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# The High Cost of Regulating U.S. Railroads

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**T**HE STAGGERS RAIL ACT, signed into law in October 1980, offers a step toward deregulating U.S. railroads. It is hardly likely, however, to quiet the controversy over rail regulation in the United States. On the one hand, the act falls far short of total deregulation. On the other, it is expected to cause sizable rate increases for some shippers and loss of service for others. It will be surprising if these events do not evoke calls for the reimposition of controls from the affected parties.

In the face of what is likely to be continuing controversy, it will be important for policy makers to understand the magnitude of the costs imposed by the complex system of controls that has governed rail operations throughout this century. The deleterious effects of those controls have often been cited, but actual evidence of their cost is meager. Moreover, what there is pertains to the misallocation of freight traffic among transport modes as a result of rate regulation, where the estimated losses have

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generally been relatively small. Experts have conjectured, however, that losses from poor productivity growth are much greater.

The principal problem in assessing such losses is estimating how the industry might have performed in a more free environment. Fortunately, this problem can be solved for the rail industry by comparing U.S. railroads with their counterparts in Canada. The rail systems of the two countries are strikingly similar in

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many physical and technical aspects. The crucial difference between them is that the Canadian railroads have been operating for years under far less regulation than U.S. railroads. Thus, the economic performance of the Canadian roads provides a yardstick for measuring performance under the more regulated environment in this country. In effect, what we have done in the research whose results we

summarize here is to take advantage of an historical happenstance. By comparing the two systems, we have found strong evidence that regulation has greatly retarded the productivity growth of U.S. railroads. The resulting costs have accumulated year by year to an astounding magnitude—\$6.7 billion in 1974 alone.

### Comparing Environments

Before World War II both U.S. and Canadian railroads had substantial monopoly power. After the war, however, they began to face significant competition from trucks and water transport. This competition, which was aided by government investment in highways and waterways, resulted in declining market shares for the railroads in both countries—from approximately 75 percent in 1946 to approximately 60 percent in the mid-1950s.

Low earnings of the railroads in the post-war period led to the establishment of government review committees in both the United States and Canada. In 1955, both committees recommended that competition be allowed to play a greater role in rail transportation. In Canada the recommendation brought substantial deregulation. The railroads were given considerable freedom to negotiate rates with shippers in 1956, and the industry was even further deregulated by the National Transportation Act of 1967. In the United States, by contrast, the recommendation had little effect. A Transportation Act was passed in 1958, but it did not result in any significant reduction in rail regulation. The U.S. railroads continued to have little pricing freedom, and attempts to gain more flexibility through selective ratemaking (negotiation of rates between carrier and shipper) were generally thwarted by an anachronistic regulatory tradition that encouraged protection of potentially "injured" competitors.

Thus, since 1956, the U.S. and Canadian rail systems have operated under very different regulatory regimes. Aside from this difference, the environments for the two systems have been remarkably similar. There has been equal access to improvements in technology. Furthermore, railway labor practices have been much alike because, to a considerable extent, the same unions represent railroad employees in both countries.

If anything, the U.S. railroads are better off than their Canadian counterparts in two ways. First, Canada's harsher climate imposes major costs on Canadian railroads, both in terms of train movements and maintenance. Second, Canadian railroads incur large deficits in hauling grain and flour destined for export because they are required by law to haul these commodities, which accounted for 27 percent of their total ton-miles in 1973, at the rates that prevailed in 1897. These deficits must be covered by revenues from other haulage, which makes it more difficult for Canadian railroads to compete with other forms of transport.

### Comparing Productivity

The best single measure of economic performance is growth in overall (or total factor) productivity, and we have adopted this measure for comparing the performance of U.S. and Canadian railroads. Overall productivity growth is equivalent to a decline in the real cost (of labor, capital, energy, and all materials) per unit of output. Thus, it is convenient to estimate productivity growth by fitting a statistical cost function (that is, using statistical techniques to find the relationship between cost and its determinants). This framework makes it possible to control for differences in the two countries and in the railroads we examine. In the figures reported here, we have controlled for the level of output, for the length of freight hauls and passenger trips, and for the prices of railroads inputs. (We have estimated other variants, all of which result in similar conclusions.) Thus our measure of productivity growth includes only those cost reductions that actually result from improvements in efficiency. It does not include cost savings that might result from a larger scale of operations or from longer freight hauls or passenger trips.

