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COMPETITION ACCESS POLICIES IN THE RAIL FREIGHT INDUSTRY, WITH COMPARISONS TO TELECOMMUNICATIONS

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1. INTRODUCTION

One of the essential premises underlying the deregulation of transportation, communications and energy utilities is that, in the absence of price and entry regulation, these industries would be sufficiently competitive to generate improvements in allocative, technical and dynamic efficiency. While legislative changes, regulatory policies and enforcement actions have attempted to sustain competition in each of these industries, there have been substantial differences in approaches across industries. We believe that understanding these differences, and the reasons for the differences, can improve public policies, for three reasons.

First, though there are significant differences in the structure and economic characteristics of these industries, there are also important similarities. Most importantly, each of these industries are *networks*, i.e., spatially defined means of production exhibiting significant economies of scale, scope and vertical integration.[1] Because deregulation and the application of pro-competitive policies has occurred unevenly across industries, there is the potential for applying lessons learned in one industry to another. This need not mean "imitating" in the literal sense; rather, one can observe that a given policy is working sufficiently well in one industry to adapt it for application in another.

Second, where a given competitive policy instrument has been applied to two or more industries, we might better evaluate its consequences by comparing its effects in one industry to its effects in the other(s). This might allow for further fine-tuning of the policy instrument to improve results.

Third, it may well be that the differences across industries mean that a policy instrument that is appropriate for one industry would be inappropriate in another. In some cases, policy differences reflect logical, political or procedural inconsistencies in the design, adoption or implementation across industries. There are also instances, though, in which the policy in one industry should be different from the policy in another industry because of differences in industry structure, the dynamics of competition or other factors. Still, even in those situations, there is much to be learned from making explicit comparisons across industries. Following the words of caution of Rudyard Kipling, "He

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who only England knows, knows not England." We think the same caution applies to industries as to countries.

The first purpose of this chapter is to describe and assess the development of competitive access policies in the rail freight industry since the legislative reform of 1980. In combination with subsequent rulemakings by the Interstate Commerce Commission, the Staggers Act took a substantial step toward deregulating rail freight rates, entry and competition. In section 2, we address the issue of market definition, since to discuss competition and access issues in any industry, we must first define the relevant market in geographic and product terms. In section 3, we review the developments of rail competition policies several types of regulatory decisions (i.e., mergers, reciprocal switching, joint rates and routes, and competitive entry.) Then in section 4, we analyze the economic basis of regulatory policy toward vertical relations in the rail industry and contrast U.S. policies to Canadian rail policies. As we will see, Canadian rail policy has been much more aggressively pro-competitive than U.S. policy.

Having reviewed competitive policies in the rail freight industry, we then compare those to competitive access policies in telecommunications during the same period, in section 5. The second purpose of the chapter is to explore and explain the very substantial differences in competition policy between the two industries. The telephone system was vertically disintegrated through the AT&T divestiture and the Federal Communications Commissions has pursued pro-competitive policies such as "equal access" very aggressively, including preemption of state regulatory policy. We highlight the significant differences in U.S. competition policy between the two industries, while noting the considerable similarity between Canadian rail competition policy and U.S. telecommunications, particularly with regard to vertical issues.

2. MARKET DEFINITION IN SURFACE FREIGHT TRANSPORTATION

Although the Interstate Commerce Commission is not required to utilize the Department of Justice and Federal Trade Commission's horizontal merger guidelines for defining relevant markets, this methodology can be applied in rail policy matters. Accordingly, boundaries for markets can be established as follows:

> Specifically, the Agency (DOJ or FTC) will begin with each product (narrowly defined) produced or sold by each merging firm and ask what would happen if a hypothetical monopolist of that product imposed at least a "small but significant and non-transitory" increase in price, but the terms of sale of all other products remained constant. If, in response to the price increase, the reduction in sales of the product would be large enough that a hypothetical monopolist would not find it profitable to impose such an increase in price, then the Agency will add to the product group the product that is the next-best substitute for the merging firm's product.[2]

To apply these standards in rail policy decisions, it must first be understood that a railroad's "products" consist of the transportation of commodities between specific origin-destination pairs. A railroad is truly a multi-product firm, in that each origin-destination and type of

commodity shipped can properly be regarded as a unique product. If we begin with such a correctly-defined product of the merging firm—for example, coal from the Powder River Basin to a Texas utility—we must then ask, in the words of the merger guidelines, whether in response to a hypothetical price increase, "the reduction in sales would be large enough that a hypothetical monopolist would not find it profitable to impose such an increase in price."

In a specific instance, the analysis of market definition would focus on whether the characteristics of the movement and the relative costs of truck and rail for that type of movement permit a shipper to switch to an alternative mode in the face of a significant rail rate increase. For an individual shipper, the substitutability of truck will depend on factors such as the loading characteristics of the commodity involved, the size of the shipment, the length of haul and the time-sensitivity of the shipment. There are many shippers, such as the coal shipper described above, for whom truck is not an adequate substitute for rail and where a hypothetical rail monopolist could profitably increase prices. Therefore, in accordance with the DOJ/FTC guidelines, we would not generally broaden the market beyond rail to include truck.

This approach looks at the choices available to consumers who might be hurt by the exercise of market power—and asks whether they can take steps to avoid being hurt. When following such an approach, the nature of railroad competition and the individualized nature of railroad pricing reaffirms the need to define markets narrowly in terms of specific origin-destinations, commodities, and modes. Given that railroads set prices to a large degree individually on a movement-by-movement basis via confidential contracts, the fact that some shippers may have truck alternatives to a monopoly rail firm for some movements does not help other shippers—or even those same shippers—for their movements where no competitive alternatives exist. Even if some shippers in a broader market have competitive alternatives, this does not help in rendering a price increase by a monopoly railroad unprofitable. The key is that a monopoly railroad can selectively raise prices to specific shippers in accordance with the availability to the particular shipper, for particular movements, of intermodal or other forms of competition. Thus, following the spirit of the DOJ's approach to market definition in this instance necessitates identifying to what extent there are shippers without these competitive alternatives. Otherwise stated, if there are a significant number of shippers without such alternatives currently benefiting from rail competition, the market should be defined strictly in terms of rail.

