

The Pricing of Inputs Sold to Competitors: A Response

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William J. Baumol and J. Gregory Sidak propose that firms controlling competitive access sell those inputs to their competitors at prices that reflect (1) direct per unit incremental cost plus (2) the opportunity cost to the input supplier of the sale of a unit of input. The purpose of this Response is to question the authors' claims of general applicability for their theory. Rules for pricing competitive access must follow from the broad vision of the appropriate regulatory transition to deregulation and not vice versa. Different regulatory regimes and different factual circumstances will produce different rules governing competitive access, including the rules for pricing access.

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Introduction

In this edition of the *Yale Journal on Regulation*, William J. Baumol and J. Gregory Sidak (Baumol and Sidak) propose pricing standards for regulated firms controlling access to facilities necessary for their non-vertically integrated rivals to compete. They propose that such firms controlling competitive access sell those inputs to their competitors at prices that reflect (1) "direct per-unit incremental cost"¹ plus (2) "the opportunity cost to the input supplier of the sale of a unit of input."² Baumol and Sidak make a number of claims in support of what they call efficient component pricing or the parity principle, including:

1. "The efficient component-pricing rule is applicable generally."³
2. "[T]he efficient component-pricing rule . . . is simply another use of the incremental-cost principles that achieve economic efficiency."⁴
3. "[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 synonyms."⁵
4. "In a competitive market, an incumbent will levy an access charge on a new entrant that will cover both the direct incremental cost of providing the access and its opportunity cost."⁶

1. William J. Baumol & J. Gregory Sidak, *Pricing of Inputs Sold to Competitors*, 11 YALE J. ON REG. - 171, 178 (1994).

2. *Id.*

3. *Id.* at 202.

4. *Id.* at 173.

5. *Id.* at 177.

6. *Id.* at 201.

The following discussion will employ the “parity principle” terminology rather than “efficient component pricing” because the latter is a misnomer: Baumol and Sidak’s pricing rule is not necessarily the one dictated by considerations of economic efficiency.

The purpose of this Response is to question the authors’ claims of general applicability for their theory.⁷ We must reframe the debate to consider explicitly the context of regulatory objectives and institutions, rather than claim general application of rules developed on the basis of hypothetical examples that may be unrealistic in practice. Simply put, rules for pricing competitive access must follow from the broad vision of the appropriate regulatory transition to deregulation and not vice versa. Different regulatory regimes and different factual circumstances will produce different rules governing competitive access, including the rules for pricing access. One size does not fit all.

The lack of universal application of the theory is demonstrated below with a counterexample from an actual case study. This counterexample demonstrates that it could be a particularly serious mistake to apply the pricing rule in situations where the highly restrictive assumptions made by Baumol and Sidak in their hypothetical examples are not valid.

Before considering the counterexample, another example will help illustrate the lack of general applicability of the rule. Followers of the debate over competitive access in the electric utility industry will recognize Baumol and Sidak’s parity principle as simply another restatement of the avoided cost doctrine (see below for an example illustrating this equivalence). Viewed in this light, the parity principle is really nothing new. Under the doctrine, competitive suppliers who qualify are allowed revenues equal to the utility’s avoided cost. If applied according to its intention, the avoided cost rule ensures that the competitive supplier gets the benefits of any efficiency gains from entry, and the utility and its customers are left indifferent.

However, such a rule is not the only one that can be justified economically. Many utilities, for example, have developed bidding systems as an alternative to the avoided cost rule in order to ensure the flowthrough of benefits of competition to ratepayers. More recently, head-to-head competition to get the business of the final customer via access to transmission lines seems to be capturing the imagination of many who follow the debate.

7. To avoid auto-plagiarism, I will not repeat my own previous writings on this subject. For further discussion of alternatives to the efficient component pricing rule, see WILLIAM B. TYE, *THE THEORY OF CONTESTABLE MARKETS: APPLICATIONS TO REGULATORY AND ANTITRUST PROBLEMS IN THE RAIL INDUSTRY* (1990); WILLIAM B. TYE ET AL., *THE TRANSITION TO DEREGULATION* (1991); William B. Tye, *Competitive Access: A Comparative Industry Approach to the Essential Facility Doctrine*, 8 *ENERGY L.J.* 337 (1987); William B. Tye, *Pricing Market Access for Regulated Firms*, 29 *LOGISTICS & TRANSP. REV.* 39 (1993).

The lack of general applicability of the parity principle is demonstrated first in Part I by showing the sensitivity of Baumol and Sidak's conclusions to the implicit assumptions in their hypotheticals. Part II illustrates the lack of general applicability by examining a counterexample taken from an actual case study of a proposed application of the rule. The counterexample shows that the parity principle does not necessarily achieve competition on equal terms, nor will it necessarily be produced via voluntary negotiations among competitors, as its proponents often claim in practice. The Response closes with a warning against applying the rule generally without first determining whether the factual circumstances are consistent with the implicit assumptions used in the hypotheticals.

I. Claims of General Applicability

Baumol and Sidak consider a railroad competitive access problem as their pricing paradigm. They then conclude that their results are "unambiguous,"⁸ can be deduced by reference to simple hypothetical examples and elementary economic principles, and are generally applicable.⁹ They argue that competitors "must" charge the price governed by the parity principle; else higher or lower prices competitively disadvantage one of the rivals and produce economic inefficiency.¹⁰

A. *Significance of Implicit Assumptions*

The authors explicitly or implicitly make a number of specific assumptions in reaching these conclusions. The chief efficiency concerns they mention are efficient routing decisions and efficient entry decisions. The nonintegrated competitor is assumed to have sunk no costs¹¹ (or is assumed to have no need to recover them through efficient pricing of access). Very importantly, it is assumed that regulators have decided that efficient pricing of the final product is to be achieved with regulatory intervention, not by price competition among alternate firms encouraged by regulatory rules to protect competitive access.

