Chapter 7

Regulation and Rate-Making

Introduction

AN EARLY AREA OF SPECIALIZATION IN ECONOMICS dealt with theoretical and practical questions on the regulation of transportation and public utility concerns. The Munn vs. Illinois decision of the Supreme Court and the Interstate Commerce Act of 1887 moved the railroad industry toward a regulated status, and the 1906 amendment to the act gave the Interstate Commerce Commission the authority to set maximum rates. Along with legislative and judicial bodies and state and federal commissions, economists took an active interest in the attempt to regulate railroads in the public interest. That the “public interest” could be furthered by regulation was an assumption shared by all of these parties as well as, perhaps, the managers of the railroads.¹

Harry Gunnison Brown’s first published article² and his doctoral dissertation³ were concerned with questions related to railroads and rate-making. His interest may have been sparked by the economic implications of recent judicial decisions and legislative acts. Also, Arthur T. Hadley, then president of Yale University and friend of Irving Fisher, was an authority on railroad economics and maintained an interest in this field.⁴

Brown’s 1916 Transportation Rates and Their Regulation, published by Macmillan, endeavored to present a complete theory on the subject.⁵ In the preface, Brown cited John Bauer for a thorough reading and criticism of the text. Brown’s 1925 article, “Railroad Valuation and Rate Regulation,” featured a defense of reproduction cost as a basis for the valuation to be used in rate-making.⁶ This article sparked a long-running debate with John Bauer and James C. Bonbright, among others. Alfred E. Kahn in 1970 said this article contained the classic argument against the original cost valuation method in rate-making.⁷ Brown’s subse-
quent articles and exchanges centered on this and related questions.

Early Articles

In his 1907 paper, Brown attempted to reconcile two views on how railroad rates should be made. One view was that railroad traffic should be charged “what the traffic will bear,” which would admit discriminatory charges. The other view was that charges should correspond strictly to costs. He assumed that the railroads, whether competing or noncompeting, were subject to “increasing returns,” due primarily to the relatively high overhead costs with largely constant operating costs. He noted that in these conditions additional freight should be desired as long as it pays at least the “special additional cost” incurred. Brown regarded the question of whether the extra freight also should pay its portion of the fixed expenses as an open one. He appeared to take “marginal cost” pricing as a first principle and regarded the distribution of the fixed costs as dependent on the competitive conditions.

He then considered the relative rates charged by competing railroads and noncompeting railroads in terms of discrimination among places, commodities and corporations. He found in general that competing railroads, relative to noncompeting ones, would tend to discriminate in favor of some cities, larger corporations and certain commodities. The competing railroads would alter prices to attract business from competitors while the monopoly railroad would reduce rates only to attract new customers. Competition would force a reliance on cost of service as opposed to value of service and would tend to distribute the fixed costs in production to direct costs incurred. He concluded that discriminatory reductions in rates were socially desirable as long as they resulted in increased traffic and not simply the diversion of traffic.

In this article and another published in the next year on the similarities of monopolistic and competitive price-making, Brown clearly was not thinking of the competing railroads as competitive in the usual sense of “perfect competition.” Not only was his assumption of declining average costs over the relevant range incompatible with competition over time, but in the case of rail-
roads, only a limited number of competitors was conceivable. He seemed to ignore the possibility of ruinous competition resulting in a monopoly for the advantaged firm. He did indicate that should both rivals follow a price-cutting strategy, both would lose, but he then retreated from this issue.10

It is possible that Brown, like Hadley,11 did not believe railroads to be natural monopolies, and thus, he assumed that declining costs would not prevail in the long run. Nevertheless, Brown’s approach seemed to be that of comparing a monopolistic situation with that of imperfect competition, especially emphasizing in the latter case the ability to profitably expand business only at the expense of rival railroads. Thus, the imperfectly competing firms faced a more elastic demand for their services than would a monopoly railroad. Brown called this the “relative responsiveness” as opposed to the “absolute responsiveness” of demand.