There is abundant empirical evidence to support the narrower definition of rail service as a separate product market, at least in some instances. As Keeler (1983) notes, the relative costs of truck and rail, and thus the extent to which motor carriers are competitive with rail in a particular market, depend on the commodity being transported and the distance between origin and destination. For longer distances and for movements of bulk products, rail usually has a significant cost advantage. The lack of fungibility of truck for rail militates against inclusion of truck with rail in a broader "transportation services" relevant market.[3]

Also relevant to whether truck should be included in the relevant market are a number of econometric studies showing that rail rates are significantly related to the degree of railroad competition—the number or concentration of railroad carriers which serve given shippers.[4] Rail competition was shown to be important even while pre-Staggers regulation was still present. A study by Grimm (1985) gathered 1977 data on rail rates and degree

of rail competition in 110 rail markets, as defined by specific origin-destination pairs. The study found a significant relationship between rates and rail competition at origin and destination, with added competition causing lower rates.

Two studies by MacDonald have used post-Staggers data to investigate the impact of rail competition on rates. One study uses 1983 data regarding shipments of corn, soybeans and wheat; regressions are performed to ascertain the relationship between rates and rail competition. MacDonald (1987, p. 163) concludes: "The analysis shows an important, statistically significant effect of concentration on prices in an industry with high barriers to entry and large capital commitments." A second study draws on data from 1981-1985 regarding grain shipments. MacDonald (1989, p. 94) concludes: "Competition among railroads has a statistically significant, fairly strong effect on rates. More competitors, as measured by RRCOMP, are associated with lower rates. The addition or subtraction of a competitor has a larger effect on rates, the fewer the number of competitors in a market. For example, moving from a monopolist to a duopolist in a corn market seventy-five miles from water competition reduces rates by 17.4 percent, while moving further to triopoly reduces rates another 15.2 percent."

Additionally, a Brookings Institution study (Winston, Corsi, Grimm, and Evans, 1990) supported the importance of railroad competition in reducing rail rates. Using 1985 data drawn over a large number of origin-destination pairs, the authors found that price-marginal cost margins[5] were significantly lower in markets with a greater degree of railroad competition. The importance of rail competition in determining rates would also argue for segregating rail as a relevant market.

Accordingly, the ICC has commonly defined the relevant market in rail merger cases as rail transportation in specific origin/destination markets and for specific commodities.[6] The ICC has largely but not always rejected efforts to include motor carrier and barge traffic in its definition of relevant markets. In the Union Pacific-Missouri Pacific-Western Pacific merger case, the ICC ruled that rail freight transportation should be analyzed as a separate product market, basing the decision largely on econometric estimates of low cross-elasticity of demand between rail and truck.[7] In the landmark Santa Fe-Southern Pacific case, the Commission used rail market shares in delineating the product market. The SP-Santa Fe decision analyzed rail competition in a number of origin-destination pairs, including San Francisco-Dallas, San Francisco-Houston, San Francisco-New Orleans, and San Francisco-Atlanta[8] and rejected the market definition proposed by applicants as freight transportation in 19 "regions" of the United States comprised of one or more Business Economic Areas.[9] And in the Milwaukee Road-Grand Trunk Western case, the ICC and DOJ agreed on rail transportation as the relevant product market.

In sum, the fact that a sensible relevant market in rail mergers and other competition policy questions is generally rail transportation between specific origin-destination pairs and for specific commodities gives rise to competition policy issues. With a broader market definition such as "surface freight transportation" across broad geographic regions, the number of competitors would substantially increase. Most critically for the purposes of this paper, there would be *no* competitive access issues, since virtually all shippers have multiple choices for access. Similarly, if the relevant product market were defined as "communications services," rather than "telephone services," there would be no competitive access issues and no economic rationale for line-of-business restrictions, equal access requirements and the like.

3. RAIL COMPETITION POLICIES AND ISSUES

We now review the most important dimensions of U.S. rail competition policy, as implemented by the Interstate Commerce Commission. Policy in four areas—mergers, mandatory reciprocal switching, joint rate and route cancellations, and entry by new construction—will first be briefly reviewed. Then, we will turn to a discussion of key competition policy issues.

3.1 Types of Competitive Policy Decisions

The Interstate Commerce Commission has authority regarding railroad mergers in the U.S. Modern authority dates back to the Transportation Act of 1940, which amended section 5(2) of the Interstate Commerce Act and required the ICC to approve consolidations which furthered the public interest. As part of the merger deliberation process, the Antitrust Division of the Department of Justice has played an active role in assessing competitive harms. The DOJ has applied their standard horizontal merger methodology of defining relevant markets, assessing concentration prior to merger, and concentration thereafter.[10] The DOJ has found that a number of proposed rail mergers raise important competitive concerns and has opposed or requested competition-preserving conditions in a number of cases.[11]

A second area of competition policy involves reciprocal switching, which allows traffic originating on one carrier's tracks to be switched by rival carrier in the area. Congress recognized that local monopoly power, where a shipper is served by only a single railroad, could limit the benefits of rail deregulation and included the following provision in the Staggers Act (Section 223):

> The Commission may require rail carriers to enter into reciprocal switching agreements, where it finds such agreements to be practicable and in the public interest, or where such agreements are necessary to provide competitive rail service. The carriers entering into such an agreement shall establish the conditions and compensation applicable to such agreement, but if the carriers cannot agree upon such conditions and compensation within a reasonable period of time, the Commission may establish such conditions and compensation.