Baumol and Sidak draw their conclusions of general applicability by relying on hypothetical examples that incorporate a set of highly specialized

8. Baumol & Sidak, *supra* note 1, at 173.

9. *Id.* at.

10. *Id.* at.

11. "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).

assumptions.¹² Before accepting claims of general applicability, we must carefully examine the consequences of violating these assumptions.

What if both firms have, in fact, sunk costs under the prior regulatory regime? What if regulators wish to encourage competitive access as a means of achieving effective competition in the market for the final product? And what if regulators are seeking to grant competitive access to a merged firm's facilities to restore competition eliminated by a merger? Is the advice to apply the parity principle nevertheless unambiguous? We shall soon see that under such changed circumstances, application of the parity principle can be a grave threat to a successful transition to deregulation and hardly a general rule for pricing access.

Indeed, we need look no further than the telecommunications access pricing example discussed by the authors for an illustration of the lack of general applicability of the rule. Baumol and Sidak assure us here that "[t]he same logic applies *without modification* to the pricing of access to the local telecommunications loop."¹³ Nevertheless, Baumol and Sidak now agree that the Court was right to conclude that the rule in fact needs much modification, precisely because the assumptions they employ to justify the rule are not universally valid. Clearly, when Baumol and Sidak's assumptions are violated the parity principle no longer serves as the unambiguous answer to access pricing. Nor are we told the correct price of access once the Court's objections are considered and the parity principle is rejected as invalid.

B. *Conflicts Between Theory and Practice*

Applications of these principles in actual regulatory proceedings by Professor Baumol, together with his colleague, Robert D. Willig, also cast grave doubts about the general applicability of this rule. Either the rule is not generally applicable or unexplained discrepancies in the claims of the rule's general applicability require further examination. Either way, difficult decisions on rules for competitive access cannot be based simply on uncritical acceptance of the hypothetical examples contained in the Baumol and Sidak essay.

12. Indeed elemental alarm bells ought to go off when we are told that a regime of competition that ensures that a monopolist will always be indifferent to the entry of new competitors will "*ensure[]* proper pricing and efficiency." Baumol & Sidak, *supra* note 1, at 186 (emphasis added).

13. *Id.* at 189 (emphasis added). Baumol and Sidak claim that the rule can be applied without modification, yet concur that the rule is in fact invalid in New Zealand. Their rationale is difficult to reconcile with their statement: "[T]he analysis underlying the rule indicates how the LEC should price *the final product*, intraLATA toll service, when selling that product to consumers." *Id.* at 198 (emphasis added).

How are we to reconcile (1) Baumol and Sidak's claims in this quote and the surrounding text that the opportunity cost standard allows the prices of the final output to be determined based on their proposed rules for the price of access with (2) their agreement in the New Zealand case that "a set of complementary rules" to set the price of the final product is indeed required because the parity principle gives the wrong price of access? *Id.* at 195.

For example, proponents of the parity principle have demonstrated extreme hostility to the use of mandated competitive access as a mechanism for inducing price competition in the market for the final product or for using mandated competitive access as a mechanism for restoring competition in the market for the final product that has been eliminated by a merger. In the Santa Fe—Southern Pacific Merger Proceeding before the Interstate Commerce Commission (ICC), Professor Baumol stated that the ICC should rely on voluntary negotiations rather than require competitive access to solve the problems arising from reduced competition after a merger:

Q. Now, you would agree with me, would you not, that if the Commission finds an instance in which it believes the profits of the merged line will be too high, that it is appropriate for them to impose trackage rights as a remedy to that situation, is it not?

A. [Professor Baumol] I am glad you asked me that question, because that is the *worst possible remedy that a malevolent mind could devise . . .*¹⁴

Professor Baumol has frequently spoken out against the use of regulatory intervention to set the competitive price of access. Rather he has encouraged regulators to rely upon voluntary negotiations between the two rail carriers:

[V]oluntary negotiations between CSXT and FEC should lead to use of efficient CSXT-FEC joint-line routes rather than inefficient CSXT single-line routes, so long as rates and divisions are freely negotiable. This proposition holds even if CSXT has monopoly power over part of the joint-line routes, and follows from the self-interest of both CSXT and FEC The effectiveness of voluntary negotiations in maintaining efficient routes is not just theoretical; it is confirmed by the observed behavior of CSXT and other railroads, and by the analogous make-or-buy decisions that countless firms make throughout the American economy every day.¹⁵

“The efficient component-pricing rule provides a competitive-market standard (that is, an efficiency standard) for settlement of such disputes. It yields an

14. Record at 10, 083, Santa Fe S. Pac. Corp., 2 I.C.C.2d 709 (1986) (Finance Docket No. 30,400) (emphasis added).

15. See Rebuttal Verified Statement of Robert D. Willig and William J. Baumol (May 7, 1993) at 20, Seaboard Air Line R.R., 1993 ICC LEXIS 284 (Dec. 15, 1993) (Finance Docket No. 21,215).

unambiguous price for the switching services, one that is called for by the public interest. No regulatory intervention is needed to impose that price.”¹⁶

C. *Conflicts Between the Parity Principle and the Theory of Voluntary Negotiations*

The view that the optimal input price will be forthcoming without regulatory intervention is foreshadowed by statements in the Baumol and Sidak essay that firms controlling access should be permitted, not necessarily required, to apply the rule. For example, they hint that it is the obligation of rival suppliers of pharmaceutical services to set the price of access to motivate the owner of the bottleneck facility to provide access on efficient terms.¹⁷ The strong support for voluntary negotiations by the proponents of the opportunity cost theory is difficult to reconcile with statements by Baumol and Sidak that appear to say contrarily that regulators ought to intervene in these pricing decisions. Indeed, I shall show below that voluntary negotiations will not in general produce the result called for by the parity principle.

