

# RECONSIDERING CLASSICAL OBJECTIONS TO LAISSEZ-FAIRE IN RAILWAYS

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## REASONS FOR NON-COMPETITIVE ORGANISATION

No deviation from the general classical principle of *laissez-faire* in the nineteenth century was enunciated with greater haste and accepted more widely than the doctrine that railways because of their technological properties were incapable of competitive organisation. In this paper I shall briefly review this doctrine and evaluate it in the light of more than a century of its acceptance.

### Indivisibility and Declining Costs

The doctrine of the intrinsically non-competitive character of railways, like many another, had two formulations, pre-Marshallian and post-Marshallian. The earlier of these was enunciated almost immediately upon the development of inter-city railways. The first major inter-city line, the Liverpool and Manchester, was opened in 1830, and in 1836 James Morrison, a Scottish Member of Parliament, delivered a speech arguing that the technological characteristics of railways made collusive pricing among them inevitable. Through Dionysius Lardner, William Acworth, and especially the American writers who advocated establishment of the Interstate Commerce Commission, Charles Francis Adams, Jr., and Arthur H. Hadley, a consistent doctrine developed:

The number of railways between given points would inevitably be small enough that collusion was attractive. Maintenance of discriminatory tariffs between points jointly served was dependent on collusive pricing. Since the investment in a railway was irrecoverable, and the fixed costs heavy relative to the variable, a policy of maintenance of competition among railways led only to depressed rates of return without any appreciable disinvestment in facilities, however redundant or indefensible they might be. The behaviour of bankrupt railroads was widely cited by American authors as demonstration of the impracticality of enforcement of competition; the typical bankrupt line was a serious source of instability in the railroad cartels, willing to disrupt traditional rate structures to attract traffic at any rate that covered variable costs.

The post-Marshallian version of the argument, as might be expected, was a more rigorous treatment of the same material. Post-Marshallian writers stressed the indivisibility of the right-of-way, rather than the irrecoverability of the investment. That is, the right-of-way involved a minimal investment which yielded economies of scale up to a triple-track line. Since only a small percentage of all mileage warranted three or more tracks, the typical railway was a declining-cost enterprise. Orthodoxy among American rail-

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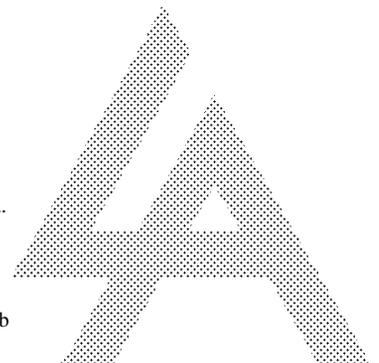
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roads in the steam era was that laying as many as four tracks on a right-of-way was justified; beyond that electrification was a preferable means of investment to increase output.

A declining-cost enterprise, however, is characterised by a discrepancy between marginal and average cost. The indivisibility manifests itself in a heavy burden of interest charges incurred in building the right-of-way. Consequently, if the firm behaves competitively, equating marginal cost with price, it will fail to cover average cost. Thus, the public is confronted with the alternatives of technological monopolies competing and losing money or some non-competitive organisation of the industry such that it can use a non-cost-based pricing system so as to cover its average cost. In the case of railways, this meant the typical tariff embodying monopolistic discrimination, pricing on the basis of the value of the service. This was usually estimated roughly on the criterion of value relative to weight; this ratio was presumed approximately inverse to the elasticity of demand for the service.

### **Inevitability of Collusion**

This argument in one or the other of its formulations was accepted fairly universally. Such an uneclectic Ricardian as J. R. McCulloch believed that governments in granting railway charters should reserve the right of price determination. Economists and political figures were confronted with a choice between enforcement of cartelisation - euphemistically called regulation - and monopoly - equally euphemistically called public ownership. Professor Milton Friedman has pointed out that economists typically preferred whichever was less familiar to them: Rudolph Eucken, familiar with European state railways, recommended American-style regulation, and Henry Simons, an equally distinguished liberal economist, after observing the Interstate Commerce Commission, decided public ownership was the lesser evil.