The similarity that Brown wrote of in competitive and monopolistic price-making was, in essence, that of the shared condition wherein marginal revenue equals marginal cost. Of course, he did not express it in this manner. He assumed that in both types of market structure, firms or the firm would search for a greater profit by altering their prices. Following Cournot in a (for Brown) rare exercise in mathematics, he demonstrated how a firm would consider a price reduction. He identified the variables in the following fashion: 

\[ P = \text{original price}; \quad \Delta P = \text{change in price}; \quad P - \Delta P = \text{new price}; \quad S = \text{original sales}; \quad \Delta S = \text{contemplated increase in sales}; \quad S + \Delta S = \text{total new sales}; \quad E = \text{original total expenses}; \quad \Delta E = \text{change in expenses}; \quad E + \Delta E = \text{total new expenses}. \]

He expressed the condition under which the price reduction would be made as \((P - \Delta P)(S + \Delta S) - (E + \Delta E) > (P)(S) - E\). The expression rearranged becomes \([P(\Delta S) - (\Delta P)(S) - (\Delta P)(\Delta S)] > \Delta E\), which in discrete form illustrates that price reductions should be carried out to the point where the increment to revenue equals the increment to cost. He elaborated his condition (1) by adding a return to new capital employed, \([(-i)(C)]\), and a return to risk-taking, \((-R)\), to the necessary increase in revenue. Finally he added a term to allow the firm to accept current losses, expecting as a result to gain higher profits in future years from the larger market share acquired in so doing.
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The discounted value of these additional estimated profits he added to the left-hand side of the inequality as

\[
\frac{G_2}{1-i} + \frac{G_3}{(1-i)^2} + \ldots
\]

As noted, he felt that the condition as stated was applicable to both monopolistic and competitive firms.

**Transportation Rates and Their Regulation**

While still at Yale, Brown reviewed several books for the *American Economic Review* on railroad economics, most notably a translation of C. Colson’s *Railway Rates and Traffic*. He also published a long article, “The Competition of Transportation Companies,” which he incorporated into his 1916 text, *Transportation Rates and Their Regulation*. Despite his intention to write a complete treatment of this subject, reviews of the book pointed out areas that were omitted or treated in insufficient detail. The reviews, however, were for the most part laudatory. J. M. Clark and Maxwell Ferguson recommended the book as a supplement to William Z. Ripley’s longer text, *Railroads, Rates and Regulation*. J. M. Clark noted several new contributions to the field of study and had special praise for Brown’s extensive treatment of freight discrimination. Ferguson and an anonymous reviewer for the *Political Science Quarterly* found controversial Brown’s free trade philosophy, which, they claimed, permeated the work. Ferguson also noted Brown’s adherence to the “cost-of-service” principle and concluded:

In the opinion of the reviewer . . . the broadminded analysis of the rate discrimination, in the refreshing clearness with which the salient principles of rate making and rate regulation are set forth, and in the more even distribution of emphasis as between the “inner philosophy of rate regulation” and the “mere record of past legislation and description of existing law,” the author has produced a work which has much to commend it.
In the *Economic Journal*, C. F. Bickerdike noted that Brown had produced a “handy volume” with “convenient” summaries of the ICC decisions. Although Brown’s book was 347 pages in length, this was about one-half that of similar studies of the time. Bickerdike was not wholly uncritical of the study and was concerned about the differences between present positions of railroads in Europe as compared to those of the United States. He ended his review with the following comment:

> It may be said that that is a point on which practical railwaymen may be left to form their own opinion, and that, in so far as the suggestion is true, self-interest will prevent companies from making anomalous cutting rates. It is questionable, however, whether they are not driven by mere competition into adopting a short-sighted, hand-to-mouth policy which is both damaging to themselves and fruitful in injustice and economic waste for the community in general. It is these fundamental questions at the basis of the whole system of “charging what the traffic will bear” which seem to merit more attention than they receive in this book, and it may be hoped that Professor Brown, whose powers of economic analysis are undoubtedly high, will pursue these matters somewhat further.  

In the following year, Brown included a condensed version of this book in his *Principles of Commerce*. Brown’s general approach to the subject of rate-making was to attempt weighing the effects on the general economic welfare. Unjustifiably discriminatory rates, in his view, were analogous to protective tariffs in that they discouraged commerce and created economic incentives and disincentives that tended to reduce society’s welfare.

