

convinced the Privy Council that pricing by use of opportunity costs computed at existing prices was a necessary and sufficient condition for static economic efficiency, even in the second—best world where monopoly pricing of the service to the final customer prevailed.

It is simply untrue that departures from the parity principle as proposed for New Zealand inevitably lead to static inefficiency in the supply of service in the contested markets. It only happens in these hypothetical examples because the examples ignore the availability of the bottleneck service at a competitive price and the ensuing competition in the supply of the contested service. Rather, the hypothetical examples assume implicitly that the monopolist continues to charge monopoly prices. But of course the reason for opening up competitive access was precisely to cause prices to move to competitive levels.

Curiously, proponents of the parity principle entertained the idea of flexible end prices only when they presented testimony on the possibility of a more efficient entrant eroding monopoly profits. We believe this testimony was mistaken and also note that the alternative assumption of rigid end prices was critical to their efficiency claims. Unfortunately, the court accepted both arguments without noticing the switch in underlying assumptions.

The High Court specifically addressed concerns that the parity principle was required to prevent inefficiency in light of the KSO.¹⁶⁴ Telecom had sought compensation for the alleged burden of the Kiwi Share Obligation in negotiations with Clear. The KSO prevents monthly residential charges from increasing faster than the rate of inflation, and ensures unlimited free local calls.

Telecom frequently described the KSO as a “burden” but did not substantiate this claim. To the contrary, Dr. Troughton, Managing Director of Telecom, announced the profitability of Telecom’s residential service.¹⁶⁵ The KSO can only be characterized as a burden if local monthly charges are

be ignored and the charge fixed on the basis of what a network owner not in competition for the custom of subscribers could reasonably charge for use of its facilities

Telecom Corp. of N.Z. v. Clear Communications, Ltd., [1993] 4 N.Z.B.L.C. 340, 344 (C.A.), *rev'd*, [1995] 1 N.Z.L.R. 385 (P.C.) (emphasis added).

164. Uneconomic bypass appeared to be one of the substantive reasons given by the High Court for approving the parity principle, notwithstanding that Court’s reservations. Telecom Corp. of N.Z. v. Clear Communications, Ltd., [1992] 5 T.C.L.R. at 166, 218-20 (H.C.), *rev'd*, [1993] 4 N.Z.B.L.C. 340 (C.A.), *rev'd*, [1995] 1 N.Z.L.R. 385 (P.C.). Concern appears to have followed from the High Court’s adoption of Professor Baumol’s evidence that the rule was necessary to enable Telecom to recover appropriate contribution to cover its universal service burden. *See id.* at 212. Unless it had this protection Professor Baumol argued it could not survive against rivals without the same burden. *See High Court Transcript, supra* note 41, at 758-59, 793.

165. Dr. Troughton reported: “Basically, I am making a profit out of the residential envelope, rural and urban.” [1992] 5 T.C.L.R. at 210.

compared to the full costs of access and of local phone calls. Once long distance revenues from residential customers are included, residential service appears profitable. This is the comparison that delighted Dr. Troughton. Nevertheless, Telecom appears to have adopted a negotiation stance that would define the KSO burden within the confines of local residential access and local charges.

The existence of a burden from the Kiwi Share Obligation is an empirical issue and cannot be determined merely by force of statement.¹⁶⁶ If such a burden does exist, Telecom could have provided evidence. Telecom should not be allowed to merely assert the existence of a burden and seek to pass along through the interconnection price a higher charge to Clear or any other competitor. Nor should the KSO be used under a "kitchen sink" approach to justify indemnifying Telecom for all its revenues lost from competition. Furthermore, Telecom can suspend the KSO if it unreasonably impairs profitability, also inconsistent with the notion of "burden." Telecom has an obligation to exploit the flexibility built into the KSO to mitigate any actual burden. This must be done *before* Telecom attempts to pass along higher charges to its competitors.

Telecom was privatized after the Government had opened the telecommunications industry to competition. The investors were aware of both the KSO and the prospect of competitive entry. They should therefore have discounted any KSO burden in determining the share price. The KSO has not, in reality, burdened Telecom's shareholders. Imposing a burden on Clear's investors and on consumers would be inappropriate.

The High Court appears to have misunderstood this point. It accepted Professor Baumol's testimony that "a distinction must be drawn between the buyer's problem and society's problem. The KSO will impinge on future capital replacement and pricing decisions. While the buyers may be protected, there is still an impact on the public interest in that the existence of the KSO can distort ongoing production and selling decision . . . [B]ygone are forever bygone."¹⁶⁷

However, the Kiwi Share Obligation has already been funded by a discount on the share price and therefore requires no future price, production, or selling distortions for further funding. No such distortion will occur if Telecom is simply subject to competition. It may earn less of a return than

166. We have assumed for the purpose of argument that any cross subsidy is indeed a burden on the provider. However, cellular carriers in the United States have voluntarily subsidized the purchase of the handset, apparently in the belief that it is a profitable "loss leader." Elsewhere, some argue that the basic line access charge should not be subsidized because the demand elasticity for the subscriber line charge is essentially zero. See Jerry Hausman et al., *The Effects of the Breakup of AT&T on Telephone Penetration in the United States*, 83 AM. ECON. REV. 178 (1993). The proper balance of charges would thus appear to be an empirical matter.

167. [1992] 5 T.C.L.R. at 211.

otherwise, but any lower ongoing return should have already been anticipated and offset by a discount in the original share price.¹⁶⁸ Professor Baumol appears to have simply assumed Telecom will have to charge in excess of competitive charges on other services to subsidize the KSO in the future. We disagree. To pass the KSO obligation onto competitors now would constitute double compensation.

As discussed above, the parity principle is not required to fund the KSO even if the government perceived a need to subsidize Telecom's obligations. Rather, universal service obligations can be funded in a competitively neutral manner without entering into the debate over interconnection charges. The mere existence of a burden therefore does not provide an argument in favor of the parity principle.

The inability of Clear to recover fixed or common costs was raised in the litigation, but the High Court apparently believed the entrant's "rich parents" might pick up the tab.¹⁶⁹ However, it provided no compelling reason why anyone would fall into such a trap. The "rich parents" argument is no more than a demand for an explicit cross-subsidy by the entrant with precisely the same adverse implications for efficiency and competition that have preoccupied the courts with respect to the Kiwi Share. Appealing to rich parents is a demand for competition on unequal terms.

The "rich parents" issue has continued with recent suggestions in New Zealand that Clear could pay the parity principle price and finance its local exchange service with the savings from toll bypass. The ability to originate and terminate toll calls within its own network may be more profitable to Clear than paying Telecom's proposed charges under the parity principle. However, the argument that this could subsidize local service has flaws beyond those of the "rich parents" argument. By competing with Telecom, Clear's presence in both the long distance and local exchange markets will align the price for terminating and originating toll calls more closely with actual costs. Profits from this service can therefore be expected to erode; there will be no pool of excess profits to subsidize Clear's entry.

Kahn and Taylor believe preferential treatment of the incumbent is justified in regulated industries based on the economics of regulatory risk and return.¹⁷⁰ We would agree that there are circumstances in which the incumbent monopolist's revenues should be protected from competitive erosion. We also believe those circumstances are inherent to traditional rate-of-return regulation; they do not apply to the telecommunications industry in New

168. Expressed differently, the investment base on which one would calculate a price of access purged of monopoly price would have to reflect the reduced purchase price, arrived at in contemplation of the alleged losses in residential and rural service.

