‘Value is not a fact’: reproduction cost and the transition from classical to neoclassical regulation in Gilded Age America

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Abstract

The paper draws on Siegel (1984) to argue that, while paving the way for constitutionalizing the free market in *Lochner v. New York* (1905), the reproduction cost method that the Supreme Court established in *Smyth v. Ames* (1898) as the preferred technique for assessing the value of a business for regulatory purposes also exposed the conventional character of any valuation exercise, against the claims of objectivity made by classical economists and mainstream jurists. The inconsistency between recognizing that “value is not a fact” and the classical laissez faire philosophy underlying the Court’s jurisprudence did not escape progressive critics, who concluded that government could legitimately fine tune regulation in order to affect a business’s value and pursue alternative socio-economic goals.

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INTRODUCTION

In a landmark essay of more than three decades ago, law historian Stephen Siegel explained how the legal controversies of the so-called *Lochner* era – the period of American constitutional jurisprudence when the Supreme Court was allegedly dominated by dogmatic laissez faire[1] – stemmed from the transformation of the American economy from one based on small-scale, decentralized, individual businesses to one where large-scale, concentrated, corporate enterprises prevailed (Siegel 1984). This paper takes the lead from Siegel's thesis and investigates the role played by the evolving techniques of business evaluation in shaping a major branch of Lochnerian jurisprudence, the regulation of railroad rates. While the most immediate effect of this foray of economic ideas into legal reasoning was to strengthen the free market penchant of American courts, I argue that in hindsight it represented a key moment for the transition from a classical to a neoclassical approach to regulation and, more generally, for legitimizing a broader scope for government intervention in the economy.

How to check the railroads' economic power was one of the thorniest legal and political issues of the time. Railways companies charged "what the market will bear" for their transport services, thereby extracting huge monopolistic rents from powerless shippers. Government at both federal and state level tried to protect the latter by regulating railroad rates. This led to frequent litigation between government and the railways companies, with courts called to say the last word on whether the proposed regulation complied with the constitutional protection of property. Property rights could, and would, be infringed – so the railroads' argument went – when regulated rates prevented a business from earning an adequate return over its invested capital. In short, when owners obtained less than the "fair value" of their property. At the core of these litigations lay the elusive concept of a business's "fair value". Late 19th-century courts had thus to refer to economic theory to identify what this truly meant.

Standard economics offered no easy answer. Scale effects demonstrated that the advent of large-scale business – in railroads as in any other industry characterized by massive fixed costs – could take place thanks to, rather than despite, market forces. The dilemma arose as to what to do in the face of the undesirable effects of the free play of market forces. The usual recipe still postulated by most orthodox economists – do nothing at all – could even appear counter-productive. In a shocking reversal, government intervention was now invoked as a curb against rising monopoly power. By

[1] The period, which lasted approximately from the late 1880s to the mid-1930s, owes its name to *Lochner v. New York* (198 US 45, 1905), where the Supreme Court stroke down a New York state statute regulating the working hours of bakers. For opposite views on *Lochner*, see e.g. Kens (1998) and Bernstein (2011).

legitimizing rate regulation in a landmark post-Civil War decision, *Munn v Illinois*,[2] the Supreme Court had sanctioned the existence of an unreviewable legislative control over prices. That decision could well be read as instrumental to protect the classical liberal principles of individualism and competition against "the rising tide" of monopoly. Yet, regulation could be hardly reconciled with the constitutional protection of property. The Constitution had originally enshrined property as a bulwark against the encroachment of individual freedom by government power. This role had been reinforced by the enactment of the Fourteenth Amendment in 1868.[3] Allowing government too much of a free hand against large-scale enterprises could thus lead to undue political domination over the economy and, through the economy, the whole of society. The puzzle was further complicated by the economists' lack of agreement on how to handle the endogenous rise of economic power in the economy while preserving the classical dogmas of full economic freedom.

Aware of the multiple and complex sides of the regulatory dilemma, American jurists, whether liberal or conservative, endeavored to handle it by redefining no less than the substance of constitutional law. According to Siegel (1984, p.260), their preferred response was to constitutionalize the free market, thereby paving the way for the so-called laissez faire constitutionalism of *Lochner v. New York* and its heirs. Regulation was therefore not just a branch, but the main log of the Lochnerian tree.