In a 1933 review article, D. Philip Locklin distinguished three approaches in the literature from the 1840s on. The earliest view of Dupuit and others was that overhead costs best explained the differential pricing by railroads. In 1891, Frank Taussig challenged this view by arguing that railroad rates were primarily a case of joint cost and should be analyzed as such. E. R. A. Seligman criticized Taussig’s conclusion on the grounds that the existence of monopolistic conditions was the essential explanation of discriminatory pricing. A. C. Pigou’s *Wealth and Welfare* of 1912
rekindled the unresolved controversy, and he and Taussig carried on a debate in several issues of the Quarterly Journal of Economics.22 One of the points of contention was whether the costs of providing railway service to different customers should be considered to be joint or simply common costs. Taussig preferred to extend joint cost analysis to much of railroad rates, while Pigou saw common costs as prevailing in general. Pigou also opined that the element of monopoly needed to be present in order to explain discriminatory rates.

Brown commented early in Transportation Rates and Their Regulation on this exchange in a footnote.23 His view was that railroad rates were not perfectly analogous to the normal case of joint costs, such as that of the production of beef and hides. A much closer analogy obtained when the case of back hauls was considered, and Brown saw this as a truer case of joint costs. He noted that as a railroad plant neared full utilization of its capacity, the complementary provision of services would become competitive. In his explanations of discrimination in rate-making, he utilized the overhead cost approach and found monopoly to be essential in explaining such discrimination, especially in the long run. In his general discussion of transportation costs, he utilized the term “sunk costs,” which he was likely to have borrowed from Fisher’s Elementary Principles of Economics.24 J. M. Clark objected that Brown uncritically included the entire transportation investment in sunk costs and ignored the dynamic aspects of such investment.25 However, Clark agreed that unregulated railroads would charge “what the traffic will bear”—that is, the competing railroad would charge what the traffic will bear “without being diverted” and what the traffic will bear “without being destroyed” in the case of a monopoly. Brown did not in this text express a firm opinion on the best test of the reasonableness of rates and on what these rates should be based.

Brown was concerned in this text with the nature of competition in railroad and water transportation as well as with its limitation, which was due to monopolistic tendencies throughout the industry. Some earlier writers on the subject had noted that competition in the railroad industry tended to be selective, and they opted to consider particular types of competition.26 Brown expanded on
the usual classification by distinguishing: (1) competition of different shippers over the same route; (2) competition of routes; (3) competition of directions; (4) competition of locations; and (5) competition directed against potential local self-sufficiency. (Earlier treatments had combined competition of directions and locations into the competition of and for markets.) Brown’s first category applied only to water and motor vehicle transportation. In terms of the competition of routes, he diagrammed cases where more roundabout routes may be economically defensible. He proposed that the long- and short-haul rule be arranged so that some level of economic waste be accepted in order to gain the stimulus of active competition. This might entail allowing slightly higher rates on intermediate traffic on the roundabout line to allow this line to remain in competition with the more advantageously situated line.

The conditions where competition of directions could take place were shown by Brown to be complex. He argued that where two or more lines led from a producing center in different directions to other markets, their rates could be competitive if, for example, there were other transportation lines capable of serving these markets from other areas. The additional lines could influence prices so as to make the original lines competitive in their rate-making. Competition of locations existed where transportation lines compete in the sense that they attempt by offering low rates on traffic to encourage the development of industries that utilize their services rather than the services of rivals in other locations. Closely related to this idea was Brown’s “competition against potential, local self-sufficiency.” The transportation line in this case would set rates so as to elicit traffic that would not otherwise be economical and in doing so mitigate against local self-sufficiency.

Brown saw railroads, with few exceptions, as partial monopolies in the sense that the various types of competition would not alter a railroad’s dominance over intermediary traffic over its lines. In addition, the tendency toward collusive behavior among railroads contributed to their ability to set rates as they desired. He argued, however, that competition among railroads was not inevitably of the ruinous type unless the railroads were operating
substantially below their capacities. He believed that the era of speculative railroad building was past, and he thus maintained that legally enforceable rate agreements and legally recognized pooling would alleviate the discrimination in rates resulting from “cut-throat” competition. He argued that the Interstate Commerce Commission should sanction such open agreements in addition to setting maximum rates. Brown’s views were somewhat unusual at the time, but they did reflect in part the earlier views of Arthur T. Hadley.