A third area of competition policy involves joint rate and route cancellations. Section 10705(a) of the 1980 Staggers Act provides carriers the freedom to unilaterally cancel joint rates when a participating carrier receives a division which does not cover at least 110 percent of the carrier's variable costs. In addition, cancellations can be pursued under a broader public interest standard that historically governed joint rate cancellations.

Finally, an increasingly important area of competition policy is the granting of new railroad entry. Although the costs of new line construction are often prohibitive, there has been an acceleration of requests for new lines to provide access to a second railroad for captive shippers.[12] The vast majority of these shippers are coal mines or utilities. Construction costs are estimated to be on the order of $1 million/mile. A recent example can be found in Finance Docket No. 31972, Decided October 19, 1992, whereby the Southern Electric Railroad Company was permitted to construct approximately 1.5 miles

of rail line. The line would run between Plant Miller, a coal-fired electric plant, to a main line of the Burlington Northern, thereby providing access to a second Class I railroad. Shippers captive to a single railroad which begin the new line construction application process can also use this as a bargaining tool to obtain lower rates via long term contracts.

3.2 Key Rail Competition Policy Issues

The ICC has placed strong weight on the preservation of rail competition.[13] It has denied the largely parallel Southern Pacific-Santa Fe proposed consolidation and attached competition preserving conditions in many end-to-end cases with some parallel aspects. The value attached to competition in enhancing efficiency was expressed clearly in the Norfolk Southern case, where the Commission stated:

> Strong competition promotes efficiency. The thread running through our criteria governing rail consolidation proceedings is the goal of maximizing efficiency in the allocation of transportation resources. The spur of competition provides incentive for firms to minimize the cost involved in providing a given level of service, to provide good service and lower prices to customers, and to seek out innovation in all aspects of their operations. We encourage competition among railroads and between the various modes in order to maximize efficiency and consequently to obtain the best combination of price and service for the transportation consumer.[14]

Approval for many of the post-Staggers Act mergers has been accompanied by conditions designed to ameliorate anti-competitive effects. These conditions provide a means to realize efficiency gains of mergers without sacrifice of competition. The ICC has approved mergers with small parallel aspects (Union Pacific), but granted trackage rights to a rival railroad to preserve the level of competition. In its recent Wisconsin Central merger decision, the ICC attached an oversight condition to its approval. The condition allows for monitoring of the competitive effects of the merger and allows the ICC "to take corrective action, if necessary, to deal with any substantial anti-competitive harm which may become evident" (9 ICC 2d, p. 247). This monitoring includes submission by the carriers of financial, economic and other data to the ICC; Commission interviews with shippers to ascertain whether the competitive environment has changed; and annual proceedings to allow all parties to express their views on competitive effects of the transaction. Thus, the Commission has acted to realize the efficiency benefits of mergers and consolidations, while sometimes imposing conditions to ameliorate competitive concerns.

Although the ICC has in large part protected existing competition by restricting parallel mergers, it has done little to encourage new competition where monopoly power exists and has not been concerned with vertical competitive effects of end-to-end mergers. The Commission has been reluctant to impose reciprocal switching under the Staggers Act, denying requests for competitive access in the Midtec and Vista Chemical cases.[15] The ICC has also generally allowed vertical (end-to-end) mergers, with the denial of requests for vertical conditions and attempted removal of protective conditions attached in earlier end-to-end mergers. Finally, as discussed in more detail by Grimm (1984a), the ICC has pursued a permissive policy with respect to joint rate and route cancellations, particularly

in a flurry of activity following the Staggers Act. These vertical policies will be explored in more detail in the following section.

4. POLICIES TOWARD VERTICAL RELATIONS IN THE RAIL INDUSTRY

4.1 Analysis of Vertical Foreclosure

As discussed in Grimm and Harris (1983b) and Grimm, Winston and Evans (1992), the resolution of vertical foreclosure concerns has been a critical issue in both ICC merger and reciprocal switching policies. The meaning of vertical foreclosure in the railroad industry can be represented graphically, as in Figure 1, where carriers A and B have a dual cooperative/competitive relationship. Carrier A's T-D line is an essential facility for B to serve the O-D market. Because A is vertically integrated from O to D, while B is not, A's single-line service competes with the A/B joint line service. Under these circumstances, B is potentially subject to vertical foreclosure. A may refuse to deal with B on the interline route, in effect tying its monopoly T-D service to its O-T service.[16] Another problem which arises in these situation is that A can leverage its integrated position to price squeeze B.

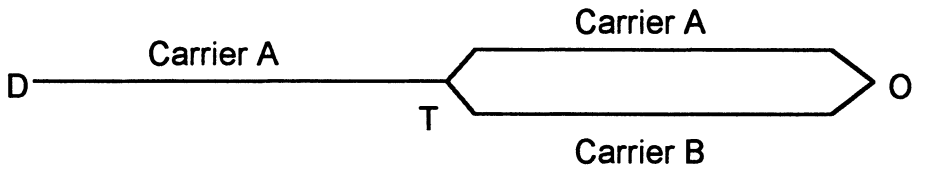

Figure 1: Vertical Foreclosure in the Railroad Industry

The potential for foreclosure and/or price squeeze can be created by an end-to-end merger of rail carriers (for example, a merger of two independent carriers between O-T and T-D to form Railroad A). Historically, the ICC took great care in analyzing potential foreclosure effects of end-to-end consolidations, either denying such mergers, or, more commonly, appending to its merger approval conditions designed to mitigate foreclosure impacts. In this sense, the ICC's approach to the foreclosure issue paralleled the DOJ's approach as denoted by their 1968 merger guidelines.