In the following pages, I show how Siegel's thesis pivots on the peculiar notion of a business's "fair value" that affirmed itself in American courts of the late Gilded Age:[4] the value of a business was given by its reproduction cost, i.e., by the sum a market entrant would have to pay in order to build anew the business itself as an alternative to purchasing the existing one. Though it did not fully belong to the tool box of classical economics, the notion was selected precisely because it allowed to preserve the gist of the classical message – the superiority of the free market over all alternative forms of social organization – while granting legitimacy to regulation. From the viewpoint of the history of economics, this was a momentous conclusion. Indeed, it was during the heated controversy that surrounded the Supreme Court's selection of reproduction cost as *the* measure of business value for regulatory purposes that several observers realized the inconsistency between a classical approach to economic phenomena, where value was conceived of as a physical, objective notion, and a notion of value that necessarily referred to the subjective assessment of

[2] 94 US 113 (1877).

[3] The first section of the Amendment contained the so-called due process clause: "No State shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States; nor shall any State deprive any person of life, liberty, or property, without due process of law; nor deny to any person within its jurisdiction the equal protection of the laws". A possible reading of the clause was that the protection it granted to American citizens was substantive as well as procedural. This reading would lie at the foundation of the *Lochner* era.

[4] The Gilded Age is the period of American history between 1870 and 1900, its last decade overlapping with the beginning of the so-called Progressive Era.

prospective cash outlays. Everybody recognized that value was not a fact – or not anymore – but rather an opinion in the evaluator's mind.

Looking at the late 19th-century – early 20th-century regulatory saga from a history of economics perspective, it turns out that precisely when the laissez faire constitutionalism of *Lochner* & c. reached its zenith, the seeds were cast for the later U-turn in American jurisprudence. If value was not a fact, then the door was open for a democratically elected government to proclaim its own assessment of a business's "fair value" and legislate to achieve any political goal – say, a specific distribution of wealth – implicit in such evaluation. While the presumptive constitutionality of government regulation would only be sanctioned by the Supreme Court of the New Deal,[5] it was during the earlier controversies over railroad regulation that it became clear to progressive interpreters that a wedge could be driven between the classical political economy of the free market and the neoclassical economics of value theory, the latter being viewed as a mere set of analytical tools that could be applied to pursue any kind of socio-political target independently of the specific pattern of economic intercourse envisioned in the former.

I. FROM PRESENT VALUE TO REPRODUCTION COST[6]

Writing for the Supreme Court in an 1893 takings case involving a navigation company (channels were at the time second only to railroads in triggering regulatory controversies), and called to determine the exact value of "just compensation" for condemned property, Justice David Brewer proclaimed the following criterion: "The value of property, generally speaking, is determined by its productiveness – the profits which its use brings to the owner. Various elements enter into this matter of value. […] The value […] is not determined by the mere cost of construction, but more by what the completed structure brings in the way of earnings to its owner. For each separate use of one's property by others the owner is entitled to a reasonable compensation, and the number and amount of such uses determines the productiveness and the earnings of the property, and therefore largely its value".[7] This was nothing but the modern idea that the value of a business is equal to the *present value* of its future net earnings. Value should not be determined by looking backward at

[5] See *United States v. Carolene Products Co.*, 304 US 144 (1938).
[6] This section and the next draw from a companion paper, Giocoli (2017).
[7] *Monongahela Navigation Co. v. United States*, 148 U.S. 312 (1893), at 328. Brewer made another key contribution to the jurisprudence on rate regulation: in a series of late 1880s – early 1890s opinions he reframed the issue in terms of the takings doctrine, away from the police power realm. The value of property was itself property and thus entitled to the same constitutional protection. This clever move transformed regulation from a public welfare concern into a property rights problem, i.e., a problem fully within the scope of classical political economy. On the difficult boundary between regulation and confiscation and Brewer's contribution to define it, see Giocoli (2017).

production cost, as in classical economics, but by looking forward, in terms of the expected income flows a given property could generate.[8]

However, notes Siegel (1984, p.221), present value was an ambiguous concept when applied to regulatory issues. If it meant the value of an *unregulated* business, which by definition included its ability to gain supra-competitive profits, the purpose of regulation would vanish. Neither could it mean its *regulated* value, i.e., the value resulting from employing regulated rates in the calculation of future earnings: in such a case the constitutional protection of property would be dodged by basing the permissible rates on the rates already set by legislators. Only one solution existed – and American courts did not take long to realize that.