All of the forms of competition that Brown had considered could result in discrimination in pricing among places. He proceeded to delineate the cases where the resulting discrimination was economically undesirable and where it was economically defensible. From the viewpoint of the general community welfare, he found economic waste when railroads discriminated in favor of competitive and against intermediate traffic. He reasoned that where rates were discriminatory, the average utilization of railroad plant capacity was not furthered. The discrimination in time arbitrarily would deprive certain areas of the benefits of their natural advantages with regard to economic development, while encouraging development of areas that possessed less economic potential. In a similar vein, he argued that should the equally promising intermediate locations be disadvantaged by discriminatory rates, then transportation patterns would be distorted in an uneconomic fashion. He maintained that discrimination of this type resembled a protective tariff in its economic consequences. He also objected to discrimination for or against imported goods in the setting of railroad rates. In addition, the state commission’s practice of setting unduly low rates on intrastate traffic to encourage local production he found objectionable.

Brown next examined cases in which rate discrimination among places could be deemed economically defensible. He found discrimination to a limited degree against intermediate points on roundabout routes to be acceptable. The limitations would be that no rate be set below the additional cost involved for competitive or through traffic, and no greater for noncompetitive traffic than what would ensure a reasonable return on the capital required to carry the traffic. He recognized that in practice such rate settings
would be a complex matter and could only be approximated so as to leave the two lines in the same competitive conditions as had prevailed before regulation. Were the traffic on the direct line relatively light, then the company may be allowed to discriminate against intermediate traffic to maintain its competitive position. He also found justifiable low rates that favored points in competition with water routes as opposed to points connected only by rail lines. Discrimination in favor of traffic that is competitive with potential local self-sufficiency was also found to be desirable as long as goods could be delivered at less than the local cost of production and pay at least their marginal cost of transport. Brown argued that under certain circumstances discrimination in favor of goods transported for export could be advantageous. This was where net earnings to transportation industries rose as a result, and the gain to domestic producers offset the loss to consumers.

Finally, the case of discrimination between opposite directions in the rates charged different goods was considered. This referred largely to the question of the pricing of back hauls, and he found discrimination here to be acceptable, as it would lead to a greater utilization of transportation facilities. Brown’s analysis of discrimination predated the emergence of air and truck transport as viable alternatives to rail and water transport. Although this would complicate questions of discrimination, his general principles still would have application. Alfred E. Kahn noted that he drew heavily on Brown’s examples and discussion in the section of The Economics of Regulation on rate-making in the presence of competition. Kahn also had praise for “his painstaking elaboration of the consistent economic principles for the guidance of regulatory policy.”

Brown then summarized the development of rate regulation and examined the rulings of the Interstate Commerce Commission on what constituted “reasonable” rates. He emphasized the difficulties involved in determining rates due to the variety of railroad services and the extent to which joint costs prevail. The ICC rulings took into account comparisons of rates, cost of service, earnings, and the efficiency of management. Brown concluded that the Commission tended to follow, where possible, the cost-of-service principle. He also noted that reasonable rates should be a reason-
able return on the fair value of railroad property. As to whether a fair value was better represented by the original investment or the present physical value, he opined that the Commission was somewhat equivocal in its rulings but tended to favor the latter. Brown next examined representative cases where the Commission ruled on instances of discrimination among places, goods and shippers. He found occasion to criticize some rulings as inconsistent with the principles he had elaborated upon.

In his final chapter, Brown roundly criticized governmental interference and subsidization of transportation. He argued that navigational laws designed to develop a national merchant marine and exclude foreign vessels from coastal trade was economically unsound. With the possible exception of certain defense considerations, he objected to subsidization of shipping in the form of harbor or river improvements at public expense. Even where it was deemed necessary for the government to spend in order to improve waterways, he argued that the clearly benefited localities should pay and, if possible, through user charges. He also objected to the “pork barrel” or “log-rolling” influences in governmental decisions that tended to prevail in the above actions as well as in the setting of protective tariffs. The subsidies for railroad building and in particular the land grants to railroads were questioned similarly. He argued that these policies were of dubious benefit in terms of economic development and represented to some degree an unsanctioned redistribution of wealth. He indicated that there was no way to determine whether these policies had led to an enlargement or shrinkage of national wealth as no means of comparison existed, but he maintained that in terms of general principles the policies did not appear to have been advisedly adopted. It may be noted here that Brown rarely discussed antitrust policies. When he did, he appeared to accept the existing legislation and encouraged its rigorous enforcement. In the 1930s he adamantly opposed relaxation of the laws.
The 1898 Supreme Court decision in *Smyth vs. Ames* provided a criterion by which to judge the reasonableness of rates set by the state commissions.\(^3\) The criterion proved not only to be very vague but also to be the subject of controversy until the Hope case of 1944 reversed it.\(^3\) The Court had mentioned in its criteria that consideration be made for the “original cost of production” and for the “present as compared with the original cost of production,” along with several other factors. A rising general price level (especially during World War I and the postwar era) sharpened the controversy as to whether “original costs” or “reproduction costs” should be the prime consideration in rate determination. The railroads then favored the use of reproduction costs while the regulatory commissions tended to favor the use of original costs. Justice Louis D. Brandeis in his dissent in the Southwestern Bell Telephone case of 1923 attacked the *Smyth vs. Ames* decision as “legally and economically unsound.”\(^3\) He favored a prudent investment basis of earning control and found the reproduction cost method of valuation to be the cause of great and continuing difficulties in rate determination.