Additionally, Baumol and Sidak do not tell us precisely which institutional arrangements supposedly achieve the desired pricing regime. Should regulators intervene to set the price of access? Relying on the two firms to set the optimal price without regulatory intervention seems highly unlikely to result in the price Baumol and Sidak label as economically efficient. Baumol and Sidak go to great lengths to argue that the economically appropriate price should leave the owners of the facility indifferent. But what would motivate an indifferent firm voluntarily to allow entry by a more efficient competitor, the result Professor Baumol forecasts in the above quotes? Another institutional arrangement would appear to be a contract between the two firms. However, as shown below, adherents of the theory have urged regulators and the courts not to enforce such contracts because they are purportedly inconsistent with the parity principle.

D. *Dependence on a Particular Vision of the Regulatory Transition*

Choosing the parity principle as the means of accomplishing competitive access is clearly dependent on a particular vision of what the most appropriate future regulatory regime should be. Baumol and Sidak dispense with any requirement to specify the goals and regulatory mechanisms chosen by regulators and claim general applicability of their rule for any regime of competition or regulation. But their theory relies heavily on the assumption that

16. Verified Statement of William J. Baumol (May 21, 1990) at 30, *Iowa Power & Light Co. v. Burlington N.R.R.*, No. 40224 (I.C.C. filed Apr. 27, 1989), *dismissed with prejudice*, 1991 WL 219374 (I.C.C. Oct. 29, 1991).

17. Baumol & Sidak, *supra* note 1, at 182.

the competitive access rule seeks to achieve efficient use of inputs but not competition in the sale of the final products.

Should pricing under this rule be extended to every regulatory transition? The answer is no, if the vision of the transition to deregulation is the contractual equilibrium. In this case, regulators may intervene on a limited basis during a transition to set the price of access and other prices to levels that would have emerged under contracts signed prior to sinking costs.¹⁸ The contractual equilibrium is an explicit recipe for regulatory withdrawal, while the parity principle as stated here relies on continued regulation of both input prices and the prices of the final product.¹⁹

E. *Monopoly Profits Are Not Really Incremental Costs*

By means of semantic devices, Baumol and Sidak's theory translates monopoly profits into incremental costs and opportunity costs. Baumol and Sidak are careful to prove mathematically that their parity principle or indifference principle achieves its intended objective: any competitor that enters the market indemnifies the owner of the bottleneck facility from the financial consequences of new competition, even if this requires the entrant to pay the incumbent a price that includes a measure of monopoly profits. Baumol and Sidak agree that this is true, but point the blame at the failure to adequately regulate the price of the final product.

However, consider for a moment that regulators may have a different goal in mind for setting competitive access than the one implicitly assumed by Baumol and Sidak. Suppose that regulators are using competitive access as a mechanism to achieve effective competition for the sale of the final product in a transition to deregulation. Including opportunity cost of the regulated firm in the price of access to new entrants would forever frustrate this goal.

18. Because elements of service in an integrated network are sometimes characterized by economies of scale and barriers to entry, at least in the short run, effective competition is not always immediately possible across the entire spectrum of services offered in the regulated industry.

A commonly proposed solution is to design policies that enhance competition wherever possible by giving all competitors access to the bottleneck portions of the network on roughly equal terms to prevent vertical foreclosures of competition across the network . . . [L]imited provision for access and pricing rules on the monopoly portions of the system are sometimes deemed necessary to effect a successful transition.

John R. Meyer & William B. Tye, *Toward Achieving Workable Competition in Industries Undergoing a Transition to Deregulation: A Contractual Equilibrium Approach*, 5 YALE J. ON REG. 273, 276 (1988) (emphasis added) (footnotes omitted).

19. Note, for example, Baumol and Sidak's concurrence with the court in New Zealand that their proposed access rules are incompatible with a regime of "light-handed regulation." Baumol & Sidak, *supra* note 1, at 194.

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Opportunity cost is a misleading and extremely confusing term in the current 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. The only question is whether the carrier seeking access will be an effective competitor. Revenues lost to 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.

Careful diction is also necessary when the parity principle is justified by reference to pricing in competitive markets: "In a competitive market, an incumbent will levy an access charge on a new entrant that will cover both the direct incremental cost of providing the access and its opportunity cost."²⁰ Clearly this outcome does arise in competitive markets. New entrants into competitive markets do not indemnify incumbents for the opportunity cost of reduced profits. Baumol and Sidak's analogy of the 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. To do so would eliminate the incentive for entry in order to take advantage of temporarily supracompetitive prices in competitive markets.

The dangers of accepting the parity principle as the only appropriate mechanism for pricing competitive access go beyond the absence of any encouragement to competition in the sale of the final product in a transition to deregulation. Its adherents often use these hypotheticals to support the conclusion that any alternative pricing rule is inefficient. Another danger is that the parity principle becomes the rationale for striking down competitive access mechanisms that do encourage price competition in the sale of the final product and are more appropriate in regulatory transitions that do not fit Baumol and Sidak's specialized assumptions.

The lack of general applicability of the parity principle and its accompanying doctrine of voluntary negotiations may be illustrated with a counterexample in which Professor Baumol and his colleague Robert D. Willig address the issue of competitive access in the rail industry.²¹

II. A Counterexample: The Post-Merger Rail Competitive Access Problem

CSX Transportation, Inc. (CSXT) petitioned the ICC to reopen the Seaboard Air Line Railroad Company (SAL) merger with the Atlantic Coast

20. *Id.* at 201.

21. Along with Professors Baumol and Willig, the author of this comment was also involved in the proceeding. See Verified Statement of William B. Tye (Mar. 29, 1993), *Seaboard Air Line*, (Finance Docket No. 21,215).