In the late 1970s and early 1980s, there was a wave of end-to-end mergers in the rail industry. The ICC, largely influenced by the "Chicago" view that vertical integration is always innocuous, argued that there are no competitive effects from end-to-end mergers.[17] In particular, the ICC opined on theoretical grounds that socially undesirable vertical foreclosure would not occur as a result of an end-to-end railroad merger. This Chicago view maintained that, as long as the unintegrated firm was efficient, it would never be foreclosed. Revenues would be divided between the integrated and unintegrated carrier such that both would have an incentive to move traffic over the efficient interline route.

This Chicago view can be illustrated with a numerical example. With reference to Figure 1, assume that $200 was the maximum rate obtainable for a unit of traffic in the OD market; at a higher rate, the customer would select truck in lieu of rail. Further assume that marginal costs (MC) for the unit of traffic are as follows: railroad A's MC for the OT

segment and railroad A's MC for the TD segment are each $50; railroad B's MC for the OT segment are $45. Railroad B is therefore the more efficient carrier over the OT segment. If railroad A handles the traffic over the entire OD route, it obtains a profit of $100. Railroad A, however, can obtain a higher profit by interchanging with railroad B, so long as A receives a revenue division greater than $150. B would be willing to participate if its revenues were greater than its MC, i.e., at least $45. The two railroad's revenue requirements define a negotiating range such that A's division would be between $150-$155 while B's would be between $45-$50. A division at the midpoint of the negotiating range would provide A with $152.50 and B with $47.50. Insisting on a division of at least $150 would be an example of A leveraging its monopoly link while not foreclosing B's participation in the movement. As long as B's costs are lower on the OT segment, there will be a division such that both A and B have an incentive to interline over the more efficient route. The Chicago view concludes that there is no need for regulatory intervention to prevent railroad A from vertically integrating to obtain this leverage over B and no need for intervention in determining revenue divisions between A and B.

This view was initially challenged by Grimm and Harris (1983b). Their arguments can be briefly summarized as follows: First, in the laissez-faire outcome as described above, Railroad A subjects Railroad B to a classic price squeeze. Revenue divisions and resulting margins for the two carriers are clearly unreasonable. With revenue divisions set at the midpoint of the negotiation range in the above example, A's revenue/MC margin would be over 300 percent (152.50/50) while B's would barely top 100 percent (52.50/50). Indeed, such disparities in margins are not unrealistic in such a laissez-faire world. Evidence submitted in a recent ICC case calculated margins which would result from a Chicago price squeeze for a number of CSX/Florida East Coast interline moves. To clarify, Florida East Coast faces a situation analogous to Railroad B, in that its route structure consists of a line from Jacksonville to Miami. CSX also serves this market and many others to the North and West. The Chicago price squeeze for a sample of 14 CSX/FEC interline moves resulted in an average revenue/variable cost margins for CSX of 268 percent, while FEC's average margin was only 119 percent.[18]

Thus, in this case, the potential for foreclosure dramatically affects the bargaining leverage of the two carriers and allows A to price squeeze B. Importantly, the resulting revenues cover B's Marginal Costs, but not necessarily its Average Total Costs. As discussed in Grimm and Harris (1983b), it is widely known that variable costs are not equal to average total costs in the rail industry. In fact the ICC's formula for estimating short-run variable costs typically produces cost variability in the 50 to 60 percent range. Thus, if Railroad B is subjected to a Chicago price squeeze on a significant portion of its traffic, its revenues may well be insufficient to cover its total costs.

A second problem with the Chicago view is that Railroad A may well opt to foreclose the more efficient Railroad B rather than exercise a price squeeze. In practice there are restrictions on use of such pricing leverage in the railroad industry. Revenue divisions over inter-line traffic are typically governed by industry standard division rules, which set divisions according to mileage or other proxies for relative marginal costs. In the previous example, a standard division rule based on costs would result in railroad A and railroad B each receiving approximately $100 for their interline movement. There is a clear efficiency rationale for establishing such standard divisions, as it eliminates having to negotiate individual divisions over thousands of routings and markets. There also remain legal

restrictions on a railroad with a monopoly position to utilize pricing leverage with interline competitors. ICC regulatory oversight, and perhaps more importantly, the prospect of antitrust actions for attempted monopolization, provide possible deterrence to exercising full monopoly power. Importantly, Railroad A would have an incentive to refuse to interline with Railroad B in order to weaken its direct competitor in the OT market. Thus, we would argue that there may well be an incentive to pursue vertical foreclosure to fully utilize and extend monopoly power.

Perhaps the most important criticism that can be levied against the Chicago view is that it is pure theoretical speculation. To our knowledge, no empirical studies have been done that support the theory that vertical foreclosure does not actually occur. To the contrary, work by Grimm and Harris (1988) found strong statistical evidence of vertical foreclosure, with significant loss of efficiency and service quality. Hence, it is more than a little surprising that economists have continued to espouse, and the Commission has largely continued to accept the dominant view on vertical foreclosure and competitive access and that vertical foreclosure can be largely ignored on the basis of a priori theory. As we will see in section 5, the lack of interest in promoting competitive access and protecting competitive access in the rail freight industry is exactly opposite of U.S. telecommunications policy during the same period.