His view echoed that of several economists specializing in railroad and public utility economics. One of their number, I. Leo Sharfman, was criticized by Brown in 1922. Sharfman, in his *American Railroad Problem: A Study in War and Reconstruction*, had advocated that an original cost basis be employed with the qualification that the original investment had to have been made prudently. Brown declared the issue “to be clearly joined” in his review of the book.\(^3\) The reproduction cost approach he favored was qualified as “the cost of bringing into existence a plant capable of performing the required service.”\(^3\) He also indicated that he favored policies that would make the returns to a quasi-monopoly conform to those that arise under competitive conditions. Most of his criticism of Sharfman’s views was made more extensively in a later article.

This article, “Railroad Valuation and Rate Regulation,” appeared after Frederic G. Dorety (then vice president and general counsel
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of the Great Northern Railway) had contested Judge Brandeis’s views in a *Harvard Law Review* article. Dorety’s article contained both legal and economic arguments for the continued consideration of reproduction costs. Brown gave no indication of having read this article, and subsequent critics tended to group it with Brown’s article and respond primarily to Brown. In his article, Brown noted that just as the courts were beginning to emphasize the cost of duplicating a service, a number of economists had begun to insist that only the original cost or original investment be considered. He first criticized on grounds of fairness the original-cost doctrine, interpreted without qualification to be the original money cost. He argued that should the price level fall significantly and if valuation were based on original costs, the returns to investors in effect were guaranteed relative to other investors at the expense of the consumers of the service. In the event of rising prices, he maintained that with the reproduction cost standard, neither the public nor the investors taken as a whole would lose or gain in real terms. He did note that bondholders would lose, to the benefit of shareholders. Brown was unhappy with the high percentage of bond investments in railroads and utilities and suggested that measures to redress the balance would be beneficial. (He appeared to assume that railroad and/or utility costs would move coincidentally with the general price level and that lags in the adjustment did not occur.)

Brown’s greater concern was with the economic consequences of allocations that would result from original-cost methods. Once again, with changes in the price level, traffic would tend to be unduly discouraged or encouraged. He maintained that when prices fell, rates based on original cost would remain relatively high and would create a distortion because they would not conform to the “rule” of charging only enough to cover the extra or additional cost incurred and thereby discourage traffic. On the other hand, with a significant inflation the original-cost method would result in rates lower than would yield a reasonable rate of return on the present cost of construction while unduly encouraging railroad traffic. This would lead to traffic exceeding the capacity of the plant and force a rationing of service with further undesirable results. The construction of new facilities at higher costs and the
charging of higher rates would force an arbitrary discrimination among shippers or other customers and ultimately result in the misallocation of industry and population. He applied the same reasoning to the case where price changes affected only the costs of construction and maintained that, in general, economic loss would result were actual, past cost the basis of rate-making.

Brown turned next to an element in the valuation of railroad property—the value of land. Despite his own views on land value taxation, he indicated that the original cost method of valuation was an inappropriate way of denying the increments in land value to the owners of railroads and public utilities. He argued that such denial would tend to discourage the building of railroads, as the potential buyers of land for other than railroad use could receive increments to the value of other land. Brown's remedy, of course, was to tax all land values equally. He explained that where compensation of some form was to be provided for the loss of the unearned increment in land values, further economic distortion would result.

On more practical grounds, Brown conceded that for "short periods" regulatory commissions should rely on actual book costs. However, if actual costs have widely diverged from the current costs of production, the latter must be given priority.