169. *Id.* at 216.

170. Kahn & Taylor, *supra* note 19, at 236.

Zealand.¹⁷¹

The privatization of Telecom exposed it to both the risks and returns of any competitive industry. The amount paid for Telecom's assets by shareholders was determined with full awareness of the impending competitive regime. Any rule applying regulatory economics to establish preferential treatment for Telecom would be inappropriate.

The Ministers of Commerce and Communications stated: "The Government is keen to ensure that the dynamic benefits of competition continue to develop to the advantage of users."¹⁷² The exclusive focus of the parity principle as proposed for New Zealand on static economic efficiency ignores entirely the dynamic benefits of competition over time. Had these arguments prevailed in the United States, the entry of new long distance competitors into AT&T's markets would never have been possible, because they could never have succeeded if they had to pay twice for their investments. We have therefore assumed the government's goal is consistent with obtaining competition on equal terms, and that there is no legal policy to indemnify Telecom for sunk costs incurred under the prior regime as a state enterprise or to otherwise tilt the playing field for cost recovery in its favor.

Uneasiness remains in certain New Zealand circles that competition in the local loop will produce a wasteful duplication of facilities that will not be offset by strengthened incentives for cost minimization on the part of the incumbent monopolist or the dynamic benefits of competition in achieving technological innovation and improved service. However, prices below those called for by the parity principle that purge monopoly profits will not create an interfirm cross-subsidy.

The fear of wasteful duplication of facilities is closely aligned with a belief that allowing competition on equal terms would be unfair to Telecom. Indemnification of Telecom for revenues from its lost customers is appropriate, according to this line of thinking, because the incumbent should be allowed to provide the service after it has already incurred the cost. Some of this thinking arises from a belief that one of the rights that Telecom bought from the government was a franchise right to the customer.

There is no clear legal foundation for such beliefs. Speaking from an economic point of view, the logic is more akin to that of a regulatory compact

171. Judge Cooke wrote:

It is important, I think, to appreciate that the theory has been developed primarily for a country of regulated markets where prices for ultimate consumers may be controlled by regulatory agencies. That is not the present situation in New Zealand: the system is one of 'light-handed' regulation, the Commerce Act and competition being relied upon to provide built-in safeguards against consumer exploitation.

Telecom Corp. of N.Z. v. Clear Communications, Ltd., [1993] 4 N.Z.L.B.C. 340, 343 (C.A.), *rev'd*, [1995] 1 N.Z.L.R. 385 (P.C.).

172. WILLIAMSON & BURDON NEWS RELEASE, *supra* note 136.

than a regime of competition on equal terms. In any event, the market solution is for competitors to protect recovery of their investments by signing contracts with customers. Ownership of customers is antithetical to competitive markets.

Concern has also been expressed that imposing a regime of competition on equal terms would threaten Telecom's financial stability or ability to provide adequate service.¹⁷³ There is no evidence that such would be the case.

In the New Zealand litigation, it was argued that the parity principle preserved whatever blemishes were to be found in the final price, thereby thwarting uneconomic bypass. One of the chief virtues attributed to the rule was that it would perpetuate the cross-subsidy alleged to be required by the Kiwi Share Obligation. If the rule perpetuated the existing price structure, warts and all, we were told that the parity principle was not a cure for warts.

Proponents of the rule have identified "complementary rules" necessary to purge the parity principle of the problems that were uncovered in the New Zealand litigation. In contrast to the New Zealand variant of parity, it is now argued that the rule should *only* be applied at retail prices purged of economic inefficiencies.¹⁷⁴ Rather than permit the perpetuation of the incumbent's price structure with all its deficiencies, the argument is that access prices should be calculated so that the incumbent will be forced to employ "imputation rules"

173. Our paper before the ITS addresses the evidence in the economic literature that Telecom's fears are unfounded. See ITS Paper, *supra* note †, app. A. The New Zealand government concluded in August 1995 that:

In preparation for deregulation, the Government commissioned a report from Touche Ross. This report concluded that, subject to satisfactory interconnection agreements, competition in network services was possible and sustainable and that any resultant losses of economies of scale and scope would be small and would be outweighed by the dynamic gains arising from greater pressures on Telecom to be efficient, to offer better service and to be more innovative.

August 1995 Report, *supra* note 141, at 20. We assume this closes the matter in New Zealand on whether competition is in the public interest.

174. William Baumol explained that:

[t]his shortcoming . . . is far more serious than anything else that arises in a debate over the finer points of ECPR and imputation The prices inherited from the past have deliberately been distorted to provide very inexpensive service to household purchasers of basic local services, with the prices of other services inflated as a counterbalance Use of existent end-user prices, or any other arbitrarily selected retail starting price is an indefensible basis for calculation of the prices of basic network functions.

. . . If it is to be consistent with the requirements of the public interest, P_r —the retail price of the end-user product that includes the bottleneck facility—is not just any retail price. It is the retail price that would be generated by a competitive market undistorted by exercise of market power or impediments to competition on equal terms by rivals purchasing the bottleneck facility from the incumbent. *This point is central to the analysis.*

See Letter from William J. Baumol to Henry M. Davidow, Senior Attorney, AT&T (Sept. 30, 1995) 4-6 (submitted to New York State Public Service Commission by AT&T) (emphasis added) (on file with *Yale Journal on Regulation*).

to set retail prices in a way that the parity principle will only be achieved at a different set of input and output prices than those previously used by the monopolist. Alternatively, it is argued that opportunity costs should be calculated under the assumption that the retail price is efficient. The new logic for the parity principle is to undermine the incumbent's prevailing price structure, not sustain it. This stands on its head the logic offered in support of the rule in the New Zealand litigation.

At this point, however, everybody can join in the game of constraining weak competitive neutrality with their preferred complementary rules. As they say, "The secret's in the sauce." Each of the problems with the parity principle we have uncovered in the previous examples could also have been cured by an appropriate complementary rule, and each of the correct results could have been justified as conforming with some variant of parity *per se*. In Figure 4, we could have calculated an access price of \$8 before costs were sunk and imposed a complementary rule that strong competitive neutrality prevent the recomputation of opportunity costs afterward.¹⁷⁵ In Figures 2 and 5, we could have required the incumbent to compute its opportunity cost before the entrant revealed its efficiency gains and not change it in light of later developments. In Figure 3, opportunity costs could have been purged of monopoly profits via an appropriate complementary rule.

In the world where there is only one monopolist, complementary rules can be used to correct the parity principle of its erroneous results (1) by assuming we know the target price for the final service, (2) by choosing a different definition and level of the relevant increment for measuring incremental cost, and (3) by adding the complementary rule that equally efficient competitors should have an equal opportunity for sunk cost recovery, i.e., strong competitive neutrality. Proponents of the rule, however, have vigorously opposed all these complementary rules at one time or another, in favor of an implicit complementary rule that the incumbent should be financially indemnified for the consequences of competition.