The proper present value of a business could be no other than the value set by the *competitive market*. Rate regulation was confiscatory when it reduced the overall return of the regulated business below that obtainable from an investment of comparable size and risk made in a competitive environment. While present value itself was a non-classical notion, using competitive markets as a benchmark for "just compensation" rested upon the well-established foundations of classical political economy. Both conservative and progressive jurists could invoke the authority of Adam Smith and his system of natural liberty to defend the choice as morally, as well as economically, grounded.[9] It was common at the time to criticize regulatory case law as arbitrary and ad hoc. But how could anyone accuse a court of having abused its discretionary powers if its decision had been guided by the just light of classical competition? Courts did not miss the golden opportunity of an inflow of external authoritativeness in so controversial an issue.

Under the doctrine of competitive present value, the judicial task was to determine what the value of a railroad or public utility would have been if operated in a competitive environment. A difficult task again, were it not for the help coming from business and engineering valuation techniques. The notion of *reproduction cost* provided the answer. While the notion had been theoretically developed in Henry Carey's *Principles*,[10] it is very likely that late 19th-century US courts borrowed the idea of reproduction, or replacement cost from more mundane sources.

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[8] It may be worth noting that, as it happened for reproduction cost (see below), even a non-classical notion like present value did not enter American jurisprudence through neoclassical economics, but rather through its common use in accounting and engineering. For example, the American civil engineer Arthur Mellen Wellington made extensive recourse to present value calculations in his well-known 1887 treatise *The Economic Theory of the Location of Railways* (Wellington 1887, Ch. IV). Within neoclassical economics, the method would only affirm itself with Fisher (1907).

[9] Cf. Smith ([1776] 1904, IV.9.51). The moral justification of Smith's system of natural liberty – a system based on strong property rights and free competition – transcended the mere maximization of wealth and was grounded on a discourse on justice and equality. See Haakonssen (1981); Young (2005).

[10] See Carey (1837-1840, vol.1, pp.9-12). Both Carey and the other alleged "inventor" of reproduction cost, the Scottish-Canadian economist John Rae (see Rae 1834, Ch. X), defy standard labels as they were neither classical nor neoclassical. Reproduction cost itself is a notion partaking of both approaches in that it contains a classical element (it still relates value to production cost) and a neoclassical one (it is a forward-looking concept that, in some of its variants, most notably that of another transitional economist, the mid-19th-century Italian Francesco Ferrara, even admits of a subjective foundation: see Ferrara 1856).

For example, the 1886 volume of the *Transactions of the American Society of Mechanical Engineers* included a paper, by a New Jersey engineer named Oberlin Smith, about "Inventory evaluation of machinery plant". Smith discusses the evaluation techniques a business should apply in cost accounting, the problem being to ascertain "the true value of property kept account of" (Smith 1886, p.433). The only correct answer, he declares, is reproduction cost: "The grand principle which lies at the root of correct evaluation, and which should govern the appraiser throughout all his work, is, that any article is worth not what it *did cost*, but *what it would cost to replace it to-day*" (ibid., 436, original emphasis). As a further example, consider an 1886 paper by Brooklyn economist Paul Davis that dealt with the big national controversy surrounding the outstanding debt to the United States of the Union Pacific Railway Co. One solution then touted was to foreclose the government lien and proceed with selling the railroad lines, but to assess its convenience one should first be able to determine the value of Union Pacific properties. Here came Davis's contribution. He suggested making recourse to the cost of reproduction principle, invoking the authority of civil engineer and renowned expert in railway matters, Richard Price Morgan, who had already adopted this evaluation technique for the same railway company a few years before (Davis 1886, pp.68-70).