An important remaining question was how to treat depreciation and obsolescence in rate-making. Brown's view was that, all other things being the same, these factors should not be allowed to influence rates during the life of a plant. Thus, rates should be set so as to meet the repair and replacement costs plus a fair rate of return for the life of the plant. A properly graduated depreciation fund would allow the rates to be invariant with respect to these costs. He noted as well that in the early period of low plant utilization it may be appropriate, as patronage grows, to add these early losses to the cost of construction or duplication.

Finally, he considered the special case of the "weak" versus "strong" railroads wherein both roads connect the same terminals. He reasoned that if the "weak" road could not support itself by charging enough on intermediate traffic to maintain rates competitive with the "strong" road, then abandonment of the line should be considered. Rates set in a manner to allow the "weak"
road to survive would create a misallocation of resources. Even the consolidation of the two lines would not necessarily resolve the difficulty, as pricing schemes would either uneconomically favor the terminal or intermediary points or discriminate unfairly among shippers. If the “strong” railroad’s advantage was due entirely to its control of the best location and if it was not capable of carrying all traffic, then he conceded that the costs and valuation of the “weak” road should determine the rates, leaving the “strong” road with a return in excess of what it could otherwise earn. He felt that only taxation (not regulation) was the proper means for the community to secure this economic rent.39

Response of the Profession and Brown’s Replies

James Bonbright wrote a review article on contemporary books dealing with valuation in a 1926 issue of the Quarterly Journal of Economics.40 He mentioned Brown’s article in two different contexts. Bonbright suggested that the current literature in favor of a simple actual cost base of rate control had ignored the problem of economic rent.41 He noted that the low, actual cost rates on utilities or transportation services amid greater land values and construction costs would not necessarily be of benefit to the community at large. Landowners may be able to increase the rent on properties served by the utilities or railroads and in doing so benefit disproportionately from the low rates. Although Brown did not use this approach, it accords with his view that regulation would only redistribute land value increments among certain groups and not benefit the public as a whole. Bonbright further noted that all the books reviewed, including one by John Bauer42 (the only one for which he had praise), failed to answer effectively the criticisms Brown made of the original cost basis of rate-making.43

John Bauer responded to Bonbright’s challenge within the year.44 Bauer was at the time and continued for many years to be a distinguished specialist in this area, as was Bonbright.45 Bauer, a 1908 Yale Ph.D. and friend of Brown’s, unlike Brown, had practical experience in working with regulatory commissions. Although he believed that the use of reproduction cost in regulation deci-
sions would “destroy” regulation, he did not immediately assault Brown’s economic rationale.

I shall frankly state that except for the requirements of effective regulation and financial stability, I should agree with Brown that the reproduction cost basis would be more in harmony with general economic forces.46

He therefore focused on practical considerations and tried to demonstrate that Brown’s objections, although in the main economically sound, were of little consequence in actuality.

Taking practical considerations into account, Bauer argued that reproduction cost was far too indefinite a base and the concept had led to endless controversy in the past. Not only was such a base difficult to measure as well as to reach an agreement on how to measure, but it continually was changing as well. He pointed out that approximately 75 percent of railroad expenses were in the form of operating costs and taxes that were calculated on an actual cost basis. The remainder, the return on investment, should have a definite basis for calculation and actual or original cost was the most expedient choice. In addition, to obtain a desirable level of financial stability for railroads and public utilities, the original cost basis would be best suited. He noted in this regard that bond issuance was the major form of financing these institutions and that inflation would tend to incite speculation in railroad and utility stocks; deflation would exert exceptional pressure on the vulnerable financial structures.

In his reply to Bauer, Brown noted that in emphasizing reproduction costs, the courts did so in part because of the perceived unreliability of actual cost figures and the accounting associated with them. Despite the inherent inexactness of reproduction cost estimates, he insisted that their economic importance was such that they could not be ignored when they markedly differed from actual cost figures. He further countered that the financial structure of railroads and utilities was not unique or deserving of special guarantees. Should companies be forced into receivership, he believed that reorganization could be accomplished without undue harm to the interests of the public.47
In addressing Brown’s economic arguments, Bauer maintained that Brown had exaggerated the potential divergence between calculations of reproduction cost and original cost in several respects. Bauer questioned whether an actual cost basis would discourage investment in a period of rising prices.