The original "Baumol-Willig" rule as proposed in New Zealand is

175. More generally, however, defining opportunity costs by use of long-run incremental costs may not solve the problem when there are economics of scope. Baumol and Sidak remind us of competition's need for revenues in excess of long run incremental costs:

[W]e must recall that even if every one of a firm's services is sold at a price equal to its average-incremental cost, the firm's total revenues may not cover its total costs. Consequently, it is normal and not anticompetitive for a firm to price some or all of its products to provide not only the required profit component of incremental cost, but also some contribution toward recovery of common fixed costs that do not enter the incremental costs of the individual products.

Baumol & Sidak, *supra* note 6, at 184. But this too could be cured by additional complementary rules to allow recovery of joint and common costs by the entrant.

evolving to what must be called parity principles.¹⁷⁶ To choose among them, we are now invited to price access so that whatever opportunity cost can be inferred from it is purged of all undesirable consequences. Of course, one cannot object to such a rule. Any objections to a particular result only invite supplemental constraints necessary to purge it of erroneous results. But this rule is far different from what was offered in New Zealand and accepted by the Privy Council.

Ultimately, weak competitive neutrality (defined as the alleged static efficiency properties of parity *per se* in a winner-take-all competition) has little power to discriminate among alternative interconnection pricing schemes. Opportunity costs and parity *per se* can be made to serve almost any master because the ultimate results depend on additional assumptions and constraints, at times not always apparent even to insiders to the debate.

If this is true, how could proponents promise that opportunity cost pricing based on the parity principle would produce unambiguous answers? The Privy Council was unaware of implicit complementary rules imposed on the New Zealand variant of parity *per se*. These implicit rules included: (1) the assumed overwhelming importance of static economic efficiency and the assumed relative unimportance of dynamic efficiency, (2) the need to apply the rule only to the retail price not purged of monopoly profits, excess costs or cross subsidies, (3) the assumption that incumbents, but not entrants, should be guaranteed the revenues necessary to achieve revenue adequacy,¹⁷⁷ and (4)

176. To list just a few of these emerging principles, we have the parity principle (1) supplemented by a "complementary rule" that the monopolist be unconstrained as to the retail price it may charge (which we label parity *per se*), (2) supplemented by the assertion that it should only be calculated using the monopolist's retail price unconstrained by regulation and incorporating any regulatory cross subsidies and monopoly profits (the New Zealand variant), (3) supplemented by the *requirement* that the end-use prices to customers are purged of cross subsidies and monopoly rents (the variant proposed more recently by its proponents for the U.S. telecommunications industry), (4) supplemented by the assumption that it would be voluntarily adopted by the monopolist (the variant proposed for the U.S. rail industry), (5) supplemented by the requirement that it not permit appropriation of entrant's sunk costs and efficiency gains and permit equally efficient competitors an equal opportunity to recover total costs (our proposals for strong neutrality below), etc.

177. The rationale behind the parity principle that the monopolist's revenues are the paramount consideration has a long history in these debates. For example, Baumol and Willig argue:

[A]dequacy of revenues is the fundamental and *over-riding* necessary condition for economic efficiency. . . . So long as market demands do not absolutely preclude adequate revenues (as will be true where an industry becomes totally obsolete), *it is appropriate to do anything* which achieves adequate revenues as quickly as possible and which in the meantime approaches that state as closely as cost and market conditions permit.

William J. Baumol & Robert D. Willig, *Pricing Issues in the Deregulation of Railroad Rates*, in *ECONOMIC ANALYSIS OF REGULATED MARKETS* 11, 26 (Jorg Finsinger ed., 1983) (emphasis added).

Recall our discussion of circumstances in regulated industries where concern over erosion

the requirement for weak competitive neutrality in a competitive market is winner-take-all. All these implicit assumptions necessary to produce unambiguous answers were lost in the shuffle of litigation and ultimately overlooked by the Privy Council.

C. *Emerging Consensus*

William J. Baumol and J. Gregory Sidak made numerous claims for the parity principle, among which we find:

1. "[T]he rule is entirely familiar to economists, and its logic will be virtually self-evident to them. . . ." ¹⁷⁸
2. "[T]he result is valid always, not only when the pertinent numbers happen in reality to match those in our illustration." ¹⁷⁹
3. "[T]he efficient component-pricing rule . . . is simply another use of the incremental-cost principles that achieve economic efficiency." ¹⁸⁰
4. "[R]eaders will lose little in following the logic in the remainder of our discussion if they treat average-incremental cost and average-variable cost as synonymous." ¹⁸¹
5. "In a competitive market, an incumbent will levy on a new entrant an access charge that will cover both the direct incremental cost of providing the access and its opportunity cost." ¹⁸²

Professors Baumol and Willig also claim universal applicability and widespread agreement among experts as to the economic principles and pricing rules they enunciated.¹⁸³ More recently, Baumol, Ordovery, and Willig purport to show

of the incumbent's profits should be considered. But even that consideration holds only as a temporary measure that is part of a transition to deregulation, to protect captive customers from cost shifting, or to uphold a regulatory bargain. New Zealand is not one of these exceptions. It is now more than three years since the trial. Since that time, despite facing competition in its most profitable services, national and long distance calls, Telecom's profitability has grown rather than been eroded. See August 1995 Report, *supra* note 141, app. G. There appears to be no evidence that Telecom's profit would be so eroded that it could not provide for the future funding of its business, or be justified in raising the price of the residential line rentals.

178. Baumol & Willig, *supra* note 177, at 182.

179. *Id.* at 184.

180. *Id.* at 173.

181. *Id.* at 177.

182. *Id.* at 201.

183. Baumol and Willig write:

We will show that there does exist such an *established foundation*, whose pertinence and defensibility seem *beyond dispute*, and which has in fact *never to our knowledge*

that the parity principle is both necessary and sufficient for competition on equal terms.¹⁸⁴

Claims that the economic reasoning offered to the Privy Council by Professors Baumol and Willig in support of the parity principle is “beyond dispute” and is “categorical and unambiguous” are not true.¹⁸⁵ Neither is it true that “virtually all economists adopt” the parity principle as it was articulated in New Zealand,¹⁸⁶ nor that “the competitive market standard yields unambiguous answers to the questions at issue here.” Nor is it a “well-known economic principle that efficiency requires” the parity principle as it was proposed for New Zealand.

Despite the reasoning of the Privy Council, consensus on several points has begun to emerge among the experts in the New Zealand debate:

1. The problem of any alleged cross-subsidy to residential and rural line services should be bifurcated from the pricing of competitive access and dealt with on a competitively neutral basis;
2. The parity principle assumes the existence of a regulated monopoly whose end-user prices have already been purged of monopoly profits;
3. Competition will not purge the price of access and the prices to consumers of monopoly rents under the parity principle;
4. The incumbent monopolist and the entrant do not compete on equal terms under the parity principle;

been disputed elsewhere in circumstances analogous to those at issue here. Moreover, as we will see, these fundamental economic principles, which we will describe next, *rigorously yield answers* that are *categorical and unambiguous*, cutting the ground from pointless dispute.