We have used data for a sample of U.S. Class I railroads and for the only two large Canadian railroads, the Canadian National and the Canadian Pacific. Reliable data on Canada's railroads have only been available since 1956. This is an appropriate starting point, however, since it coincides with the advent of regulatory freedom for Canadian railroads. In addition we have analyzed detailed data for 1963 and 1974. Thus we compare productivity growth over the

full 1956-74 period and the two interim periods, 1956-63 and 1963-74.

The first two lines of Table 1 present our estimates of productivity growth for U.S. and Canadian railroads. In the 1956-63 period, Canadian railroads experienced productivity growth of 1.7 percent a year compared to 0.6 percent for U.S. railroads. The big difference came after 1963, when Canadian railroad productivity growth rose to 4.0 percent a year, while that of the United States dropped to 0.1 percent. Over the full period the Canadian gain of 3.3 percent a year is more than six times greater than the U.S. gain of 0.5 percent.

It might be objected that the comparison is intrinsically unfavorable to the U.S. industry since the U.S. data include a large number of weak and relatively small railroads. However, because the clear direction of the U.S. railroad industry has been to emulate the example of the Canadian industry—creating through mergers a small number of large railroads—the objection can be met by comparing the Canadian National (CN) and the Canadian Pacific (CP) with U.S. railroads having similar characteristics. For this purpose, we have selected the Atchison, Topeka, and Santa Fe (SF) and the Southern Pacific (SP)—two U.S. carriers that stand out as being similar to the CN and the CP and that are generally regarded as being among the strongest U.S. railroads.

The last four lines of Table 1 present the average annual growth in overall productivity for each of the four railroads. CN and CP productivity growth rates fell between those of the SF and SP in the earlier of the two periods covered but clearly moved ahead in the later period and were significantly higher for the full period, 1956-74. The productivity performances of the SF and SP were, it should be noted, somewhat better than those of the typical U.S. railroad but still far below those of the Canadian railroads.

Several factors (like climate) that differ between the United States and Canada but do not vary over time have been omitted in our analysis. These factors do not, however, affect our comparisons of productivity *growth*, although they do affect comparisons of *levels* of productivity between the U.S. and Canadian railroads. In effect, a comparison of productivity levels will include cost differences attributable to climate and other factors in

**Table 1**  
OVERALL PRODUCTIVITY GROWTH FOR  
U.S. AND CANADIAN RAILROADS  
(average annual percentages)

	1956-63	1963-74	1956-74
Canada	1.7	4.0	3.3
United States	0.6	0.1	0.5
Canadian National	1.8	4.3	3.3
Canadian Pacific	1.7	3.3	2.7
Atchison, Topeka and Santa Fe	1.4	1.0	1.1
Southern Pacific	3.1	0.4	1.4

**Table 2**  
COMPARISON OF OVERALL PRODUCTIVITY FOR  
U.S. AND CANADIAN RAILROADS  
(ratios)

	1956	1963	1974
United States/Canada	1.24	1.15	.82
Atchison, Topeka and Santa Fe/Canadian National	1.22	1.18	.82
Southern Pacific/Canadian National	1.33	1.45	.95
Atchison, Topeka and Santa Fe/Canadian Pacific	1.07	1.05	.81
Southern Pacific/Canadian Pacific	1.17	1.29	.94

addition to cost differences stemming from productive efficiency. The result of the differences is generally to increase costs for Canadian railroads, thereby putting them at a disadvantage in the comparison. Nonetheless, as long as this qualification is kept in mind, it is worthwhile to examine the relative levels of productivity for U.S. and Canadian railroads.

Table 2 presents that comparison. The first line indicates that a U.S. railroad with characteristics similar to those of the Canadian railroads had a 24 percent higher level of productivity (hence a ratio of 1.24) than the Canadian railroads in 1956. This superiority had declined to 15 percent by 1963, and by 1974 U.S. railroads had fallen 18 percent behind. The figures are very similar for comparisons of the individual railroads. In all cases, the Canadian productivity levels were superior by 1974.