Public policy reflected an almost universal acceptance of the argument. English courts as early as 1850 held railways exempt from the usual tortiousness of collusive pricing. The Interstate Commerce Act of 1887 represented acquiescence in the idea that the industry could not be expected to behave competitively, and that its cartels should be stabilised. One cannot generalise on the motivations of all the legislators whose votes represented a victory for this doctrine, but many probably felt as do current legislators who countenance monopsony against professional athletes: the incentive to collude is just too great to expect reasonable men to resist. This analogy is almost perfect. Both railways and operators of professional teams of any sort are limited in number and must deal with one another to present a joint product; thus, their opportunities to collude are exceptionally abundant. Athletes are highly specialised to their industry for short periods, which is to say that the majority of their incomes are quasi-rents. Their inelasticity in supply to the industry is the analogue of the demand conditions for railroad transportation. Athletes vary in the attractiveness of their alternative employments. A perfect collusion would eliminate their quasi-rents and pay them only the wage of their best alternative, plus some compensation for the certainty of being finished with their careers at an early age. Similarly, colluding railways would set rates on the basis of the attractiveness of alternative means of transportation.

No one defends the collusion of athletes on the ground of technological monopoly. Rather it is typically defended on the specious ground that it equalises talent among teams. Virtually every country tolerates monopsony of athletes, whether through allowing the international collusion against soccer players to operate within its borders, through judicial exemption of monopsony arrangements from anti-trust laws, as in the instance of American baseball, or the various arrangements for maintenance of amateurism on the national and international levels.

Thus it can be said with some certainty that the argument of the inherent non-competitive character of railways would have been made even in the absence of the large optimal size of the enterprises. Further, the consequences of large optimal size and collusive pricing were the same. That is, either would produce a situation in which average cost was in excess of marginal cost, and thus competition would result in losses in either circumstance. Especially in America, where entry into railroading was relatively free, duplication of rail lines between major points resulted in quotas of pooled traffic so low that the great majority of mileage was single track, below optimal scale. There the consequences of economies of scale and of the cartelisation could not be undone, on the ground that efforts to generate competition would only generate low earnings without causing any outflow of resources such as would occur in any other industry. Thus it was the irrecoverability of investment in the railroads on which ultimately the argument of the industry's inherently non-competitive character was based.

### **REASSESSMENT IN RETROSPECT**

What is to be said of this argument viewed from the present? Principally, it must be observed that it was a short-run argument. Policies which stemmed from the argument were based on presumption that governments could, in fact, prevent a long, slow, outflow of resources from the industry. This, it is clear in retrospect, was an invalid supposition.

### **The Coming of Competition ...**

The fact that monopoly is technologically based does not exempt it from the general principle that monopoly is a short-lived and self-destructive institution. In the case of railways, the collusion thought to be inevitable was used to enforce a discriminatory set of tariffs in which rates were unrelated to marginal cost. State railways used similar tariffs. Indeed, economists who accepted the argument wrote at great length on the optimal degree of discrimination in tariffs. The divorce between rates and marginal costs, which was accepted as inevitable, was a major force in the decline of railways. This was, in fact, a force which gave almost the entire economy an incentive to find an alternative form of transportation. The industry had incidental shortcomings which caused it to decline beginning around 1915. The slack action of couplers and the brutal impact of switching movements resulted in excessive damage claims, compared to the new forms of transportation. Railways were slow, particularly because wagons spent long periods in yards when being interchanged. The technology was inflexible, being tied to the rails in origins and destinations. Finally, the irrecoverability of the investment in right-of-way, so basic to the theory of the inherent non-competitive quality of railways, made the industry liable to depredations of labour unions and tax collectors as few others were. As might have been expected, truck (road haulage) and barge

transportation which replaced the railways were characterised by small optimal sizes, and so were entirely capable of competitive organisation.

The decline of the railways necessarily brought about the situation which the advocates of the doctrine of the inherent non-competitive character of railways had sought to avoid: slow outflow of resources in response to low rates of return. In countries with privately-owned rail systems, this entailed massive reductions in the industry's debt through bankruptcy. The American railroads in two great waves of re-organisation, the first in the 1890's and the second in the 1930's, reduced their debts to levels comparable to other capital-intensive industries. Thus, the financial consequence of the indivisibility of the right-of-way, the heavy debt incurred in building the line, was largely swept away. Accordingly, the source of the discrepancy between average and marginal cost was being eliminated.

### **... Reinforced by Technical Change**

Technological change was also modifying the indivisibility of the right-of-way and the economies of scale in the industry. Railways have had continuous technological improvements throughout their history, but two were of outstanding importance during the period of their decline: the diesel-electric locomotive and centralised traffic control. The diesel-electric locomotive was probably the greatest technological improvement in the industry's history, but certainly the greatest since the introduction of the air brake. By providing continuous torque, as distinct from the steam locomotive's four impulses per revolution of the drivers, and by enabling several units to be operated by a single set of controls, it permitted longer (and therefore less frequent) trains on a given line of railway. These properties, which manifested themselves in a lower skill level required for operation, lessened the power of the unions of operating personnel. The diesel-electric locomotive, though more expensive than a steam locomotive of comparable horse-power, was such an enormous improvement as to be labour-saving and capital-saving simultaneously; it allowed disinvestment in maintenance facilities, multiple track, and electrification. From the point of view of the economies of scale in the industry, it gave single- and double-track railroads some of the advantages of more capital-intensive lines.