In a sort of mutually enforcing feedback, the notion of replacement cost owes a lot to the history of regulation itself. For instance, the concept was employed as far back as the 1840s in controversies raised against the British Railway Commission about the evaluation of capital improvements.[11] Accounting historian Germain Boer confirms that the earliest arguments about replacement cost in the US had no theoretical foundation or origin, but stemmed from rate cases involving public utilities and heard before regulatory agencies: "It was in the hearings before these commissions that replacement cost first received prominence in America" (Boer 1966, p.92). In short, railroad regulators used reproduction cost because engineers and accountants did; engineers and accountants in turn used it because some regulators had. Yet, in order to come full circle an authoritative judicial sanction was required. The Supreme Court was ready to oblige.

II. THE *SMYTH* RULE

By the last two decades of the 19th-century, engineers, accountants and even a few regulators had agreed that the present value of a business was equivalent to the funds a potential buyer of the whole business would have to expend to construct anew that specific enterprise, i.e., to the

[11] See Pollins (1956, p.353).

business's reproduction cost. This technique rested on the more or less implicit assumption that buyers in a free market always had the option of building, rather than buying, and should bear the full consequences of their own choice. The reference to free – that is, competitive – markets proved crucial in the technique's success. As Siegel remarks (1984, p.222), under the reproduction cost approach, a businessman in a regulated industry would reap the fruits, positive or negative, of his own ability: if he had built his enterprise at less than its current reproduction cost, even regulated rates would guarantee him an extra profit; by contrast, if he had spent too much, he would suffer from his bad choices. This was exactly what would happen in the unregulated market, given that the reproduction cost always identified the right value of his business.

Of course, calculating the reproduction cost of a railroad, a navigation channel or a public utility was no easy task, but still no harder than determining the historic cost, as required by the backward-looking evaluation criteria. Moreover, it was a matter of factual inquiry rather than mere judicial opinion. This catered to the courts' need to avoid excessive discretion. In 1898 a unanimous Supreme Court established the reproduction cost rule in the landmark *Smyth v. Ames* case.[12] Despite mounting criticism (especially after WWI), and a considerable degree of ambiguity in the Court's own wording, the rule would remain valid for the next forty-six years,[13] helping judges at all levels to separate rate regulation from confiscation.

The case involved Nebraska's 1893 railroad rate legislation. With an opinion written by Justice John Harlan, the Court found the regulation unconstitutional: when set too low to permit the railroads a "reasonable return", regulated rates amounted to an unconstitutional taking of private property. Factual analysis would have sufficed to reach this conclusion in the specific case, because the rates established by Nebraska legislators brought insufficient revenues for the railroads under any possible definition of "reasonable return". However, the Court hinted at a preferred approach to the notion. In the key passage of his opinion, Harlan wrote: "the basis of all calculations as to the reasonableness of rates to be charged by a corporation maintaining a highway under legislative sanction must be the *fair value* of the property being used by it for the convenience of the public. And in order to ascertain that value, the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stock, *the present as compared with the original cost of construction*, the probable earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses are all matters for consideration, and are to be given such weight as may be just and right in each case.

[12] *Smyth v. Ames*, 169 U.S. 466 (1898). For the economic foundations of the constitutional jurisprudence that led to the *Smyth* rule, see Giocoli (2017).
[13] *Smyth* will be formally overruled only in *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591 (1944).

[…] What the company is entitled to ask is a *fair return* upon the value of that which it employs for the public convenience" (*Smyth*, at 546-7, emphasis added).

These words were subjected to careful scrutiny over the following four decades.[14] Taken literally, they merely offered a list of evaluation criteria that eschewed any commitment to a specific determination of the vague concepts of "fair return" and "fair value". So, Harlan's statement has been considered ambiguous at best and useless at worst. According to Siegel, though, this was not how most contemporary courts and commentators understood it. At the time, it was widely recognized that the Court had endorsed the reproduction cost approach to rate regulation.[15] Indeed, all subsequent decisions on rate regulations took it for granted that the "fair return" to which a regulated company was entitled was the competitive dividend, and that the "fair value" upon which that return had to be calculated was the present reproduction value of the company's assets, as required by the reproduction cost method, and not their original cost.