Baumol & Willig, *supra* note 1, at 2 (emphasis added). Professors Baumol and Willig profess to offer the Court “unambiguous answers” to these issues and state that the parity principle is a “necessary condition for economic efficiency.” *Id.* at 2, 27. They state that “the basic efficiency result is . . . always true, not just if the pertinent numbers of reality happen to match those in our illustration.” *Id.* at 31 (emphasis added). Baumol and Willig label any price less than that called for by the parity principle a “subsidy” or “an interfirm cross-subsidy” to the entrant. *Id.* at 34, 35.

184. Baumol et al., *supra*, note 12, at 11-13.

185. Baumol & Willig, *supra* note 1, at 2.

186. See, e.g., JEANS ARNBAK ET AL., EUROPEAN-AMERICAN CENTER FOR POLICY ANALYSIS NETWORK INTERCONNECTION IN THE DOMAIN OF ONP: STUDY FOR DGXIII OF THE EUROPEAN COMMISSION (1994); Michael A. Crew & Paul R. Kleindorfer, Problems of Efficient Component Pricing for Postal Service (1996) (working paper in progress, on file with the *Yale Journal on Regulation*); Nicholas Economides & Lawrence J. White, *Access and Interconnection Pricing: How Efficient is the 'Efficient Component Pricing Rule'?*, 40 ANTITRUST BULL. 557 (1995); Mark Armstrong & John Vickers, The Access Pricing Problem, (Mar. 1995) (unpublished manuscript, on file with the *Yale Journal on Regulation*) (presented at ITS Workshop, Wellington, New Zealand).

5. Incumbents controlling interconnection generally have no incentive to adopt voluntarily the pricing rule called for by the parity principle and will behave opportunistically if not restrained;
6. Pricing access according to the parity principle as proposed for New Zealand would inhibit incentives for efficiency and innovation and threaten the dynamic benefits of competition; and
7. In a wide range of circumstances, the price of access should be below that called for by the parity principle as proposed for New Zealand and be based on long-run incremental cost.

Some of the experts involved in the New Zealand litigation have not taken clear positions on each of these issues. Rather, they are ordered in descending degree of apparent agreement. Note that there is a fair degree of overlap between these conclusions and the seven conclusions of the New Zealand government report. These points of emerging consensus are diametrically opposed to the reasoning of the Privy Council on many key properties of the parity principle.

IV. An Alternative Vision for Pricing Interconnection

A. *Conditions for a Competitively Neutral Competitive Access Pricing Scheme*

The above discussion of the parity principle supports two goals for interconnection pricing:

1. It should allow all equally efficient competitors an equal opportunity to earn their cost of capital, include compensation to the incumbent for any legacies of regulation, and purge the interconnection price of monopoly rents (if any);
2. It should achieve competition on equal terms in the competitive sector of the market; ownership of the bottleneck facility should be neither an advantage nor a disadvantage to the incumbent insofar as competition in the contested area on the basis of true efficiency differences is concerned.

The first of these goals is designed to assure that there is no asymmetry in recovering total costs for equally efficient competitors. Included in this test is the requirement that the incumbent be compensated for any true legacies of regulation, such as the Kiwi Share Obligation. The access price should not

include any monopoly rents to the incumbent. By the same token, it should not be used to impose a price squeeze on the entrant.

The second degree of competitive neutrality is designed to assure that all competitors are able to compete on the basis of true efficiency differences going forward. As we have seen, this is a relatively permissive test because static economic efficiency is a rather robust property of access schemes that satisfy the first degree of competitive neutrality.

B. *Application to New Zealand*

The problem of determining an optimal interconnection policy for the deregulated telecommunications industry in New Zealand lies beyond the scope of section 36 of the New Zealand competition law. The government's policy goals are presumably twofold: privatize and stimulate competition in order to both increase efficiency and pass the benefits along to consumers. Use of the parity principle as the standard for interconnection risks thwarting these goals.

To allow Telecom monopoly rents in the price of interconnection, or to allow preferential treatment for its sunk and common costs, or to allow Telecom scope for opportunistic behavior against entrants would forever frustrate the goals of competition. The parity principle would expose the industry to all these problems; it simply does not resolve the interconnection problem. The parity principle is inappropriate because it mistakenly analogizes an essential facility in the telecommunications industry to the bottleneck portion of a railroad track. The essential facility is ubiquity of service to all telecommunications customers. Ubiquity relies not upon a bottleneck, but on a *bridge* linking the networks. Telecom and Clear each require access to the other's network. The task of competition policy is to turn the existing bottleneck into a bridge.

Our recommended solution to achieve both strong and weak competitive neutrality involves a shift in focus. Instead of asking what net revenues the incumbent does or might obtain from "its" customers, the interconnection problem should focus on (a) the incremental costs of actually linking the two networks, (b) an appropriate settlement regime to compensate each carrier for the cost of calls originating in the other competitor's network, but terminating in its own,¹⁸⁷ (c) provisions to prevent opportunistic behavior by either party once the networks are linked, and (d) determining the appropriate economic distinction between a legitimate, independent network and a large PABX customer to obviate concerns of free-ridership.

187. Excluding the notion of "opportunity cost" as used by supporters of the parity principle.

C. *Reciprocity*

A procompetitive interconnection policy must incorporate the notion of reciprocity. Reciprocity arises out of the need for interconnection to preserve ubiquity. It involves the acknowledgment that both network owners have rights. Unlike the parity principle, reciprocity does not assign the incumbent ownership of customers. Hence, reciprocity does not involve charging “opportunity cost” for lost customers. Rather, it requires that each network compete on equal terms to maintain customers.

When a call originates on Telecom’s network and ends on Clear’s network, the parity principle compensates Clear for the incremental cost that Telecom avoids by not completing the call itself. When a call originates on Clear’s network, the parity principle hardly applies the reverse formula on Clear’s behalf. Rather, the parity principle views Clear’s origination of the call as a service performed on behalf of Telecom. Telecom is assigned the same revenues it would have received by originating the call itself, minus the incremental cost it *avoids* by having Clear perform the service. Hence, the parity principle hypothesizes Telecom’s incremental revenues and cost for *all* services on the originating end of the call.

In contrast, reciprocity would apply the same method of compensation whether it was Clear or Telecom terminating a call on behalf of the other network. Each network is compensated on the same cost basis. This approach excludes opportunity costs and avoids hypothesizing that someone else might have originated the call. Under reciprocity, the originating network can retain the benefit of attracting the customer through a combination of competitive price and service. Instead of assigning Telecom property rights over a customer, reciprocity respects the network that the customer chooses to join. For reciprocity to work economically, the charges for terminating calls must reflect the correct valuation of scarce resources. An incorrect valuation will lead to excessive use of scarce resources or distorted levels of investment in services. As explained below, our proposal would involve reciprocal charges of long-run incremental cost for terminating calls.