Our finding that Canadian railroads had much lower productivity levels in the mid-1950s than U.S. railroads is consistent with the general view that railroading is inherently more costly in Canada because of harsher climate. Since then, as noted, the relative productivity levels of the two systems have been reversed. The Canadian gains cannot be attributed to climatic changes, which have not occurred. Nor can they be attributed to changes in economic


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factors: while the general economic environments in the two countries have changed, they have changed in markedly similar ways.

Why, then, has the Canadian performance been superior? The evidence strongly suggests that the answer is the greater regulatory freedom in Canada. Indeed, during the period in which the economic performance of Canada's railroads has far exceeded that of U.S. railroads, the only major differential change in the environments of the two systems has been the Canadian deregulation.

### The Cost to U.S. Consumers

It is of interest to know the dollar magnitude of the losses associated with poor productivity growth in U.S. railroads. In 1974 expenses for all Class I U.S. railroads totaled nearly \$17 billion. Between 1956 and 1974 the decline in real cost per unit of output averaged 3.3 percent a year for Canadian railroads but only 0.5 percent for U.S. railroads. Compounding this difference between 1956 and 1974, we find that the cost of producing railroad services in the United States in 1974 was \$6.7 billion higher than it would have been with the Canadian rate of railroad productivity growth. This is \$6.7 billion for 1974 alone. It is clear that cumulating these "excess" costs over the post-World War II period would result in an enormous figure. This finding supports the conjectures of other writers that losses from forgone productivity growth are much larger than losses from the misallocation of freight traffic.

### Conclusions

Analysts have speculated at length on the possible connections between regulation and the retardation of productivity growth. We believe that the most direct link is through the rate-making process. Freedom to negotiate rates provides railroads with a means of attracting the kinds and amounts of traffic that fit in well with existing networks, traffic patterns, and stocks of equipment. Also important, in our view, is the fact that ratemaking freedom provides incentives for the development of new or more efficient services. Often the introduction of such services entails heavy costs that can be

justified only if rates can be set so that sufficient profitable traffic is generated.

The most obvious manifestation of the exceptional productivity performance of the Canadian railroads is their more efficient use of equipment. On average, a Canadian freight car generates more revenue ton miles a year than a U.S. freight car. One reason for this is the reduction of empty back-hauls; another is better control over the movement of empty cars to where they are needed. Largely because of these reasons, the Canadian railroads have been able to accommodate traffic growth with modest increases in rolling stock. U.S. railroads, on the other hand, have difficulty in handling additional traffic and experience recurrent "shortages" of capacity. Greater reliance on market mechanisms would surely ease such problems.

The recently passed Staggers Rail Act should improve the regulatory climate for U.S. railroads. To the extent that it brings rail regulation in the United States closer to that in Canada (an issue not examined here), and to the extent that policy makers can resist calls for re-regulation, there is good reason to expect better performance from the U.S. railroad industry. But not, of course, dramatic improvements right away. Just as the costs of impaired productivity growth accumulated gradually, so the initial benefits from revived productivity are likely to be modest.

In any event, much mischief will be avoided if the public's attention can be captured by the lure of the huge long-term benefits that Canadian-type deregulation would bring. ■

#### Selected Readings

For background and further detail on the research reported here, see: "Productivity and U.S. Railroads, 1951-1974" by D. W. Caves, L. R. Christensen, and J. A. Swanson, in *Bell Journal of Economics*, vol. 11, no. 1 (Spring 1980); "The Relative Efficiency of Public and Private Firms in a Competitive Environment: The Case of Canadian Railroads" by Caves and Christensen, in *Journal of Political Economy*, vol. 88, no. 5 (October 1980); "Productivity Growth, Scale Economies, and Capacity Utilization in U.S. Railroads, 1955-1974" by Caves, Christensen, and Swanson, Social Systems Research Institute, University of Wisconsin-Madison, Discussion Paper 8002 (forthcoming in *American Economic Review*); and "Economic Performance in Regulated and Unregulated Environments: A Comparison of U.S. and Canadian Railroads" by Caves, Christensen, and Swanson, SSRI Discussion Paper 8004.