One year later, in *San Diego Land & Town*, Harlan himself clarified the Court's endorsement of reproduction cost, calling for a "fair return upon the reasonable value of the property *at the time it is being used for the public*" as the measure of just compensation, while rejecting the appellant's request based on the original cost.[16] Even more significantly, the next rate regulation cases – where the Court consistently applied the new method – were all decided unanimously, with opinions written by Justices as diverse as progressive Oliver Wendell Holmes and conservative Rufus Peckham.[17] In 1903 Holmes quoted Harlan's words from *San Diego Land & Town* to proclaim that "[i]t no longer is open to dispute that under the constitution" evaluation for regulatory reasons should be based on reproduction cost. "That is decided", Holmes wrote, "and is decided as against the contention that you are to take the actual cost of the plant, annual depreciation, etc., and to allow a fair profit on that footing over the above expenses".[18] By the time of *Lochner*, reproduction cost looked like settled law.

As we said, the logical underpinnings of the reproduction cost principle resided in the notion of competitive markets. Fairness (of values and returns) was expressly translated in terms of the

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[14] Given that the "fair return on fair value" mantra underlies all forms of cost-plus regulation, one may legitimately argue that the debate raised by *Smyth* continues today.

[15] Siegel 1984, p.227. Textual corroboration did exist. Reproduction cost had been explicitly employed by counsel for the appellant State of Nebraska, famous agrarian leader William Jennings Bryan, with the goal of demonstrating that no right to profit existed for the railroads (*Smyth*, at 489-91). Moreover, Harlan's opinion quoted from an 1891 official report of the Nebraska Board of Transportation that, in admitting that freight rates could be lowered no further (as the 1893 legislation would indeed do) without "doing violence" to the railroads, underlined that such a conclusion had been reached, "not by taking the cost of construction and equipments, nor the amount of stock and bonds issued per mile, but by making our computations upon the basis of what it would cost to duplicate the property at the present time" (ibid., at 549). The Court plainly approved this method of evaluating the railroads' "fair value" – the one *more favorable* to regulators in a deflationary period – and still voided the law as an unconstitutional deprivation of property.

[16] *San Diego Land & Town Co. v. City of National City*, 174 U.S. 739 (1899), at 757 (emphasis added).

[17] On these cases, see Whitten (1912, pp.26-8); Siegel (1984, pp.226-8).

[18] *San Diego Land & Town Co. v. Jasper*, 189 U. S. 439 (1903), 442.

outcomes of classical competition. *Smyth* thus constitutionalized competitive values and returns as the fair yardsticks for measuring property and for protecting it against unconstitutional takings.[19] Classical competition gave substantive content to all those vague ethical or political attributes – justice, reasonableness, fairness – a regulated rate should satisfy. Indeed, its outcomes were themselves just, reasonable and fair.[20] Under competitive conditions, the public would pay no more for a product or service than what would grant a competitive return to a freely entering rival – viz., the equilibrium rate of profit. The Court recognized that this was also the amount the Constitution should guarantee to railroad and utility shareholders. Competitive market returns, and only such, represented the *morally justified* profits that even privileged businesses like railroads and utilities were entitled to gain. Judicial determination of reasonable rates thus suffered no arbitrariness: competition, not the judge's idiosyncratic will, drew the constitutional boundary between regulation and confiscation. Courts should just establish by factual analysis what the competitive return on the present market value of a given enterprise would be and compare it with that implied by the regulated rates.

Remarkably, the kind of competition the unanimous Court had in mind in *Smyth* and later decisions was still the classical one. As classical economists envisaged, competition was the dynamic process leveling the profit rate and canceling monopolistic rents unsupported by legal privilege.[21] Competitive markets were simply those where this process worked unhampered. Proof of their effective functioning rested in the tendency itself to the equalization of returns – the analytical core of classical economics.[22] Conversely, the Court's jurisprudence on rate regulation did not hinge upon the neoclassical notion of competition as a market structure made up of small enterprises devoid of market power. Much as it happened in antitrust case law, the structural view of competition was still far away from the Justices' mindset.[23] Yet, the notion of value underlying the *Smyth* doctrine was not the classical, wholly objective one, but a more modern conception that could pave the way to fully subjective assessments.