Centralised traffic control had many of the same consequences. This system of signalling control of all switches and signals in the hands of the dispatcher directly, eliminating the need for switchmen, station agents and telegraphers along the way. The greater precision with which the dispatcher can arrange meets at sidings accelerates trains to the point that the typical American railroad can handle 80 percent more tonnage on a single-track line equipped with CRTC than on one subject to ordinary dispatching methods. In the same fashion as diesel-electric locomotives, centralised traffic control gave single-track railroads many of the advantages of more capital-intensive systems, and incidentally permitted extensive disinvestment in facilities. Both the diesel-electric locomotive and centralised traffic control were innovations appropriate to a declining industry, since they were consistent with the disinvestment the industry needed.

The foregoing argument is not a demonstration that railways became free of indivisibilities. All industries have indivisibilities which determine the optimal size of firms; notably,

the indivisibility of the human being pervades all economic activity. The point is that the unique indivisibility of the railways, the indivisibility of the right-of-way, lost its significance through the bankruptcies of the 1890's and 1930's, and the technological changes in the industry in the past 30 years. These changes, combined with the absence of significant economies of scale among the motor carriers and water carriers which were rising relative to the declining railways, produced a transportation industry which would have been ordinarily competitive, had public policy allowed the market forces for dissipation of monopoly to take action.

### **THREE FORMS OF NON-COMPETITIVE ORGANISATION**

Public policy, however, had been based on the doctrine of inherent non-competitiveness of the railways. As a consequence, every major nation suffers from one of three non-competitive organisations of its transportation industry.

#### **A Regulated Cartel**

The United States, which alone of major nations maintained a privately-owned railroad system of a large number of companies, has an incomplete cartel of common carriers administered by the Interstate Commerce Commission. This euphemistically-named body administers a cartel of the entire railroad industry, about a third of inter-city motor trucking, and somewhat under 10 percent of water transport. It administers the cartel with a nebulous body of statutory authority, a purely verbal set of directives implemented with a legal procedure in the nature of a set of law-suits. The Commission endeavours to maintain the traditional discriminatory pricing of the old railroad tariffs in the face of rising competitive pressures. When confronted with rivalry for traffic between the three major classes of carrier, it typically sets rates at levels at which the carriers can all compete for the traffic, with the rate differential approximately compensating for the differences in quality of service between the three. To perpetuate the discriminatory rate structure, it rigorously prohibits filling up empty backhauls with rates which cover only the marginal cost of the movement.

The consequence of this organisation of the industry is exactly what such a policy would produce in any industry. Rates are in excess of marginal cost, traffic often moves by means other than that which is best suited to it, and carriers of all sorts are characterised by redundant facilities and empty movements. In particular, the Commission's efforts to elevate rates of firms subject to its regulation stimulate the various exempt, semi-legal, and outrightly illegal carriers which abound, and so produce a relative decline of common carriers. In short, America, a country which has distinguished itself for statutory and judicial hostility to private cartelisation, has in its transportation industry an ordinary example of an incomplete cartel, with all the costs and disadvantages a cartel entails. No one has endeavoured rigorously to quantify the costs to the economy of this cartel, but they are almost certainly greater than the welfare losses from all pure enterprise monopoly in the country.

#### **A Protected State Monopoly**

South Africa, New Zealand and several other nations have pursued a policy of restriction of non-rail transportation to protect their state railways. This policy is essentially estab-

lishing a monopoly to prevent the forces for decline of railways to take effect. South Africa restricts road haulage to local service or to a delivery function, prohibits pipelines, and incorporates domestic air service into the Railway Administration. The country has no navigable streams, and the principal centre of population and economic activity, Johannesburg, is an inland city. The South African Railways and Harbours Administration behaves as one would expect. Partly through the ordinary incentives to maximise net receipts, and partly through political pressures for depression of rates on bulk agricultural commodities, the Administration uses an extremely discriminatory rate structure analogous to the structure of postal rates in most countries. Its tariffs are in the nature of a tax on final products for the benefit of producers of primary agricultural products. Both the nature of the tariff structure and the limitation of motor transport to specified radii from the centres of the cities in which the trucks are based tend to centralise economic activity in Johannesburg. That is to say, in two fashions, the policy gives an incentive to maximise the number of consumers within a short radius of their plants.