Line Railroad Company (ACL)²² in an attempt to remove a variant of the so-called "DT&I conditions."²³ These conditions were imposed as a precondition to the Commission's approval of the 1963 merger that created the Seaboard Coast Line Railroad (SCL). SCL subsequently became part of the CSX system as a result of subsequent mergers approved by the Commission. Professor Baumol filed joint testimony with his colleague, Professor Willig, strongly supporting the elimination of the merger conditions. They criticized regulatory intervention into the pricing of competitive access and instead urged the ICC to rely on voluntary negotiations between the carriers to solve the problem of post-merger competitive access.

A. *Assumed Facts in a Rail Competitive Access Proceeding*

The CSX-FEC controversy provides a case study for understanding the problems of post-merger competitive access in the rail industry and the weaknesses of the parity principle and the accompanying theory of voluntary negotiations. At issue is that one carrier controls a bottleneck route or essential facility that connecting carrier(s) must have access to if they are to compete. When competitive access problems occur due to a merger, a procompetitive access policy should assure competitive access on equal terms to restore the equal competitive footing which existed before the merger. Competition on equal terms means that ownership of the bottleneck route should not convey a competitive advantage or disadvantage. The objective is to establish a contractual equilibrium or regulatory contract as a substitute for the competitive regime eliminated by the merger.

Merger conditions address the need to protect FEC from opportunistic behavior. Because of sunk capital costs, a contract (regulatory or private) is needed to protect a more efficient connecting carrier, like FEC, from opportunistic behavior by the merged single-line carrier. Once such a contract is in place, the single-line carrier has strong economic incentives to break the contract and either apply a price squeeze²⁴ to the more efficient connecting carrier or cancel the joint route entirely.

22. Seaboard Air Line R.R., 320 I.C.C. 122 (1963), *modified*, 360 I.C.C. 582 (1979).

23. DT&I conditions have been traditionally imposed on railroad mergers by the ICC since 1922. They are aimed at limiting the anticompetitive effects of a merger by mandating certain relationships between the consolidated entity and other railroads. The phrase derives from Detroit, T. & I.R.R., 275 I.C.C. 455, 492 (1950), wherein the Commission set out these conditions in their standard form.

24. A "price squeeze" is generally defined to be a situation where a firm manipulates the input and output prices faced by a competitor to prevent that firm from competing effectively.

Figure 1

The Post-Merger Competitive Access Problem

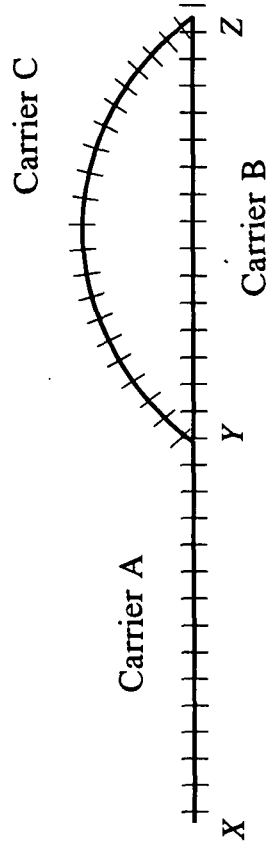
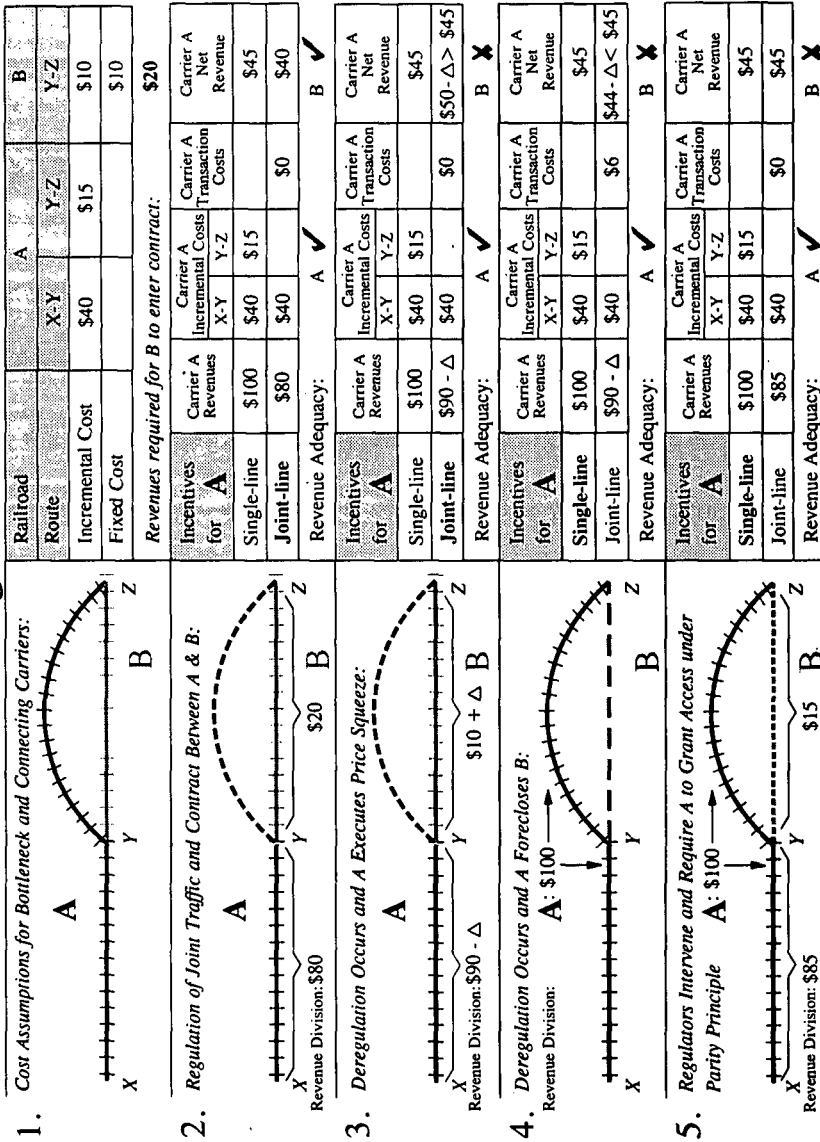