The economic rationale for reciprocal charges of long-run incremental cost can be illustrated by imagining that Telecom were the sole provider of services, but decided to split the network among independent subsidiaries that would transact with each other. What would be the appropriate transfer price for network use for these subsidiaries?¹⁸⁸ Telecom would have the

188. Chris Pattas, *Appropriate Interconnection and Access Arrangements* 3 (Apr. 10-12, 1995) (unpublished manuscript, on file with the *Yale Journal on Regulation*) (presented at ITS Workshop, Wellington, New Zealand) (noting that pricing interconnection at long-run incremental cost was based on the idea that it was the price that “a carrier with significant market power could negotiate for itself if a genuinely competitive industry was the norm in telecommunications”); *see*

subsidiaries pay each other, and hence would “charge” itself, only the incremental cost of network transactions. It would not be efficient to carve up the network and force each subsidiary to charge the other “opportunity costs” for lost revenues. Economists agree that the efficient intercorporate transfer price does not include foregone profit among subsidiaries.¹⁸⁹ In fact, one of the frequent justifications for vertical mergers is that, by centralizing ownership, “opportunity costs” as defined here will *cease* to be charged between successive links in the chain of production.¹⁹⁰ Thus “opportunity cost” does not form part of the concept of reciprocity.

Reciprocity also suggests that network carriers should cooperate to ensure that the joint value of the networks is maximized for the customers. Competition is often thought of in terms of an “invisible hand”; individuals make self-interested decisions, yet the overall outcome is good for society. However, self-interested decisions that do not adequately account for negative impacts on customers or on the integrated network do not yield optimal results for society. Cooperation is necessary, for example, in the design of network components to establish compatibility and efficiency along all points of the network. A similar requirement has arisen in other network industries where consumers demand ubiquity, such as credit cards and automatic teller machines (“ATMs”). In the credit card industry, for example, the VISA network has established a framework of rules for the cooperation and connection of over five thousand independent credit card issuers. ATM networks also provide for the cooperation and connection of independent banks. Without advocating a return to regulation, we agree that the principle of cooperation should be a component of reciprocity.¹⁹¹

D. *Rationale for the Duration and Scope of Necessary Intervention in the Transition to Competition*

The following question has arisen in the telecommunications policy debate: Why does Clear require a kick-start from the government in order to

also Jerry A. Hausman, *Proliferation of Networks in Telecommunications* 21 (Mar. 1994) (unpublished manuscript, on file with the Massachusetts Institute of Technology) (stating that “[t]o increase economic efficiency, regulators should lower access prices toward their incremental cost”). The essential rationale is that prices in excess of incremental cost encourage inefficient production decisions. In the present case, presumably the concern is uneconomic bypass.

189. See generally F.M. SCHERER & DANIEL ROSS, *INDUSTRIAL MARKET STRUCTURES AND ECONOMIC PERFORMANCE* 522-23 (1990).

190. See Martin K. Perry, *Vertical Integration: Determinants and Effects*, in *HANDBOOK OF INDUSTRIAL ORGANIZATION* 183, 243 (Richard Schmalensee & Robert D. Willig eds., 1989).

191. Professor Willig has recently stated the need for cooperation in testimony for AT&T of Illinois: “Since the incentives of the parties to cooperate need not square with social efficiency, there is likely to be a productive role for a regulatory mandate that the LEC cooperate.” Willig Testimony, *supra* note 32, at 14.

successfully compete with Telecom? We do not view our interconnection pricing proposal as a “kick-start,” if that term is equated to a subsidy. Pricing interconnection at incremental cost is not an infant industry argument. Our recommended policy can only be viewed as a “kick-start” in the sense that it attempts to get out of the current monopoly equilibrium in New Zealand and into a new competitive equilibrium.

Economies and markets are dynamic systems. These dynamic systems often have what economists call multiple equilibria. Multiple equilibria are stable but disjointed outcomes; once the economy or market arrives at one of the equilibria, natural forces will keep it there. Stability of the economic system, however, does not imply optimality. Some equilibria will be superior to others in terms of dynamic and static efficiency and the level of welfare they provide. Because of inertia, some type of intervention is required to move the market or economy from a sub-optimal equilibrium to a more optimal one.¹⁹² Once the system is given a sufficient push toward a more optimal equilibrium, dynamic forces¹⁹³ will maintain the new equilibrium as long as it is stable.

The New Zealand telecommunications industry can be characterized in this manner. Monopoly control of the local exchange market is, in effect, a stable equilibrium. Because of pre-existing institutional arrangements, Telecom can foreclose potential competitors. At the very least, Telecom can always require indemnification for interconnection with potential entrants. Furthermore, the strength of incumbency in conjunction with ownership of bottleneck facilities means that Telecom will never allow an entrant to acquire the market share the entrant would need to achieve reciprocity in negotiations. Full competition in the local loop will never occur as long as Telecom is allowed to apply the parity principle in setting interconnection terms.

As the competitive equilibrium is superior to the current monopoly equilibrium in terms of static and dynamic efficiency,¹⁹⁴ the issue is how to arrive at a stable competitive equilibrium in the telecommunications industry in New Zealand. More specifically, what sort of push does the industry require? The role of government intervention at this stage is very specific: to promote the types of contracts that would have been in place had the industry

192. The phenomenon of stable but sub-optimal equilibria has been used to describe why some under-developed countries have a difficult time making a successful transition to industrialization. A successful transition to industrialization may require achieving some initial threshold of industrialization. Coordination failures among players in the market may prevent the economy from reaching the needed threshold. See Kevin M. Murphy et al., *Industrialization and the Big Push*, 97 J. POL. ECON. 1003 (1989).

193. The dynamic forces can be laws, long-term contracts, institutional arrangements, or the expectations of market players.

194. See ITS Paper, *supra* note †, app. A.

already been competitive.¹⁹⁵ This role will enable the development of the institutional arrangements, the long-term contracts, and the market expectations that are consistent with competition. In this sense, the industry will receive a kick-start toward competition. Thus the pricing mechanisms that we suggest are consistent with the types of contracts one would find in a competitive telecommunications industry.

With such a specific government role, creeping intervention is easy to avoid. As long as the interconnection pricing principles are clear and opportunism is prevented, competition will sustain itself. As competition develops, the market should reach a stage where all players need each other. Bargaining power will be more balanced and the mutual dependence of the players will encourage reciprocity. Maximizing the total benefits of the network will come closer in line with the individual interests of all players. As the marketplace works, the regulatory mechanisms can wither away.¹⁹⁶

E. *Preventing Opportunistic Behavior*

A procompetitive interconnection policy should strive to prevent opportunistic behavior by either party. While constant and formal supervision of the parties can prevent opportunistic behavior, it must be limited lest the government be drawn back into the role of comprehensive regulator. Opportunistic behavior can be prevented at minimum cost if the government declares in advance clear standards of permissible behavior. Within this framework, binding arbitration will be necessary for enforcement. We suggest that the following points be kept in mind:

1. Acceptable contracting rules should be established. As explained above, much of our concern with the parity principle and the voluntary negotiations approach is the potential for opportunistic behavior. This behavior is sometimes evidenced by attempts to break contracts. However, it can also govern the renewal of contracts. It may not be efficient to sign perpetual contracts between the parties. At the same time, no company should be exposed to the possibility of a price squeeze simply because an expiration date has arrived and no constraints govern until a new

195. See WILLIAM B. TYE, *THE TRANSITION TO DEREGULATION: DEVELOPING ECONOMIC STANDARDS FOR PUBLIC POLICIES* 10 (1991).

196. Perhaps mechanisms such as those of the Staggers Rail Act in the United States could make this process automatic. Under the Act, contracts replaced regulations and courts replaced regulators as parties exercised their rights in the transition. See generally Staggers Rail Act of 1980, Pub.L. 96-448, 94 Stat. 1895 (1980).