The fact that the state railway is publicly owned gives it a degree of insulation from the market forces that a private monopoly would not have. As the largest employer in the nation, the railway inevitably generates its own political support for the policy of protecting it. The policy is open to all of the usual objections to monopoly although, as with American experience, no one has yet quantified its cost.

### A Subsidised State Monopoly

Britain, Italy and many countries operate state railways as non-maximising enterprises. The two countries mentioned do not protect their state railways from road competition, and thus have declining railways in the usual fashion. On the other hand, the railways are subject to political pressures for maintenance of uneconomic services - notably unprofitable passenger operations and deteriorated branch lines - which result in chronic deficits. Similar pressures are at work when the railways system is operated under a cartel or a monopoly, but whatever may be said against the cartel organisation, the fact that the ownership is private restricts the ability of political pressure groups to require uneconomic services to be perpetuated. The Interstate Commerce Commission is bound by the general principle of American law that due process to a regulated firm forbids its properties being confiscated by the regulatory body. The ICC implements this principle with a doctrine that an unprofitable branch line will not be required indefinitely to be continued because the railroad as a whole is profitable, and similarly that an unprofitable passenger train will not be perpetuated indefinitely. As usual, the Commission's behaviour is not wholly consistent. It has required perpetuation of plenty of branch lines and passenger trains which were clearly hopeless, acting as regulatory bodies (and public monopolies) usually do, generating monopoly gain in one activity and requiring it to be dissipated in uneconomic services. However, if "indefinitely" is taken literally, then the Commission is generally consistent with its stated policy of not requiring continuance of uneconomic services indefinitely. A second or third show of unprofitability is customarily enough to secure abandonment of a branch line or discontinuance of a passenger train.

### TOWARDS A COMPETITIVE STRUCTURE

There is a general presumption that a monopoly is preferable to a cartel, on the ground that the idleness of resources in a cartel entails a greater welfare loss than the misallocation of resources due to monopoly. Indeed, it is tempting to argue that the organisation of American transportation represents an absolute "pessimum", the worst organisation of an industry the mind could devise: a non-pooling cartel with abundant exempt segments, operated without explicit or implicit marginal calculations for allocation of traffic, implemented with a legalistic framework by a group of people who are literally unaware they are running a cartel. Yet, the obligation of an American regulatory body, even one as generally devoid of redeeming features as this one, to avoid confiscation of the property of the regulated firm, is a protection against indefinite perpetuation of uneconomic services which is absent in publicly-owned systems.

Thus, it is by no means clear which of the three organisations of transportation from which modern nations suffer is in fact the worst. Choice between evils is never pleasant. Had legislatures in the nineteenth century recognised the short-run nature of the allegedly non-competitive character of railways, we would not be confronted with such a choice. Rather, railway companies, prohibited from pricing collusively, would have become integrated transportation companies as railroading, *per se*, declined. The proliferation of independent truck and barge lines would have been so great that the industry would have become competitive (and presented few problems of industrial organisation) as early as the 1930's. Such an organisation of transportation would have numerous advantages - among them, release of economists' time currently expended in studying the present organisation - but the most important would have been the centralisation of the decision on which mode of transportation to use in the hands of the entrepreneur of an integrated and competitive transportation company. No other organisation of an industry can assure the appropriate allocation of traffic among modes of carrier.

If the American organisation of transportation has a second advantage - and I should hesitate to seek a third - it is that transition to a competitive organisation of the industry is easier than it would be under a publicly-owned monopoly. Congress, by abolishing the Interstate Commerce Commission and subjecting the industry to the Sherman Act, can readily reorganise American transportation competitively, with only the usual transitional problem of outflow of resources from a decartelised industry. Competitive reorganisation of transportation in countries with state railways is more difficult. As a minimum, state railways should be granted freedom in pricing, required to maximise net receipts, given freedom to engage in non-rail transportation and to withdraw from unprofitable rail services, and, most important, be denuded of their protection from non-rail rivals. An explicit directive to engage in marginal-cost pricing is a possible concomitant.

None of these policies for moving toward competitive organisation of transportation is without transitional difficulties, but the consequences of acceptance of the doctrine of the inherent non-competitive character of railways as a long-term verity have been so undesirable that transitional problems are inevitable while the damage is being undone.