Figure 2



The factual circumstances of the typical rail competitive access case arising from a vertical merger may be illustrated by Figure 1. All three carriers are assumed to have incurred substantial sunk costs and must price well in excess of incremental costs to become revenue adequate. Assume in Figure 1 that Carrier B competes from Y to Z and then interchanges traffic with Carrier A, which serves X to Y. Assume also that Carrier C competes from Y to Z and also interchanges through traffic with Carrier A at Y. Now assume that Carrier A and Carrier C merge to produce a single carrier.

The competitive access problem is that Carrier B has no ability to compete for the through traffic without access to a direct competitor's services from X to Y. If denied such access, Carrier B is said to be subject to a vertical foreclosure of competition. Competitive access problems generally occur as a result of changed circumstances since Carrier B depended on Carrier A as a friendly connection prior to the merger. In most mergers prior to the Staggers Act,²⁵ the Commission relied on the merger conditions to preserve post-merger competition. More recently the preferred tools for preserving the competition lost by the merger are trackage rights, whereby Carrier B operates its trains over the merged carrier's tracks.

B. *The Goals of a Procompetitive Access Policy*

The logic for a procompetitive access merger policy is relatively straightforward: assure competitive access on equal terms to restore the equal competitive footing which existed before the merger. The competitive access problem is most acute in situations where both the firm seeking access and the firm controlling access require prices in excess of incremental costs in order to cover total costs (fixed costs); and also where the firm seeking access has sunk considerable investments which must interchange with facilities which are owned by a competitor (sunk costs).

Furthermore, it is assumed that a regime of competition, once eliminated, would be very difficult to restore because of barriers to entry. In these circumstances, solutions to the competitive access problem should meet the following goals:

1. to preserve and enhance price and service competition among rail carriers;
2. to do so with a minimum of regulatory intervention;
3. to do so with maximum reliance on contracts and privately negotiated solutions;

25. Staggers Rail Act of 1980, codified at 49 U.S.C. § 10101 (1982); Motor Carrier Act of 1980, Pub. L. No. 96-296, 94 Stat. 793 (codified at 18 U.S.C. § 1114 (1982) and in scattered sections of 49 U.S.C.).

4. to provide incentives for efficient provision of rail services, including the most efficient routing of traffic;
5. to promote an equitable and efficient division of net revenues among rail carriers on joint-line movements in order to prevent cross-subsidy;
6. to preserve competition in the industry in the long run; and
7. to advance the goal of revenue adequacy.

Revenue adequacy in an industry with substantial fixed and sunk costs requires revenues well in excess of incremental costs. In these circumstances, prices in excess of incremental costs should not be viewed as supra-competitive prices or necessarily generating excess profits. Rather, they should be viewed as necessary for firm survival. Indeed, as we shall soon see, prices equal to or only slightly above incremental costs cannot be deemed to be competitive in such circumstances, precisely because they doom the enterprise charging such prices to financial ruin.

Regulation of post-merger competitive access should be designed to afford the parties the protection they would have obtained through contracts before sinking costs, knowing that a merger would occur. FEC would not have built a railroad without assurances that it would get a certain amount of the interstate traffic that currently moves to and from Florida on CSXT. The objective is to establish a contractual equilibrium or regulatory contract as a substitute for the pre-merger competitive regime.²⁶

C. *The Standard of Competition on Equal Terms*

If a decision is made to preserve competition that is reduced or eliminated by a rail merger, competitive access in such circumstances should be designed to achieve competition on equal terms.²⁷ Competition on equal terms means in the present circumstances that ownership of a bottleneck facility should be competitively neutral: ownership of such a facility should convey neither a competitive advantage nor disadvantage. In short, (1) fix it only where it is

26. See Meyer & Tye, *supra* note 18, at 290-97, for a discussion of substituting contracts for regulation in the transition to deregulation. Note that this vision of a contractual equilibrium as a replacement for regulation differs significantly from that of Professors Baumol and Willig. They apparently view the competition as akin to spot markets whereby competitors sink costs in idiosyncratic investments with neither regulatory nor private contractual guarantees against opportunistic behavior. By the same token, Baumol and Sidak ignore the sunk cost problem entirely by assuming that average incremental costs and average variable costs are synonymous. This procedure effectively ignores the central problem in these disputes—the recovery of sunk costs by the foreclosed competitor seeking access. This example illustrates once again the high degree of sensitivity of Baumol and Sidak's conclusions to their highly specific assumptions.

27. The economic test is designed to give content to the Supreme Court's legal objective that access must be afforded "upon such just and reasonable terms and regulations as will, in respect of use, character and cost of service, place every such company upon as nearly an equal plane as may be . . ." *United States v. Terminal R.R. Ass'n*, 224 U.S. 383, 411 (1912).

broken; (2) do not allow a breakdown of effective competition in one part of the regulated industry to infect the other parts; and (3) minimize the scope of regulatory intervention. Competition on equal terms is designed to accomplish these objectives. Below I show how this can be accomplished with private or regulatory contracts over joint rates, through routes, and revenue divisions.