4.2 More Activist Approach to Competitive Access: Canadian Rail Policy

In contrast to U.S. rail policy, Canadian rail policy takes the prospect of vertical foreclosure and provision of competitive access much more seriously. The 1987 National Transportation Act included several provisions to increase rail intramodal competition, in particular for shippers captive to a single railroad. First, the Canadian interswitching legislation promotes such competitive access in a more vigorous manner than U.S. reciprocal switching legislation. Such access is provided to shippers primarily within an urban area through rates set by government fiat. Dating back to 1908, interswitching was required within distances of 4 miles. In other words, assume a coal mine has physical access to only one railroad (Railroad A), but is located within four miles of a second railroad (Railroad B). The coal mine can arrange to ship its coal with Railroad B, with Railroad A required to move the coal from the mine to the junction with Railroad B at prescribed rates. The 1987 legislation extended this to 30 kilometers and also provided the National Transportation Agency to set compensatory rates for such interswitching, to be adjusted annually. Shippers outside this limit who compete with shippers within the 30K limit can apply to be deemed within the limit. According to the National Transportation Agency of Canada (1992), Canadian National and Canadian Pacific currently interswitch between 130,000 and 140,000 cars annually, with half that volume outside the previous 4 mile limit. According to the National Transportation Act Review Commission (1992), the percentage of shippers having access to two or more railroads has increased from 54 percent to 80 percent because of the extension of the interswitching limit.

The 1987 legislation also provided more sweeping competitive access provisions in the form of competitive line rates (CLRs). Any shipper who is captive can request a rate over that line to the nearest interchange with another railroad. Importantly, if the captive shipper and monopoly railroad cannot agree on the rate, the National Transportation Agency will set a rate according to legislated guidelines. This provision ostensibly

provides access to competition from multiple railroads to all shippers. Shippers must show that they cannot economically ship their goods via truck and that their current rates are unreasonably high. However, according to the National Transportation Act Review Commission (1992), this provision has not been nearly as effective in promoting competition. The provision has been opposed from the start by the railroads, and they have not attempted to gain additional traffic via CLRs. The only CLRs in existence provide for access to U.S. railroads with a small presence in Canada, such as Burlington Northern.[19]

5. COMPETITIVE ACCESS POLICIES IN RAIL AND TELECOMMUNICATIONS

5.1 Comparison of Railroad and Telecommunications Industries

First, the intrinsic structures of railroad and telecommunications networks are fundamentally alike. Each network has local access (branch rail lines, local phone loops); switching (rail classification and switching yards, central offices) and long distance (trunk rail lines, inter-exchange phone service). To a greater or lesser degree, these networks are locationally specific, i.e., service in one market (origin-destination pair) is a poor or non-substitute for service in another. Hence, network structure, scope and configuration are critical determinants of competitive position. Under regulation, though, route structures reflected political, rather than economic, considerations.

Second, their cost structures are characterized by a high ratio of fixed to total costs. Stated differently, the marginal costs of providing an additional unit of service (another passenger, another ton of freight, another phone call) is very low, compared with the average cost of installing and maintaining the capacity to provide an additional unit of service. These fundamental cost relationships have profound implications for competitive pricing.

Third is the historical similarity in regulation of these industries. Although railroads were not rate-of-return regulated,[20] rate-setting in both industries did promote a "cost-plus" mentality. Moreover, regulation had the effect of promoting excessive service quality, if for quite different reasons. In both industries, regulators enforced a "universal service" or "common carrier requirement," financed out of general rate levels when individual users (especially in high cost areas) could not pay the full cost of service.

Finally, U.S. telecommunications and railroad industries had similar regulated rate structures historically, in which the prices of various services have little to do with either the costs of or the demand for those services. Under the regulatory protection against "undue" or "unreasonable" price discrimination, regulated rates take too little account of cost differences due to traffic density, time-of-use, and other economic conditions. Regulators have also required uniform pricing across markets of the same size or length (i.e., geographic averaging), ignoring substantial differences in the costs of service across markets.

There are, of course, also important differences between the two industries, increasingly so since the deregulation of the railroad industry in the past fourteen years. Most rail rates are now effectively deregulated, whereas nearly all telephone prices remain heavily regulated under rate of return constraints.[21] This has profound implications for

comparing access policies in the two industries: on the one hand, rate regulation affects the incentives for firms to vertically foreclosure (or, more generally, cross-subsidize competitive services with less competitive services). On the other hand, basic residential and small business telephone service is almost certainly subsidized, which means that prices for the more competitive services, such as toll and long distance access, are priced above cost to provide the source of subsidies to basic local services. Historically, there was an analog to this situation in the rail industry in the form of subsidies to light density branch lines; since deregulation of rail rates and liberalization of line abandonment policies by the ICC, though, there is a fundamental differences between the rail and telephone industries on this count. So long as telephone rates are controlled, regulators can prevent vertical price squeezes directly through the rate regulation process. Since the ICC no longer has the authority to regulate rates except under the most extreme circumstances,[22] it is limited to structural remedies of vertical foreclosure.

Most significant for our comparison of competitive access policies in the two industries is the organizational separation of local exchange and interexchange carriers in the telecommunications industry. Whereas there are some strictly "local exchange carriers" in the rail freight industry (e.g., terminal carriers), most railroads are vertically integrated across local access and long-distance services. Owing to antitrust enforcement against the integrated AT&T, most local exchange carriers are prohibited from offering long-distance telephone service.

A third significant difference is that competition in local access and exchange services has only recently begun to manifest itself, although it is increasing at a torrid pace, with Competitive Access Providers (CAPs), cable systems operators and wireless carriers entering or planning to enter local telephone markets. This so-called "bottleneck monopoly" of local exchange carriers lies at the root of antitrust and regulatory policies designed to promote competition and protect against the abuse of market power by local exchange carriers.