- agreement is signed on terms dictated by the strongest party.
2. The ability of either party to manipulate data should be minimized. The parties must be obligated to compile loop cost data according to stipulated accounting procedures. Otherwise, it may be very difficult for the parties to cooperate; telecommunications companies have an inherent reluctance to share data. Because it can be extremely difficult to verify or critique cost data presented in an aggregate form, efforts should be made to provide data in the least aggregate form practical.

Professor Willig's recent testimony on behalf of AT&T supports a requirement to disaggregate the basic network elements. Otherwise, two types of opportunism may arise. The first, mentioned above, is obscuring actual costs. The second, discussed by Professor Willig, is the ability to force payment for services not truly exchanged among the parties.¹⁹⁷ The forced purchase of undesired inputs through the practice of bundling may be socially inefficient. Undesired elements from the bundle are effectively discarded, yet their cost is passed along to the consumer.

F. *Free-rider Concerns*

An interconnection policy should prevent free-ridership. If any residential user could obtain network status for the home, there would be the inevitable temptation for everyone to abandon the network, pay the interconnection price and leave Telecom stuck absorbing all its sunk costs. However, Clear is not an ordinary customer seeking access; an ordinary customer does not have the capability to terminate calls and does not come equipped with network facilities. By focusing on relevant differences it is possible to address free-ridership concerns and to discern which principles should apply when an entity seeks access.

Defining a network appropriately would both prevent free-ridership and further document the foundation for reciprocal treatment of Clear and all other legitimate network competitors. Telecom's refusal to recognize Clear as a network significantly contributed to the impasse between the parties. Telecom incorrectly compared Clear to a large commercial PABX customer.¹⁹⁸ This

197. Willig Testimony, *supra* note 32, at 13-14.

198. For example, a Telecom press release characterized a proposal to Clear thus: Under the long-term proposal Clear will pay Telecom a fixed annual per-line charge to cover on-going fixed and common costs, including a Kiwi Share cost contribution, called the Network Cost Share. This has been set at less than half the price other *businesses* pay for access to Telecom's network.

comparison allowed Telecom to argue that Clear sought a free ride on Telecom's sizeable network investments.

Although the proper definition of a network may be a complex technical issue, the considerable distinctions between Clear and a PABX customer with respect to technology and capacity were apparent to Judge Ellis and Professor M. Brunt in the High Court. The Court recognized Clear's large call carrying capacity relative to a PABX customer.¹⁹⁹ The Court also recognized that a PABX is restricted to a specific site while Clear's technology is not.²⁰⁰ Finally, in contrast to a PABX customer, the Court recognized that Clear will use its own set of lines, switches and trunks in providing local service. Clear also proposes to interconnect with Telecom's network trunkside.

For practical purposes, Clear therefore bears no resemblance to a PABX customer. Judge Gault appears to have agreed that this distinction was important to the free-ridership issue: "I was unimpressed with the 'floodgates' argument that other private exchange operators might seek the same terms. There should be little difficulty in differentiating them from an existing operator with the toll market share Clear already has and with the resources and intentions already demonstrated."²⁰¹ Any potential entrant may meet the definition of a network and still operate on a significantly smaller scale than Telecom; difference in scale does not mean free-ridership. When the entering network is relatively small, Telecom may be concerned that the exchange of calls between networks might not be reciprocal. Telecom, for example, may claim its network assets are used more extensively by calls originating from Clear's network, whether use be measured by one or a variety of cost drivers. If so, Telecom should be able to measure any disparate use. There is no reason why an imbalance of use cannot be measured separately and handled through special provisions for compensation between the parties. Any concern with free-ridership can thereby be avoided entirely. In sum, there exists no tension between free-ridership and reciprocity or the other terms of a procompetitive interconnection policy. Free-ridership concerns can be identified and addressed independently.

SERVICE TERMS 1 (Feb. 9, 1995) (emphasis added) (on file with the *Yale Journal on Regulation*).

199. *Telecom Corp. of N.Z. v. Clear Communications, Ltd.*, [1992] 5 T.C.L.R. 166, 176 (H.C.), *rev'd*, [1993] 4 N.Z.B.L.C. 340 (C.A.), *rev'd*, [1995] 1 N.Z.L.R. 385 (P.C.).

200. *Id.*

201. *Telecom*, [1993] 4 N.Z.B.L.C. at 365 (Gault, J., concurring).

G. *The Price of Interconnection*

The parity principle would call for an evaluation of the profit that Telecom might or might not make if it offered the same technology and service as Clear. We propose focusing instead on the actual costs of interconnection, without reference to the "opportunities" of either carrier. The direct incremental cost of linking the two networks is one component. The other major component is the cost of handling calls that originate in one network but terminate in the other. We propose to base this charge on incremental cost, which should have a long-run focus including necessary investments. Applying reciprocity to this principle, Clear and Telecom should *each* be compensated for the incremental costs incurred as a result of terminating the calls of their competitor. Other services that fundamentally resemble a call would also be priced at incremental cost as long as the same basic network elements are used. Long-run incremental cost is preferable to short run pricing measures because it allows for efficient investment in the equipment necessary to meet customer demand. For example, the costs associated with future network expansion are included in long-run incremental cost. Long-run incremental cost provides the proper incentives for long-run investment within the industry.

The distinction between the parity principle and our proposal is significant. The parity principle is a price squeeze limiting Clear's revenues to Telecom's incremental cost of all the services Clear can provide in competition with Telecom. Under our proposal, each carrier is allowed to price originating calls in excess of incremental cost to its consumers and receive a contribution to common costs.

We believe this proposal has several advantages over the parity principle. First, it is easier to implement because cost estimates are used only for the terminating portion of calls. There is no need to hypothesize Telecom's incremental costs for every single service Clear may choose to offer its customers.

Second, our proposal allows each carrier to recover a contribution to its fixed and common costs. By applying the parity principle to every service an entrant could offer, the entrant is condemned to insolvency. Our proposal, however, allows each network operator to recover sunk and common costs. Each network is free to price to consumers as it chooses. Pricing in excess of incremental cost to the consumer while paying only incremental cost for terminating calls is compatible with full cost recovery.

Third, our proposal is consistent with both efficiency and reciprocity. As explained in our discussion of reciprocity, a firm would not have its wholly-owned subsidiaries charge opportunity cost or a markup for either common or sunk costs among themselves.

Finally, our proposal accommodates imbalances in the use of each

network to terminate calls originating on the other. The parties can measure the imbalance on a periodic basis and compensate the network that is used more extensively.²⁰²

H. *The “Infant Industry” or “Helping Hand” Argument*

Proponents of the parity principle often disparage alternatives as variants of the “infant industry” argument or the extension of a “helping hand.”²⁰³ And it is in fact true that some observers have called for low access prices as a means of offsetting barriers to entry and other impediments to effective competition.²⁰⁴ Undoubtedly, those calls are based in part on the authors’ views about the effectiveness of competition in the United Kingdom.²⁰⁵

However, our proposal is not designed to provide a second—mover advantage in the price of access to offset some perceived market imperfection or cost disadvantage of entrants. Rather, our proposals are designed to purge the price of access of the first—mover advantage which is an inherent feature of the parity principle. And, as we have shown above, it is simply not true that pricing access at competitive levels will make available an “interfirm cross-subsidy”²⁰⁶ to subsidize uneconomic entry by inefficient rivals.