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[19] See Siegel (1984, pp.231-2).

[20] In the Smithian system of natural liberty, competitive prices satisfied moral criteria of justice and equality beyond and before welfare maximization standards. See above, footnote 9.

[21] Within the classical worldview, "privilege" was the necessary condition for persistent monopoly because it identified any "wealth that only certain individuals could acquire, usually through designation by affirmative governmental act" (Siegel 1986-87, p.58). Privilege stood in contrast with ordinary property, i.e., wealth "whose acquisition was open to all individuals, typically through competition in the free market" (ibid.). No monopoly could last in competitive, privilege-free markets. The dichotomy between market-based property and government-based privilege – and its eventual collapse at the turn of the 20th century – provide an alternative key to interpret the Gilded Age jurisprudence on economic matters. See Siegel (1986-87); Giocoli (2017).

[22] On the centrality of the profit equalization theorem for classical economics, see Stigler (1957).

[23] On the two views of competition as a (classical) process and a (neoclassical) market structure, see Giocoli (2014, Ch.2), and the literature cited therein.

In sum, by 1898 the Court had unanimously endorsed the strong connection between competition and property that lay at the core of classical political economy. The former provided no less than the measure of the latter, because free markets were the one and the only place where the value of property was determined. This free market value was, according to the Court, also the value protected by the American Constitution. One could not separate competition and property without violating the Constitution – and classical economic principles, too.

Under this respect, the *Smyth* doctrine had momentous consequences that went beyond rate regulation. The constitutionalization of competitive markets affected the *Lochner* era as a whole. "The *Lochner* era began", Siegel writes, "when American jurists decided that the constitutional notion of property included its free market value" (Siegel 1984, p.260). First settled in the railroad regulation context, the latter idea was soon generalized. All citizens were entitled, like railroads, to the free market value of their property. In Siegel's account, even the central doctrine of the *Lochner* era, liberty of contract, emerged as a corollary of the constitutional protection of the competitive value of property (ibid.). Free market value is nothing but *exchange* value; the latter, in turn, depends upon the possibility of trading property with the utmost liberty. Hence, liberty of contract may also be construed as a necessary implication of the Court's interpretation of the "just compensation" principle of rate regulation in terms of the reproduction cost rule – that is to say, of the ironclad link between classical competition and the constitutional protection of property rights.

However, the apparent triumph of the classical worldview epitomized by *Smyth* also contained the seeds for its eventual demise. If value was not anymore an objective entity, but something entirely determined on the marketplace, as a function of a piece of property's ability to generate a flow of earnings, and if the latter were nothing but the outcome of the property's capacity to cater to the marketplace's tastes and needs, critics of that very worldview could then argue for the replacement of a different set of needs that property might legitimately be called to satisfy. For example, it could be claimed that the flow of earnings property was entitled to were those stemming from its ability to meet a politically-determined social need. In other words, that value was a matter of policy and that the choice set available to policy-makers had more options than just the classical, free market one.

III. *SMYTH* BESIEGED

In the years after *Smyth*, federal courts were busy with rate regulation cases. Under the new doctrine, railroad companies could ask for injunctions against the enforcement of state-fixed rates. Federal courts of equity granted several such injunctions, significantly restricting state rate-making

authority. Unsurprisingly, those in favor of more extensive government regulation of business power subjected *Smyth* and its underlying economics to intense criticism.