5.2 Competitive Access Policies in Telecommunications

The promotion of competition has been the central guiding principle of Federal telecommunications policy during the fourteen years since the Staggers Act.[23] The Federal Communications Commission has aggressively sought to open as many segments of the industry as possible to competition, even preempting state regulatory authority when necessary (e.g., the deregulation of customer premises equipment and inside wiring). The Commission has ordered local exchange carriers (LECs) to (1) provide equal access to long distance carriers so customer would automatically be connected to the carrier of their choice (1+ presubscription); (2) interconnect their networks to CAPs and allow collocation of CAPs facilities within the LECs' switching centers; and (3) implement open network architecture and unbundle services to facilitate entry and competition by enhanced information service providers. In each case, regulatory policies have been justified by the supposed need to protect against vertical leveraging, i.e., the extension of LEC's market power in local access and exchange services into vertically related services.

In its regulation of long distance services, the FCC has also asserted its pro-competitive policy bent, by (1) continuing to regulate AT&T as a "dominant carrier;" (2) substituting price regulation for rate of return regulation, thereby reducing incentives for

cross-subsidies and other anti-competitive conduct by AT&T; (3) by exercising regulatory "forbearance" toward MCI, Spring and other interexchange carriers; and (4) by instituting policies ensuring resale of long distance services, to reduce AT&T opportunities for price discrimination.[24]

In the antitrust arena, the prevention of vertical foreclosure has played an even more dominant role. The Department of Justice's suit against AT&T, the consent decree and the Modified Final Judgment's (MFJ) line-of-business restrictions are premised on this economic theory of leveraging: that AT&T had used its ownership of the Bell Operating Companies and control of their "bottleneck" monopoly in local exchange telephone service to monopolize the long-distance and telecommunications equipment markets. Having severed AT&T's vertical control through divestiture, the MFJ imposed the restrictions on the operating companies to prevent them from leveraging their respective monopoly power in local exchange services into interexchange services, manufacturing or information services. The interexchange restriction is based on the need for connection of interexchange carriers to the local exchange network, or, alternatively, the need for end-users to have access to interexchange carriers through the local exchange carrier, the "bottleneck" monopoly.[25] The District Court has even extended the vertical leveraging theory into satellite video communications services, even though there is no economically significant vertical relationship between local exchange services on the one hand and uplinking, transponders or downlinking on the other.[26] Most recently, the District Court temporarily denied the acquisition of McCaw Cellular by AT&T, largely on vertical grounds.

5.3 Comparison of Competitive Access Policies in Rail and Telecommunications

On the horizontal dimension, public policies toward the rail freight and telecommunications industries have followed very similar courses since 1980. On the vertical dimension, it is difficult to imagine how policies toward similar industries could be more different. In the rail freight industry, the ICC has largely ignored vertical concerns, in its merger, reciprocal switching and trackage rights decisions. In telecommunications, both antitrust policies and regulatory policies have been centrally concerned with preventing vertical foreclosure. It is somewhat ironic that the leading advocates of the Chicago view, who virtually dismiss even the *possibility* of vertical foreclosure in the rail industry have staunchly opposed any relaxation in existing antitrust and regulatory policies in telecommunications, on the *inevitability* of vertical foreclosure.[27]

How can one explain these nearly opposite policies toward vertical foreclosure in two industries as structurally similar as railroads and telecommunications? While we do not suggest that regulators are even conscious of these differences—much less that the differences are deliberate. There are several factors which might explain these divergent policies. First, policymaking at the ICC was heavily influenced by free-market economists such as Darius Gaskins.[28] As strong proponents of deregulation, these economists viewed vertical relations through a Chicago lens. Telecommunications policymaking, in contrast, was shaped to a much greater degree by lawyers, such as Judge Greene, who approached vertical issues from the populist perspective of traditional antitrust.

Second, divergent policies on competitive access were influenced by the economic conditions of the two industries at the outset of this period, which could not have been more

different. In the late 1970's, as public policies toward the two industries moved to front stage, center, AT&T was one of the largest and most financially prosperous companies in the world. Under rate of return regulation, with its world class technological leadership, a near monopoly of local and long distance services and equipment manufacturing, and rapidly increasing demand, AT&T's financial performance and prospects could hardly have been better. Antitrust officials could seriously contemplate breaking up the "system as the solution" precisely because it was so healthy.

The rail freight industry, in contrast, was in terrible shape financially, due in no small part to regulatory policies that were utterly out of touch with economic reality. For decades after it was no longer true, we continued regulating railroads as though they still were the "big, bad monopolies" of yesteryear. Bankruptcies, deteriorating physical plant, excessive labor costs and worsening service quality were commonplace. In that environment, the public policy debate was driven by a growing awareness of the need to reinvigorate the industry, to consolidate its balkanized structure to improve efficiency, to liberalize rate regulation so railroads could better compete with motor carriers, and—foremostly—to attain and sustain "revenue adequacy." In that environment, regulators had much less concern with the potential exercise of market power than with the continuing disruptions and dislocations of railroad failures.

Ironically, in the fourteen years since our point of demarcation, this marked difference in industry conditions has changed substantially. The operating and financial performance of the rail freight industry has improved more than one could have reasonably expected. Most major carriers are healthy and earning reasonable profits. There is nothing on the horizon to suggest that these gains are temporary. Technological innovation has accelerated dramatically; carriers have substantially reduced their labor costs, improved equipment utilization and rationalized their route structures. Service quality has improved tremendously and pricing flexibility has enabled rail carriers to win back a sizable share of the traffic previously lost to truckers. Given the enormous entry barriers to all but minimal line extensions, and the growing cost advantage of rail over motor carriage, competition is unlikely to increase any time soon, in the absence of more activist competitive access policies.

In telecommunications, the trend is very different. While local exchange carriers continue to earn normal profits, their most lucrative business—large business customers in urban markets—is under assault. Because they must continue to subsidize residential and small business users, the loss of profitable traffic to their rivals will, as competition proceeds, begin to threaten their financial performance. As cable system operators enter telephony services and the prices of wireless communications services falls, competition in local telecommunications services will increase markedly over current levels.