I. *Access Pricing At Ramsey Pricing Levels*

We address only briefly alternatives to pricing access at levels dictated by Ramsey pricing.²⁰⁷ We reject Ramsey pricing for New Zealand for two reasons. The first is practical. The theory is unworkable in practice and there is scant evidence that applying the theory is worth the trouble.²⁰⁸ The second

202. Note that in a situation of symmetry of costs and no significant call imbalance, a “bill and keep” approach might be reasonable. Apparently, this thinking is responsible for situations where two telephone systems within a metropolitan area provide free interconnection services reciprocally.

203. Kahn, *supra* note 26, at 12, 15.

204. See, e.g., JOHN VICKERS & GEORGE YARROW, *PRIVATIZATION: AN ECONOMIC ANALYSIS* (1988).

205. Kyle Pope, *Britain to Scrap a Pricing System Imposed on BT*, WALL ST. J., July 26, 1995, at B6; Kyle Pope, *Utility Privatizations Backfire in the U.K.: High Profits, Salaries May Bring Regulatory Changes*, WALL ST. J., Mar. 30, 1995, at A10.

206. Baumol & Willig, *supra* note 1, at 35.

207. Ramsey pricing is referred to as “charging what the market will bear” in the vernacular or pricing to maximize aggregate “consumer surplus” in the view of those economists who support it. See BONBRIGHT ET AL., *PRINCIPLES OF PUBLIC UTILITY RATES* 132-36 (1988).

208. See William B. Tye & H. Leonard, *On the Problems of Applying Ramsey Pricing to the Railroad Industry with Uncertain Demand Elasticities*, 17 *TRANSP. RES. F.* 439 (1983).

Empirical studies have shown that the gains from correct Ramsey pricing are small, even assuming all the necessary assumptions are satisfied. Bonbright, Danielsens, and Kamerschen note that:

[One study] simulated interstate telecommunications Ramsey prices and found

is conceptual. Ramsey pricing calls for the incumbent to make maximum use of its monopoly power, since it is the most likely source of the difference in demand elasticities that the theory seeks to employ. It could merely be a back door means of reintroducing the opportunity cost approach.

J. *The Issue of a "Markup" Over Long-Run Incremental Cost*

In the debate on pricing access, some have argued for a markup over incremental cost. We propose that charges be based on long-run incremental cost with no markup. However, depending on one's definition of incremental cost, our proposal can be viewed as already containing a markup; *i.e.* long-run incremental cost is equal to the short-run incremental cost of the service plus a markup covering the forward-looking joint and common costs of appropriately defined network elements. However, if incremental cost is defined as the long-run average incremental cost of an entire service, the rationale for charging even higher prices is not compelling. We acknowledge that such a markup may be justified where there is a true asymmetry in the cost structures of the carriers that could create an artificial competitive advantage or disadvantage among the carriers if ignored. One such asymmetry might be a universal service obligation imposed only on one party without avenues for relief.

The argument for a markup may also be justified in the case of a non-network entity seeking access to the network of a fully integrated carrier. If the non-network entity does not offer reciprocal network services, then the granting of access by the incumbent is unilateral and the bottleneck facilities would *not* become a bridge between independent networks. Pricing access at incremental cost could then give a competitive advantage to the entrant and violate the standards of many economists for appropriate Ramsey pricing.²⁰⁹

that they produced relatively modest or small efficiency gains (frequently 2-3 percent of revenue and [always] less than 7 percent) compared with the typical regulatory use of fully distributed cost.

BONBRIGHT ET AL., *supra* note 207, at 541-42 (citing Brown & Sibley (1986)). Sylvester Damus writes that: "The principal conclusion is that the contribution of Ramsey pricing to economic efficiency is small compared to that of an alternative constraint on the level of railway profits." The value of Ramsey pricing can be exaggerated. . . . The benefit from Ramsey pricing at a less than profit-maximizing level can be very small. Sylvester Damus, *An Evaluation of Ramsey Pricing: Argentine Railways CA. 1905*, 24 TRANSP. RES. F. 418, 418, 426 (1983).

209. The need for a markup depends importantly on exactly how the incremental costs are calculated. See *Pricing Market Access*, *supra* note 46; Jean-Jacques Laffont, *Access Pricing and Competition*, 38 EUR. ECON. REV. 1673 (1994); Jean-Jacques Laffont & Jean Tirole, *Creating Competition Through Interconnection: Theory and Practice* (Dec. 30, 1994) (unpublished manuscript on file with the *Yale Journal on Regulation*). Laffont & Tirole comment that:

[I]t is widely accepted that marginal cost pricing of access deprives the dominant telephone operator from the recovery of the fixed costs of the network and the deficit stemming from the universal service constraints. Many regulators and

However, when two certified networks interconnect and charge each other true long-run incremental costs, a markup is not necessary to economic viability.

K. *Asymmetries in Incremental Costs*

The discussion so far assumes the carriers could terminate calls at equal cost. However, the incremental costs for terminating calls may differ among carriers. The degree to which these differences ought to be taken into account depends on the cause of the differences. If the difference results from a carrier's inefficiency, the difference ought not be taken into account. If the cause is a true cost burden, then acknowledging the asymmetry in a settlement regime is consistent with the principles we have recommended.

However, it makes no sense to argue that the incremental costs of inter-network calls depend on the relative size of the networks.²¹⁰ If this logic were true, telecommunications networks would operate under diseconomies of scale of massive proportions. It would cost, say, 100 times as much to terminate a New Zealand call in the United States network as to terminate a call in New Zealand. Furthermore, telecommunications costs are heavily driven by switching costs, which are not proportionate to network size. Nevertheless, these issues will have to be resolved on a case by case basis.

L. *Pricing of End-User Services*

We have seen that the parity principle starts with a presumption that the price of the final service to the end user is optimal and establishes an access price which achieves static economic efficiency by preventing uneconomic bypass. The rule's failures in practice are blamed on poor regulation of the final price, not the access rules.

economists have suggested long run incremental cost plus a markup as a workable alternative to allow recovery of the "access" deficit.

Laffont & Tirole, *supra*, at 2.

210. Telecom announced that:

Telecom is offering to pay Clear for use of its network (i.e. reciprocity) although there are not the "equal" payments Clear seeks because of course Telecom's network is so much larger and more comprehensive than Clear's and thus has greater costs.

... Telecom's and Clear's circumstances are not equal. Clear's local network is neither likely to be of comparable size to Telecom's in the foreseeable future nor does Clear have the regulatory impost of the Kiwi Share obligation. The first point can be well illustrated by considering the size of Auckland, Wellington and Christchurch Central Business Districts which comprise only 0.16%, 0.16% and 0.19% [footnote omitted] of the geographical area of their respective local call areas. While Clear is only operating in those three Central Business Districts, it follows that for local call between our networks, Telecom is doing most of the work and incurring most of the cost.

See TELECOM COMMUNICATIONS GROUP, *supra* note 198, at 1.