The actual cost basis would provide all the capital economically needed to take care of developing business but would not exercise any artificial influence in stimulating or retarding the flow of capital. His interpretation of the “artificial influences” was that the reproduction cost basis in an inflation would stimulate investment, assuming adjustment in rates was made promptly.

In reply, Brown argued that such investment would be economically irrational and that the substitution effects of the return to regulated industries falling relative to that of other industries was his real concern.

Bauer questioned the importance accorded to the expectations of buyers of railroad and utility stock regarding a rising price level and increments in the value of land. In reply, Brown noted, in some cases, they indeed may be of little importance, but they remain as reasons for the present cost of the necessary plant to provide the service diverging from the original cost of the plant. Bauer also asked whether the public should deny to railroads and utilities the “unearned” increments to their land values, given the conceded element of public interest in these businesses.

Bauer stressed that even the 25 percent of railroad expenses corresponding to the return on investment would be the subject of a gradual adjustment over time, and thus the small percentage of costs that are not reflected would be counterbalanced by the gains resulting from the ease of application and stability permitted by the original cost formula. He also questioned whether it was a reasonable possibility that the construction of new facilities, as in the case of railroads and utilities, would create a conflict in rate structures between old and new plants. He emphasized in the case of utilities their local nature.

Brown replied that construction of new trackage to accommodate increasing demand was not altogether unlikely and so his point stood. However, he recognized that increased competition...
of other types, such as trucks and airplanes, may reduce the need for new construction in the future. He also defended his use of large price changes. Bauer found such use too unrealistic; even accepting substantial price variations, the effects of the price changes would be reduced due to the structure of railroad costs. Brown maintained that the extreme conditions that would result in large price movements were recurrent in history and at the present in evidence in Europe and to a lesser extent in the United States. For there to be dramatic changes in the costs to the industry, he pointed to technological breakthroughs or inventions as sources for such changes. He concluded his reply to Bauer by insisting that valuation based on reproduction costs should continue to play a role in regulation despite the difficulties it presents in application. Where the book valuation is thought to have diverged significantly from present costs, then the book costs should be modified with index numbers of general and specific price changes and compared with the engineering estimates. The courts and the commissions could then utilize all this information to make their decisions. For Brown, the added difficulty should result in a worthwhile economic dividend.49

In 1927, John Bauer was the chairman of the AEA Round Table Conference on the problem of effective utility regulation.50 Of the participants in the discussion, only Brown spoke in defense of the use of reproduction cost. As reported by Bauer, Brown reiterated his position that original cost pricing did not accord with the principle of seeking to make rates of public utilities correspond to rates that would prevail under competitive conditions. He also disagreed with a proposal that would tend to assure the financial stability of public utilities. All of the participants challenged Brown’s points of view. Robert Hale accused Brown of tacitly assuming a greater mobility of capital than was practicable in the cases of utilities and railroads.51 He was joined by Professor Ruggles in insisting that the public interest in utilities was sufficient to justify spreading the risk-taking in utility investments beyond the investors to the community or to the general public.52 Clarence E. McNeill questioned the elasticity of demand for utility services. According to his studies, the demand was “particularly” inelastic; thus, the effects suggested by Brown would be of negligible im-
portance. Finally James Bonbright, noting that Brown’s actual proposal was to ascertain the present cost of the most economical plant that might be constructed, concluded that the financing of utilities would become “utterly unmanageable.” It was agreed that in the next meeting of the association the subject would be discussed once more.

At this meeting Bonbright and Arthur Hadley presented the major papers, and comments by I. L. Sharfman and Brown were recorded as well. Hadley’s paper dealt with the economic meaning of valuation; Bonbright’s compared the merits of reproduction cost versus prudent investment on four different grounds. Bonbright stated that with respect to the criterion of efficiency, reproduction cost, interpreted as the cost of providing the service with a new plant, did have advantages over original cost. However, he viewed the application of such a standard to be impossible. He also noted the adverse cyclical effects of original cost pricing as opposed to reproduction cost pricing, but he felt this was of dubious importance. In his discussion of using reproduction cost as a means of attaining rates at competitive levels, he directly attacked Brown’s and Dorety’s argument that this was necessarily the correct approach to the problem of rate-setting. He pointed out what he saw as the “fatal flaw” in Brown’s reasoning, accepting for the sake of argument that the cost of reproducing the service was a practical rate base. Bonbright contended that reproduction cost pricing of services would not conform to the ideal of marginal cost pricing any more than would prudent investment pricing. He further stated:

Even Professor Brown, who is the leader in this type of defense, recognizes in a measure the dilemma in which he is placed. For while conceding that a price based simply on variable costs would come closest to meeting his ideal as a regulator of socially desirable traffic, he recognizes that the application of such a principle would be quite impossible on grounds of financial expediency.