D. *Contractual Solutions to the Rail Competitive Access Problem*

Historically the solution to the rail competitive access problem was a regulatory contract whereby the traffic interchange, joint rates, joint routes and divisions were established by regulation.²⁸ With such rules in hand, Carrier B in Figure 1 could invest in sunk facilities knowing that it could rely on a regulatory guarantee of competition on equal terms. There is, of course, no reason in principle that the same guarantees to Carrier B of access on equal terms could not be achieved via a private contract—provided the contract were signed before Carrier B sunk its cost. Otherwise Carrier B would be in the same situation as a tenant inquiring into the cost of air conditioning provided by the landlord after the tenant had sunk hundreds of thousands of dollars in leasehold improvements. The tenant would be highly vulnerable to a holdup.

Post-merger traffic conditions address the fundamental need for a contractual solution to post-merger competitive access. The problem is illustrated by several scenarios of the classic rat-tail situation depicted in Figure 2. Once again, Carrier B must connect with A to participate in traffic from X to Z. Carrier A is the only rail carrier serving X to Y and operates a competing route from Y to Z as a result of the merger discussed in connection with Figure 1. Panel 1 of Figure 2 shows a hypothetical example with facts similar to those claimed by CSXT in the preceding figure. CSXT is in a situation like Carrier A in which it connects with a more efficient Carrier B (much like FEC) that must price in excess of incremental cost to become revenue adequate. Panel 1 lists the relevant assumptions regarding the costs of Carriers A and B. Following Panel 1, Carrier A can serve the bottleneck portion of the route, X-Y, at an incremental cost of \$40. Carrier A can serve the contested portion of the route, Y-Z, for an incremental cost of \$15. Carrier B is more efficient and can serve Y-Z for an incremental cost of only \$10. However, Carrier B has previously sunk an investment that requires revenues of \$10 per movement in order to recover the investment with a fair rate of return.²⁹ That is, Carrier B,

28. For some time now it has been recognized that regulation is a form of contract that allows economic entities to sink costs to idiosyncratic relationships without the need of the private contract that would otherwise have been necessary to protect firms from opportunistic behavior. See Victor P. Goldberg, *Regulation and Administered Contracts*, 7 BELL J. ECON. 426 (1976).

29. Proponents of the parity principle tend to focus on the role of access pricing in encouraging efficient entry and achieving static efficiency gains by encouraging the traffic to move over the most efficient route. Based on these considerations, it might be argued that the existing situation implies that uneconomic entry

although more efficient than Carrier A, requires revenues of \$20 for movement over Y-Z in order to be made revenue adequate, whereas Carrier A can serve Y-Z at an incremental cost of \$15.

This hypothetical example will illustrate two major economic principles relevant to understanding the economic issues raised by Professors Baumol and Willig's recommendation to remove the merger conditions:

1. A contract (regulatory or private) specifying joint rates, routes and divisions is needed to protect a more efficient connecting carrier from opportunistic behavior by the merged single-line carrier; and
2. Once the more efficient connecting carrier has such a contract, the single-line carrier has strong economic incentives to break the contract and either apply a price squeeze to the more efficient connecting carrier or cancel the joint-line route entirely.

Historically such a situation has been addressed through regulation of joint rates, through routes, and divisions, or by post-merger conditions. Assume that Carrier B views the merger conditions as a regulatory contract that protects it from opportunistic and expedient behavior by Carrier A. As a more efficient competitor, it competes effectively in the market. Given the regulatory environment, Carrier A and B negotiate traffic interchange, joint route, joint rate, and division agreements that permit the more efficient Carrier B to compete on equal terms, just as before the merger.

Panel 2 shows the result of a contract or merger conditions governing joint traffic that allows Carrier B the opportunity to recover the cost of its investment. It is not necessary for the contract or merger conditions to prevent rate competition between single-line and joint-line traffic. It is necessary, however, to prohibit Carrier A from taking actions that would prevent Carrier B from competing on equal terms.³⁰ Clearly, Carrier B never would have entered the market, despite its greater efficiency, if it believed that Carrier A, through a price squeeze, could always appropriate both its efficiency gain and the revenues in excess of incremental costs needed to amortize its sunk costs. Moreover, having sunk costs in the past, Carrier B would not sink additional

by one of the carriers had occurred at some point in the past. However, in the rail merger case, entry is not an issue. To get situations similar to those in Figure 2, we need only assume a merger between Carrier A and Carrier C in Figure 1, plus a typical oligopoly situation where all competitors do not necessarily have the same incremental costs.

³⁰ Note that the point is not that Carrier B has a prior right to the net revenues needed to recover sunk costs because it has the greater efficiency. Rather the objective is to require the two firms to compete on equal terms. For a discussion of the more general case where both firms cannot be made revenue adequate, see WILLIAM B. TYE ET AL., *supra* note 7, at ch. 7.2.

costs in the form of efficiency enhancing investment if it expected that Carrier A could appropriate these.

In the hypothetical example in Panel 2, the revenue is split with \$80 to Carrier A and \$20 to Carrier B. Note that less efficient Carrier A still has an incentive to compete on the Y to Z movement because the single-line route is more profitable with \$45 net revenue. Note however, that the single-line carrier must bear 100 percent of its inefficiency if it attempts to compete by offering a single-line route. Likewise, Carrier B is strongly motivated to encourage traffic to the more efficient joint-line route.

E. The Incentives for Opportunistic Behavior by a Bottleneck Carrier

Assume that Carrier B has signed a contract, or has merger conditions, that allow it to recover its sunk cost of \$10 per unit. However, Carrier A has a strong incentive to break the contract or eliminate the conditions and engage in what economists call opportunistic behavior.³¹ If Carrier A can somehow void the agreement, it can appropriate all of Carrier B's efficiency gains as well as the revenues Carrier B needs in excess of its incremental costs to recover the \$10 in fixed costs.