We begin with the opposite presumption. We assume a commitment to effective competition in providing services to end-users. The entire purpose of the exercise is to undercut the existing monopoly of the incumbent by providing access at competitive prices to achieve competition on equal terms for service to the final customer. If the effort is successful, competition, not monopoly, will determine prices to end-users.²¹¹ We have shown that concerns over uneconomic bypass are resolved by effective competition in the contested area, regardless of the access price. We believe that this procedure is consonant with New Zealand's strong preference not to regulate end-user rates. For these reasons, we have not dwelled on the characteristics of rates for end-users.

Nevertheless, some regime of price controls may be necessary as a transition device only. Under these rules, the dominant carrier is not allowed to charge customers a price below the sum of (1) the access price charged to competitors plus (2) the dominant firm's incremental cost of the competitive service.

Finally, the issue of pricing access cannot be divorced completely from the issue of beliefs about the optimality of end-user prices. Decisions to drive access prices downwards towards incremental costs will increase pressures on carriers to recover costs through basic monthly charges to customers and tolls on usage. By the same token, high markups over incremental costs could be used to fund the KSO, should it be demonstrated to be a burden. More economically appropriate access charges are likely to encourage competition and thus achieve lower end-user prices.

V. Conclusion

As summarized in Figure 6, the parity principle does not solve the interconnection problem for New Zealand's telecommunications. It fails to achieve the New Zealand government's goals of increased competition and

211. Our proposals thus are similar to those advanced by Elizabeth Bailey and William J. Baumol:

What, then, can be done to weaken the barrier to entry that is found when entry requires heavy sunk investments?

. . . In these cases, regulators are just beginning to experiment with new methods to ensure that no excessive profits are earned from sunk-cost facilities. Rather than relying exclusively on traditional rate and entry regulation, they have turned to two rather novel approaches. The first of these entails government intervention to ensure equal access to the sunk facility. If the facility is privately owned, the government requires that all firms seeking to use the facility be given access to it, that the access price be reasonable, and that all users be charged the same price. If the sunk facility is in the hands of a local public authority, then that authority is encouraged not to discriminate among private users in its access policies.

Elizabeth Bailey & William J. Baumol, *Deregulation and the Theory of Contestable Markets*, 1 YALE J. ON REG. 111, 124 (1984) (citation omitted).

consequent benefits to consumers. The concept of opportunity costs, a critical feature of the parity principle, poses the threat of becoming a generalized fudge factor for setting the price of interconnection. Opportunity cost has become an increasingly elastic concept that permits the inclusion of a variety of justifiable and unjustifiable factors into the price of interconnection, even including monopoly profits and potential future price increases to the final customer. Contrary to the arguments made by its proponents in the New Zealand litigation, competition will not purge the access price of monopoly rents under the parity principle. Nevertheless, the problems with the parity principle go well beyond the monopoly rents issue. Proponents claim static efficiency properties for the theory in the contested area, even where it would guarantee recovery of monopoly profits. This fallacy rests upon an easily resolved confusion that involves an imaginary conflict among competitive prices, incentives for entry, and static economic efficiency. The rule was developed for regulated industries and simply does not apply to a deregulated, competitive environment. The incumbent monopolist and entrant do not compete on a level playing field under the rule, because it condemns the entrant to inadequate recovery of its sunk and common costs. The rule threatens to impede technological progress by constraining the entrant to indemnify incumbents for all sunk costs of obsolete technology and by creating a mechanism whereby incumbents can appropriate the efficiency gains and benefits of innovation by entrants. Furthermore, the parity principle is inspired by the belief that voluntary negotiations can yield efficient prices. In reality, voluntary negotiations open the door to opportunistic behavior by the incumbent. Any one of these several problems with the rule can make entry unattractive for an efficient firm. Combined, they counsel for abandoning the rule entirely. The parity principle is simply inappropriate for the telecommunications industry in New Zealand.

We urge an alternative pricing approach for the interconnection of telecommunications networks in New Zealand. Our approach defines the interconnection problem as one of achieving competition on equal terms in the final market for service to telecommunications customers, not one of merely achieving static efficiency in the supply of a component to a monopolist who is deemed to choose the services of competitors via a make or buy decision. Thus, we begin by recognizing the ubiquity of access demanded by consumers of telecommunications services. This demand means that independent networks must connect on the basis of reciprocity, must cooperate to maximize the joint value of the network to the customer, and must compete on equal terms. Further, we recognize that the reliance of each network on the other will create the potential for opportunistic behavior once they are linked. The optimal interconnection policy should seek to protect each party from the possibility of opportunism by the other. Finally, an appropriate regime should be

FIGURE 6
Summary of Issues and Conclusions

OBJECTIVES	PARITY PRINCIPLE	PRO-COMPETITIVE ALTERNATIVE
1. Effective competition	<p>Stifles effective competition</p> <ul style="list-style-type: none"> • Focuses on costs to monopolist, not benefits of competition to consumer for final service. • Insulates monopoly rents from effective competition. • Creates barriers to entry and effective competition. <ul style="list-style-type: none"> (a) Price squeeze on entrant making it impossible for efficient entrant to recover common costs and sunk costs. (b) Undercuts efficient contractual solutions ("the contractual equilibrium"). 	<p>Achieves competition on equal terms with:</p> <ul style="list-style-type: none"> • Benefits to consumer from competition for final service. • Reciprocity based on LRIC for defined networks. • Government supervised contracts and arbitration. • Any necessary changes in legislation.
2. Minimize incentives for opportunistic behavior	<p>"Voluntary negotiations" are invitation to:</p> <ul style="list-style-type: none"> • Refusal to deal. • Price squeeze on entrant. • Bundling of services. • Undercut necessary contracts and arbitration. 	<p>Competition on equal terms and reciprocity help keep the competitive system honest. Incentives to maximize joint value of the network.</p>
3. Incentives to innovate	<p>Entry and innovation are discouraged by requirement to indemnify incumbent for sunk costs of old technology.</p>	<p>New technology does not mimic costs of old technology and does not indemnify owners of obsolete technology. Entry encouraged.</p>
4. Universal Service (Kiwi Share Obligation)	<p>KSO used as "kitchen sink" approach to justify parity principle and set of anti-competitive rules to preserve revenues of incumbent from competition.</p>	<p>KSO should not drive rationale for anti-competitive public policy.</p> <ul style="list-style-type: none"> • First prove burden of KSO and consider all efforts to mitigate—lack of evidence. • Consider offsetting benefits—"first mover" advantage of incumbent. • Already funded in purchase price. • Pursue "competitively neutral" funding mechanism if burden remains (Willing proposal). • Consider "franchising competition" to minimize burden.
5. Avoid biases in competitive process—competition on equal terms.	<p>By indemnifying incumbent for all sunk costs and permitting opportunistic behavior, rule enhances "helping hand" already given to incumbent by prior grant of "first mover" advantages to incumbent.</p>	<p>No application of "helping hand" or "infant industry" argument, allow all defined networks equal opportunity for financial success.</p>
6. Administrative simplicity/Low transaction costs	<p>Refusals to deal/high transaction costs.</p>	<p>Government involvement only to extent necessary to enforce contractual/arbitration process.</p>

established to handle the termination of calls that flow from one network to the other. We propose that the price for terminating calls be based on long-run incremental costs.