In our view, these fundamental differences in policy perspectives and industry conditions explain why we would have pursued such different policies toward railroads and telecommunications. Now, it is time to moderate competitive access policies in both industries. The rail freight industry is now healthy enough to elevate the importance of preserving and promoting competition in policy decisions. Given the consolidation that has already occurred in the past decade or so, the ICC can insist on more stringent competitive conditions and their enforcement without fear of jeopardizing the industry's financial health. In reviewing mergers, switching and trackage rights and entry, the Commission would do well to consider the merits of the Canadian approach. which has effectively

balanced competition concerns with efficiency and carrier viability.

In telecommunications, too, it is time to moderate public policies toward competitive access. While healthy competition is surely a good thing, we should reduce the highly asymmetric regulatory policies that inhibit local exchange carriers from competing effectively with their new rivals. Likewise, the line-of-business restrictions could be removed, and RBOC entry into long distance and manufacturing allowed, so long as regulators safeguard against anti-competitive abuses.

The main lesson, then, of a comparison of competitive access policies in the rail freight and telecommunications industries is this: that underlying differences in economic conditions in the two industries, at the time these policies were shaped, created an environment in which policy makers pursued extreme policies: dismissing competitive access and vertical foreclosure in the rail industry, while building a pyramid of policies to promote competitive access and protect against vertical foreclosure in telecommunications. Those initial differences in industry conditions may have helped shape these extreme opposites; but they no longer should. It is time for policies to move toward a happy medium, toward the golden mean.

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NOTES

1. For an extended discussion of the similarities across these industries, see Harris (1991). For an explanation of the economies of network industries and their implications for public policies, see Harris and Meyer (1980).

2. Department of Justice and Federal Trade Commission (1992), Section 1.11.

3. In some cases, of course, water transportation also provides effective competition with rail. However, this competition is clearly limited to instances where both ends of the move are on navigable waterways and low value, bulk commodities are being shipped.

4. In addition to evidence from econometric studies, Levin (1981) has provided insights through simulations on the social benefits of increasing competition in concentrated rail markets. He has shown that, given various assumptions concerning demand elasticity and revenue/variable cost ratios, the social benefit of adding a second, equal-sized competitor to a monopoly market ranges from 6.8 percent to 18.9 percent of the revenues in that market. Adding a third railroad in a two-firm market yields social benefits of from 2.4 percent to 6.6 percent of revenues. This suggests that reduction of the number of competing railroads in a market from two to one has a particularly negative effect.

5. More precisely, the price-marginal cost margins were weighted by the probability of a shipment moving by railroad. The reader is referred to Winston, Corsi, Grimm and Evans (1990), pp. 44-49, for further details.

6. Indeed, the nature of railroad competition and the individualized nature of railroad pricing reaffirms the need to analyze the impact of the transaction in markets defined in terms of specific origin-destinations and commodities. As discussed above, even if some shippers in a broader market have competitive alternatives, this does not help in rendering a price increase by a monopoly railroad unprofitable. The key is that a monopoly railroad can selectively raise prices to specific shippers in accordance with the availability to the *particular* shipper, for *particular* movements, of source, product or intermodal competition. Thus, following the spirit of the DOJ's approach to market definition in this instance necessitates identifying to what extent there are shippers without these competitive alternatives.

7. See, for example, Appendix E of the Union Pacific-Missouri Pacific-Western Pacific merger decision, 366 ICC at 673.

8. 2 ICC 2d at 770-771.

9. 101 ICC at 727.

10. As discussed in Grimm (1984b), most railroad mergers involve both horizontal and vertical aspects. In some instances, horizontal merger procedures are incorrectly applied to vertical aspects of mergers. Recently, Willig and Bernheim (1993) have alleged similar

misapplication of horizontal merger procedures to vertical competition issues in the AT&T-McCaw combination.

11. Recently, in a proposed merger of three relatively small railroads in Wisconsin (Wisconsin Central, Fox River Valley and Green Bay and Western), the DOJ participated actively and found serious competitive problems with the merger. The analysis and presentation of competitive issues by independent government agencies is of crucial importance given that there is a disincentive for shippers to come forth in merger cases, even if they believed that anticompetitive effects might result. In this era of close partnerships between shippers and carriers, a shipper risks alienating a railroad by publicly opposing a rail merger. A shipper in such an instance must weigh the negative effects of speaking out (loss of leverage, disruption of working relationships, and possible retaliation) against the positive possibility that a given statement may make the difference in determining policy. Shippers may face significant harms from the transaction, but still judge from a self-interested perspective that the risks of speaking out are greater than the benefits.

12. Two factors are perhaps responsible for this acceleration in activity. In the mid-1980s, the ICC no longer ruled out requests for new construction merely because the line would cross (and be opposed by) existing railroads. Second, the lack of ICC action to promote competition on reciprocal switching (and perhaps less stringent adjudication of maximum rate regulation than shippers would like) may be prompting coal shippers to turn to alternative devices for procuring rail competition.

13. One factor dictating the importance attached by the ICC to the preservation of competition is the effective competition which often takes place in the face of small number of rail competitors. For many products and services, firms set their prices openly, and these prices prevail for large classes of customers. In such an atmosphere, when there are only two firms in an industry, recognition of their interdependence and tacit collusion may well occur. If rivals have full information about each other's prices, they know that if one firm takes an initiative to cut prices, that initiative is commonly matched by the other firm. The price cut ends up being to the detriment of both firms. If only two firms are present in such an environment, they may be dissuaded from effective price competition as a result. Also, if price discrimination across customers is not possible, competitive alternatives which may exist for *some* customers can benefit *all* by rendering price increases unprofitable for the firm. Thus, customers without competitive alternatives can benefit from the alternatives others may possess.