Panel 3 shows the consequences of Carrier A responding to incentives for opportunistic behavior. Assume that new rules and regulations give Carrier A the opportunity to unilaterally renounce its prior agreements with Carrier B. Such an opportunity would occur if Carrier A could get out of the merger conditions and the contracts it signed with Carrier B based on those conditions. Panel 3 shows that it will be profitable for Carrier A to do so. Whereas Carrier A can earn net revenues of \$40 for joint-line movements under the contract or merger conditions (Panel 2), it can earn in excess of \$45 on the same joint-line movements if it can get out of the contract or merger conditions and engage in a price squeeze (Panel 3).

Professors Baumol and Willig's theory of voluntary negotiations provides a guideline on how Carrier A should engage in such opportunistic behavior.

31. The incentives for opportunistic behavior in similar situations are discussed by Benjamin Klein et al., *Vertical Integration, Appropriable Rents, and the Competitive Contracting Process*, J.L. & ECON. 297 (1978):

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.

Id. at 299.

One option is to engage in a price squeeze. Carrier B will accept an offer of $\$10+\Delta$ (and earn net revenues of Δ), where Δ is the “peppercorn” above incremental cost that induces Carrier B to participate, rather than have the traffic move over the single-line route and earn no net revenues. Despite its greater efficiency, Carrier B will, however, be unable to recover its total costs after the price squeeze, since Δ is not enough to cover its fixed costs. Thus, in this hypothetical example, Carrier B moves from a position of revenue adequacy to being revenue inadequate.³²

This example shows that Carrier A has no incentive voluntarily to agree to interchange traffic with a more efficient connecting carrier at revenue divisions that permit Carrier B to recover its sunk costs. This follows from the fact that the less efficient single-line route is still more profitable for Carrier A at a division that permits Carrier B enough revenue to recover its sunk cost. In fact, Carrier A must apply a price squeeze if it is to have an incentive to voluntarily interchange traffic after it has been relieved of the merger conditions. As Panel 3 shows, the joint-line route is more profitable (assuming a sufficiently low Δ) for Carrier A than the single-line route. But this occurs only because Carrier A appropriates all of Carrier B’s net revenues necessary to amortize sunk costs and appropriates almost all the benefits of Carrier B’s efficiency gains (all except Δ).

The price squeeze is not an unintended consequence of the voluntary negotiations theory. The example of voluntary negotiations of competitive access in Figure 2 demonstrates that the permissive theory can only operate to route traffic over the more efficient joint-line route via a price squeeze against the carrier seeking competitive access. According to its own assumptions, the theory works to achieve efficiency as measured by incremental costs only if the bottleneck carrier applies the price squeeze. The incentive to open up competitive access to a more efficient entrant depends on the bottleneck carrier’s ability to capture all or most all of the net revenues, most particularly the other carrier’s efficiency advantages. Otherwise there is no incentive for Carrier A to hold open the more efficient route. (Panels 3 and 4 in Figure 2 depict this conclusion.)

32. Professor Baumol has repeatedly reminded us of rail carriers’ need for revenues in excess of long run incremental costs:

If a railroad were to set its rates equal to the corresponding marginal or variable cost (*or the long run incremental cost*) none of its traffic could be expected to make any contribution toward the railroad’s fixed and common costs—maintenance and replacement of track, roadbed, signals, switching and loading facilities. *This is clearly so even if prices are set equal to long run incremental cost, including the railroad’s incremental capital needed only to provide the service in question.* Such a set of rates is clearly not economically compensatory, for it permits the railroad to cover only a portion of its total costs.

Reply Verified Statement of William J. Baumol (Feb. 21, 1985) at 36, *Santa Fe* (Finance docket No. 30,4000) (emphasis added).

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Panel 3 shows that, without a regulatory or private contract negotiated prior to the more efficient connecting carrier sinking its costs, there is no system of voluntary negotiations that will simultaneously achieve two necessary prerequisites for economic efficiency: (1) Carrier A will have an incentive voluntarily to allow the traffic to move over the most efficient route; and (2) Carrier B will price sufficiently in excess of incremental costs to recover its total costs and survive in the long run.

This inconsistency may be seen by comparing Panel 2 with Panel 3. If Carrier B is able to recover sunk costs of \$10 and its incremental costs of \$10, Carrier A has no incentive, in the absence of a contractual or regulatory constraint, voluntarily to allow the traffic to move over the more efficient route because the single-line route is most profitable (Panel 2). Therefore Carrier A refuses to interline unless the more efficient joint-line route is more profitable to Carrier A as a result of a price squeeze. But then Carrier B cannot recover its sunk cost (Panel 3).

Panel 3 can hardly be characterized as competition on equal terms. Professors Baumol and Willig's theory assumes a price squeeze in which Carrier B must hand over some or all of its efficiency gains to Carrier A in order to gain access to the market. The efficiency gains go to the carrier controlling access, not the carrier achieving the efficiency gains.

F. *Impediments to Voluntary Negotiations*

Panel 4 illustrates that the situation could even be worse for short-run economic efficiency: Carrier A may not apply Professors Baumol and Willig's price squeeze. Here Carrier A may incur \$6 in transaction costs from applying the price squeeze that are greater than Carrier B's efficiency gains of \$5. Therefore, it is unprofitable for Carrier A to incur the transaction costs necessary to engage in the price squeeze. Rather Carrier A would prefer foreclosing Carrier B and offering only a single-line rate. Other explanations for choosing Panel 4 over Panel 3 would be the inability of Carrier A's management to understand Professors Baumol and Willig's model (bounded rationality in economics) or uncertainty over the size of Carrier B's greater efficiency (imperfect information). Despite hints in Baumol and Sidak that voluntary negotiations will solve the problem, and despite Professors Baumol and Willig's frequent statements in support of that theory in actual applications, Baumol and Sidak imply at points that regulators should intervene. They also point out that the parity principle would prevent Carrier A from appropriating Carrier B's efficiency gains in the above example.