The reproduction cost method was attacked on pragmatic and theoretical grounds. Scores of economists, engineers and legal scholars joined the debate. The intense controversy, which would last until the demise of the *Smyth* doctrine in the 1940s, climaxed in the wake of the Hepburn Act.[24] The 1906 Act strengthened the power of the Interstate Commerce Commission, establishing, among other things, the Commission's authority to fix maximum railroad rates. By so late a date, the classical faith in the markets' self-policing ability had almost vanished from the economics profession. Hence, the economists' take on the railroad issue focused on the allocative function rate regulation should accomplish, downplaying the themes of justice and equality that were central in the classical approach. Everybody still agreed that free markets would determine the long run equilibrium value of goods and services and that this would conform to production cost. At the same time, almost everybody[25] recognized that in the case of railroads competitive forces would fail to push prices down to production cost and that there lay the rationale for rate regulation. Robert Harvey Whitten, a city planner who mastered the law as well as the economics, explained this rationale most effectively: "In the case of unregulated virtual monopoly the force that tends to limit prices charged to the cost of production is lacking. This creates the necessity for public regulation of the rates of charge of public service companies. The aim of public regulation is to accomplish what in other industries is assumed to be accomplished automatically by free competition, that is, to limit the price charged to the normal cost of production" (Whitten 1914, p.422).

The regulator's task was therefore to determine a rate that corresponded exactly to the "normal price", which, in turn, should equate to the "normal cost of production". Whitten defined the latter as "the amount which in the long run it is necessary to pay to secure the utilities demanded by the public. It is the amount that will secure an equilibrium between demand and supply", and the former as "the amount which in the long run it is necessary to pay to secure the utilities demanded by the public. It is the amount which constitutes an adequate inducement for investment" (ibid., p.422, p.424). The allocative viewpoint was apparent: rate regulation should aim at generating sufficient profits to attract the capital necessary for future investment in railways, exactly as competitive markets would have done. The question was whether the reproduction cost method devised by the *Smyth* Court could actually perform this task, without triggering either under- or over-investment.

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[24] On the controversy accompanying the Hepburn Act, see Giocoli (2016).

[25] The main exception was no less than the father of modern railway economics, Arthur Twining Hadley, who remained optimistic about the effectiveness of competition in curbing monopoly power in the railroad industry, at least in the long run (see e.g. Hadley 1885, pp.101-105).

Several economists gave a negative answer on purely practical grounds. Reproduction cost was unable to fulfill its allocative role because of huge administrative problems. The valuation of present reproduction cost was a time-consuming process, largely based upon conjectural estimates and, above all, incapable by definition of providing a stable basis for fixing rates. Compulsory reference to current prices of inputs in the production process of railway services made the results exceedingly sensitive to changes in the price level. In particular, the inflationary process of the early 20th century turned the method into a boon for railroads, by generating reproduction values that far exceeded the original outlays to build the lines.

One of the fiercest critics of reproduction cost was Harvard economics professor (and renowned racial taxonomist) William Zebina Ripley. In his oft-quoted treatise *Railroads Finance and Organization*, Ripley borrowed from the practical wisdom of railways commissioners to dismiss the method. "The 'reproduction theory' contemplates an imaginary community in which an imaginary corporation makes imaginary estimates of the cost of an imaginary railroad", he complained. "The actual, efficient sacrifice of the investor, as revealed in accounting and other historical studies, supplemented by engineering advice as to the adaptability and present condition of properties for the purpose intended, will count far more than the estimates of engineers as to what it will cost to buy land that will never be bought again, to duplicate property that will never have to be duplicated, and to build up a business that will never again have to be developed" (Ripley 1915, p. 356). The passage reveals not only Ripley's distaste for the conjectural character of reproduction cost, but also his favoring of a backward-oriented approach like the historical cost method. This preference – which curiously mixed-up a neoclassical focus on allocative efficiency with a classical penchant for objective valuation – was shared by most economists involved in the post-*Smyth* debate.

Practical difficulties also occupied center stage in Whitten's analysis. He was especially concerned with the intrinsic instability of the incentives stemming from regulated rates when the latter were grounded on reproduction cost. Stability, and the ensuing provision of correct incentives to invest, would per force require a continuous adjustment of the rate of return applied to the outcome of the evaluation method, but this was clearly a cumbersome task (Whitten 1914, p.425).[26]

Problems in administering the reproduction cost method could get even worse whenever one wished to apply the technique in a truly rigorous way, by following the so-called "value of service rendered" approach. The correct method, Whitten explained, should neglect the value of physical property and aim instead at that of the service provided: "[the method] involves a reproduction of the service rather than a reproduction of the plant. If the old plant were wiped out, what would it

[26] As noted by a referee, the fact that even perceptive critics such as Whitten and Ripley were pursuing at the same time classical backward-looking objectivism and neoclassical forward-looking efficiency bears witness to the persisting transitional status of early 20th-century American economics.

cost at present to construct and operate a plant capable of performing the service now performed by the old plant?" (Whitten 1914, p.426). The difference could be huge in terms of depreciation allowances because the given level of service could be rendered even with an obsolete capital.