Bonbright’s solution was to allow railroads and utilities to charge rates that in many cases would be in excess of a fair profit on investment and would invoke the recapture clause of the Transportation Act of 1920 to normalize profit-taking.
In response, Brown admitted that reproduction cost prices would be likely to vary from the ideal of long-run marginal cost pricing. However, he maintained that on practical grounds, the better regulatory policy was to allow returns only as high as is necessary to earn a reasonable return on the current cost of plant construction. Where the plant capacity was utilized only partially, he argued that low (marginal cost) rates ultimately would retard economic development as a fuller utilization of capacity was achieved. He asked,

How test, in the long run, the desirability of such (new) construction other than by charging rates high enough to yield a return thereon, and so judging whether there would be enough business at those rates to justify the construction?56

He also added to his earlier arguments against strict reliance on original cost by pointing out that when the obsolescence of a plant was accelerated, to insist that the public continue to pay on the basis of original cost was to impose on the public the rule of “dead hand.”

Brown continued to support his position in an address to the American Bar Association,57 and in an article in the Public Utilities Fortnightly.58 On these occasions, for the most part, he reiterated his earlier arguments. However, he did emphasize that he thought that no formula could be devised to directly determine regulatory rates. He also noted that rates are changed only at intervals in the regulatory process and that the efficiency of management becomes a larger factor in the firm’s profitability. After 1930, he made no further comments on the issues other than in the various editions of his textbooks. Bonbright in particular would continue to pursue the arguments especially in his The Valuation of Property.59

Comments and Conclusions

The question (as Brown left it at that juncture) probably was carried by the proponents of the use of original cost as the rate base (or some variation of it). However, as Bonbright pointed out in a 1940 paper, it was largely on the grounds of administrative
feasibility and better financial adaptation that writers favored this approach. A final verdict on the purely economic merits of the two approaches remained unresolved, at least in part. M. G. de Chazeau strongly challenged the application of either method to the determination of service charges as distinct from the determination of appropriate earnings. Hotelling’s advocacy of pure marginal cost pricing questioned the relevancy of the use of the average cost pricing implicit in both the original and present cost approaches. Brown’s arguments as to the distortional effects of original-cost based pricing encountered the problem of the “second best.” His premise that the attempt to set prices of public utility services at competitive levels would further economic efficiency also was questioned, as was the case for marginal cost pricing.

Brown’s advocacy of the use of reproduction cost considerations in pricing decisions was not as successful as his attack on original cost usage. However, he was able to raise significant economic questions in this area and emphasize the relevancy of current and future costs for long-run pricing policies. In the difficult search for “general principles” to guide efficient regulatory practice, his was a positive contribution. This view of Brown’s contributions is supported in the comments made in 1961 by James C. Bonbright.

Thirty years or more ago, the case for the replacement-cost principle ... was developed with great skill, and with particular reference to railroad rates, by Professor Harry Gunnison Brown of the University of Missouri. Similar views have been expressed by later writers, but they have lacked both the incisiveness and the firmness of conviction that make Brown’s earlier analysis a classic in the history of rate regulation.

Elizabeth Read Brown related to the author that it was the custom of John Bauer while on vacation with his wife to pay a visit to Brown’s home, both in Mississippi and Missouri. She said the two Yale classmates would avoid “shop talk” until dinner was over whereupon they would retire to another room and recommence with great relish their debate begun some 30 years in the past.
Notes


3. Harry Gunnison Brown (1909). *Some Phases of Railroad Combination.* Diss. Yale University. (I should note that I have not examined the dissertation as it was deemed not suitable for copying. However, I am confident that his later book and articles capture its essential content.)


8. The term, then common, refers to economies of scale or decreasing average total costs.


34. *Ibid.*: 321.
41. *Ibid.*: 205, n. 8.
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51. Ibid.: 125.
52. Ibid.: 125–126.
53. Ibid.: 126.