G. *Results from Applying the Parity Principle*

Panel 5 assumes that regulators take Baumol and Sidak's apparent advice to intervene and require Carrier A to grant competitive access to Carrier B under the parity principle. As the numbers indicate, the revenue division is \$15 for Carrier B and \$85 for Carrier A. This result may be reached either by calculating a price of access to Carrier B equal to Carrier A's direct cost (\$40) plus Carrier A's opportunity cost (\$45) or a revenue division to Carrier B equal to Carrier A's avoided cost (\$15). While the rule does prevent Carrier A from appropriating Carrier B's efficiency gains, it does not solve the problem of revenue adequacy of the more efficient connecting carrier, who is now short \$5 instead of \$10.

The example also illustrates a number of interesting features of the parity principle. First, there is no incentive for the carrier controlling competitive access to adopt Baumol and Sidak's pricing rule voluntarily. By definition under the rule, Carrier A receives the same net revenues of \$45 regardless of whether Carrier B is granted access.

Second, the parity principle is an improvement over the perfect price squeeze from Carrier B's perspective only because the carrier seeking access was more efficient than the carrier controlling access. In the more general case in which regulators seek to encourage equally efficient carriers to compete on the basis of price, the parity principle squeezes Carrier B down to its incremental costs of \$10, and only the carrier controlling access has any hope of recovering total costs. Clearly the parity principle does not achieve competition on equal terms under these circumstances.

Third, we can see that the parity principle ignores the problem of Carrier B's recovery of its sunk costs. The \$10 in revenues to Carrier A needed to recover its sunk cost are treated as opportunity costs to Carrier B when the more efficient carrier gets the business. This example illustrates once again the problems that arise when the assumptions that Baumol and Sidak adopt in supporting the parity principle are no longer valid.

H. *Voluntary Negotiations Do Not Necessarily Produce the Parity Principle*

Voluntary negotiations do not necessarily produce the parity principle. Comparing Panel 3 and Panel 5 shows that voluntary regulations (Panel 3) can produce a price of access to Carrier A which is well in excess of the price dictated by the parity principle. The excess is equal to the portion of Carrier B's efficiency gain which is appropriated by Carrier A.³³ Baumol and Sidak

33. Note that the complaint that the more efficient competitor's efficiency gains are appropriated by the incumbent is directed to the theory of voluntary negotiations, not to the parity principle, as implied by Baumol and Sidak at footnote 14 of their article. Baumol & Sidak, *supra* note 1, at n.14.

claim that the parity principle will produce a price equal to the price that Carrier A charges itself and that prices higher than this level will “perhaps seriously” handicap the rival’s ability to compete.³⁴ How then are we to interpret the frequent arguments advanced by proponents of the parity principle that voluntary negotiations will produce the economically efficient price?

In actual practice, without regulatory intervention railroad executives often simply cancel the joint-line route.³⁵ After all, that result accomplishes Carrier A’s desires under the preexisting contractual or merger condition regime—divert the traffic to the single-line route to achieve net revenues of \$45. Indeed, it no longer must compete to accomplish this result if it simply refuses to deal. Carrier A locks up the business with a minimum of administrative expenses and management resource. One letter to a tariff publishing bureau will suffice and Carrier A will not need to hire an economist to both explain the new theory to management and calculate incremental costs of thousands of movements.

Allowing Carrier A to eliminate the merger conditions or break the contract with Carrier B because they are inconsistent with the parity principle or the results of voluntary negotiations will harm efficiency. Clearly no carrier, even though more efficient, would have voluntarily entered into a situation of either Panel 3 or Panel 4. Carrier B’s incentives to undertake further investment will be deterred by the success of Carrier A’s opportunistic behavior. Moreover, Carrier B’s lesson will not be lost on other regulated firms. Regulated firms which rely on the cooperation of competitors who control bottleneck facilities may subsequently require higher expected rates of return in order to contract with the owners of such facilities. If Carrier B is foreclosed altogether, the traffic will automatically move over the less efficient route. Furthermore, Carrier A’s incentive to control costs and improve its system will be blunted if it no longer has to compete with Carrier B. Moreover, even if it still participates (Panel 3), Carrier B no longer has incentives to invest in efficiency-enhancing activities.

Conclusion

The parity principle does not provide a general solution to the competitive access problem. Rather, rules for pricing competitive access must follow from the broad vision of the appropriate regulatory transition to deregulation. Claims of general applicability for the rule are based on extrapolation of results to

34. *Id.* at 173.

35. For example, in *Chesapeake O. Ry. v. United States*, 704 F.2d 373 (7th Cir. 1983), Conrail, by canceling certain types of favorable rates on some routes, effectively engaged in wholesale route cancellation without sufficient concern for whether the canceled routes were more efficient than the routes Conrail maintained. *Id.* at 376, 378-80.

situations where the facts do not comport with the explicit and implicit assumptions employed in the hypothetical examples. For example, applying the rule to the problem of competitive access in the rail industry ignores the problem of recovering costs sunk in the prior regulatory regime.

We can now see the harm from belief in the parity principle as a generally applicable rule for pricing competitive access, especially when combined with the theory of voluntary negotiations in practical examples. Contractual and regulatory mechanisms for allowing more efficient competitors to achieve access to the market and protect themselves from opportunistic behavior are denounced as inconsistent with efficient component pricing. Confident in the belief that the parity principle has wide applicability to practical problems even when the facts are inconsistent with the assumptions in stylized hypothetical examples, believers in the rule urge courts and regulators to overthrow efficient regulatory rules and contracts in favor of voluntary negotiations. The net result can be a step backwards from developing efficient rules for competitive access designed to encourage a successful transition to deregulation. There is no substitute for a careful assessment of the regulatory goals and institutional circumstances on a case-by-case basis to determine the economically efficient approach for pricing competitive access.