The nature of competition in the railroad industry is very different from that described above. It is very common to have competing railroads submit bids on traffic, with a winning bid often gaining traffic under contract for several years. Most companies solicit confidential bids for traffic from competing railroads, usually for new contracts with terms of several years. Bids often include information on equipment, service, rates, length of contract, and escalator clauses. Recent railroad merger cases, such as the Wisconsin Central, provide detailed evidence of the benefits of existing head-to-head rail competition in terms of lower rates and better service. This merger involved three relatively small railroads in Wisconsin (Wisconsin Central, Fox River Valley and Green Bay and Western).

The merger record detailed competition between these carriers, particularly where Wisconsin Central and Fox River Valley have parallel tracks. Individual, private negotiation, with proposed rates not generally available to the other competitor, means that very effective competition can and does take place between two rail carriers. Tacit collusion on rates between two independent rail competitors is very difficult in the railroad industry.

14. 366 ICC at 216. Conversely, there are multiple adverse effects of monopoly. Allocative inefficiency is one of these, but not the only one nor even necessarily the most important given the degree of price discrimination which takes place. The experience across many industries which have dramatically cut costs and improved efficiencies when no longer insulated from competitive pressures, such as following deregulation, suggests that insulation from competitive pressures often leads to higher costs, or x-inefficiencies. The recent experience of U.S. railroads in dramatically reducing railroad crew sizes and labor costs in the face of ever intense competitive pressures suggests the importance of competition in promoting efficiency.

15. The ICC issued its policy guidelines for reciprocal switching in its Ex Parte 445 decision, October 1985. The Commission denied requests for reciprocal switching in the Midtec decision, December 1986, with a court appeal supporting the ICC issued in 1988. The Vista Chemical Co. request for reciprocal switching was denied in February 1989. In recent years, there have been few additional requests for reciprocal switching.

16. There are many other means of foreclosing B, short of actually closing the gateway. Most importantly, A can provide inferior service on interline traffic to give shippers an incentive to use A's single-line service.

17. See, for example, the ICC decision in Ex Parte 282(5).

18. Verified Statement of Tom O'Connor, p. 11, in Finance Docket No. 21215 (Sub-No. 5), Seaboard Air line Railroad Company–Merger–Atlantic Coast Line Railroad Company—Petition to Remove Traffic Protective Conditions, filed with the Interstate Commerce Commission, March 24, 1994.

19. Finally, a recent proposal by Canadian Pacific and Canadian National to voluntarily share a several hundred mile main line track provides an additional option for sharing of fixed infrastructure. The two railroads have proposed and received regulatory approval for the CN/CP Ottawa Valley Partnership, whereby the existing CP main line between Western Quebec and North Bay, Ontario will be abandoned and both railroads will use the existing CN line in this corridor. The proposal may well be the first step in a similar track sharing arrangement or even full consolidation of CN and CP from Winnipeg across Eastern Canada. Obviously if a full-blown merger between CN and CP eventuates, this would provide the first major test of Canadian horizontal rail policy.

20. The ICC used a modified form of rate-of-return regulation known as the "operating ratio" method. One critical difference between the two methods is that individual airlines or motor carriers could, at least in the short-run, earn above-average returns by operating more efficiently than other carriers. Remember that while public utilities commissions historically determined the revenue requirements of individual telephone companies, rail rates were set for all the carriers in each region.

21. A few services have been classified as "competitive" in some states and are no longer subject to price regulation. Most states still employ rate of return regulation of local exchange carriers; even those with some form of price cap regulation have an "earnings sharing" provision based on rate of return. The prices of MCI, Sprint and other interexchange carriers are not directly regulated, but the rates of AT&T are.

22. The Staggers Act denies the Commission rate authority unless the rate exceeds a jurisdictional threshold—180 percent of variable costs—and the carriers has "market dominance" over the traffic at issue.

23. In the early to mid-1980's, most states opposed competition, in the fear that it would force "rate rebalancing," i.e., decreases in the prices of long distance and other high-value services and increases in the prices of basic telephone services.

24. At last count, there are more than 600 interexchange carriers registered at the FCC; all but a few are "resellers," i.e., they buy service at wholesale rates from one or more "facilities-based carriers" and resell those services at retail rates.

25. For the most intensive end-users (i.e., large business users in downtown business districts), there is no local bottleneck monopoly, since there is a growing number of competitive access providers for interexchange services. Since market power in one market is a necessary pre-condition for vertical leveraging into another market, the absence of market power would absolutely prevent leveraging.

26. Satellite communications services do not (with but very few exceptions) interconnect with the local exchange telephone network—they bypass it. There is minimal connection between uplinks and the local exchange carrier because most uplinks are located at the production facilities or event sites. There is no interconnection between video transponders and the local exchange network, since transponders receive their signals from and send them to satellite dishes. There is minimal interconnection of the local exchange network and downlinks because downlinks are usually connected directly to the end-user's headend, broadcast or other distribution facilities.

27. We refer here to Professors Baumol and Willig, who have testified and written extensively on vertical foreclosure, dismissing it as a theoretical improbability in railroads, while arguing for the most stringent protections against it in telecommunications (i.e., continuation of the line-of-business restriction prohibiting entry by Bell operating companies into interLATA services).

28. Dr. Gaskins was Chairman of the ICC in 1980 and 1981; he had been a professor of economics at Berkeley and served with Alfred Kahn at the Civil Aeronautics Board. Professor Harris was a Deputy Director of the Bureau of Accounts in 1980-81, while on leave from Berkeley.