Both Whitten and Ripley acknowledged that focusing on the service rather than the plant was the proper way of reasoning from a theoretical viewpoint.[27] But they also observed that the approach would clash with existing accounting techniques (Whitten 1914, p.429; Ripley 1915, p.357) and, above all, entail insurmountable administrative complexity. In Whitten's words: "As thus stated, the reproduction method has so many difficulties that it is practically never employed. The reproduction of the service involves not only the determination of the cost of the most efficient substitute plant, but the determination of the present cost of reproducing the business […] The engineering costs of such survey and estimates would be enormous" (Whitten 1914, p.427). How could the evaluator ever know all the details necessary to reproduce a company's whole business?

Inevitably, the reproduction cost method had to be applied less than rigorously. But intrinsic imperfection in actual applications undermined the main argument in favor of the method itself, namely, its being a *more* rigorous evaluation technique – that is to say, one less dependent on the regulator's or the judge's arbitrary assessment – than the rough estimates of historical cost. "Rather than providing the definite, clear, and simple rule called for by a functional analysis", Siegel notes, "the *Smyth v. Ames* rule was an administrative nightmare and an inaccurate one at that" (Siegel 1984, p.236). Many economists thus preferred the historical – also called *actual* at the time – cost approach. On the one side, it was administratively easier; on the other, by a clever use of cost multipliers it could be tailored to meet contingent necessities, such as the need to attract new capital in some parts of the railroad industry.

Actual cost had the further advantage that "it eliminates or minimizes, through compensation, the changes of valuation arising from fluctuations in the level of prices in general" (Ripley 1915, p.349). This remark touched a sensitive chord with contemporary commentators. Opting for one method or the other was hardly neutral: "If it were generally true that public utility properties could now be reproduced at less than actual cost, the argument for the acceptance of actual cost as a normal standard for fair value would appeal very strongly to the public utility interests. As, however, prices of land, labor, and material have in general advanced enormously since 1896, most utility enterprises can only be reproduced to-day at a cost considerably in excess of the actual necessary cost. It is natural, therefore, that public utility interests should incline strongly toward the reproduction method" (Whitten 1914, p.433).

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[27] Also see Bauer (1916, p.571). Remarkably, technological progress occupied center stage already in John Rae's and Henry Carey's early theorizations of reproduction cost. See above, footnote 10.

The numbers were indeed staggering. Between 1913 and 1920 the US price level rose almost 150%. Under inflationary conditions, the reproduction cost method effectively meant green light for railroads to charge what the market would bear, and a practical constitutional ban on government regulatory activities. The situation was the opposite of the time of *Smyth*, which came at the end of a period of sharp deflation. Falling prices meant that the method subjected regulated businesses to the risk of losing on their capital outlays. Accordingly, late 19th-century enemies of regulation had shunned reproduction cost, while pro-regulation interpreters had embraced it. Wartime inflation changed everything: now present costs were much higher than historic ones, so reproduction cost was very favorable to railroads and other public utilities.

Scholars could not fail to notice. Princeton economist John Bauer was straightforward: "Gross reproduction cost is the standard of valuation which corporations are demanding. […] Under present high prices it would probably give corporations the largest valuation that could be obtained through any single basis" (Bauer 1916, p.579). The shocking reversal raised serious equity concerns. "[T]his change in the rate basis was merely fortuitous", Ripley complained, "totally disconnected with the matter in hand. It would certainly appear more equitable that the rights and obligations of the companies should rest upon the amount of the investment […] actually created and placed in the public service" (Ripley 1915, pp.349-50). Actual cost was clearly preferable for achieving both the allocative and the equity goals of regulation. Whitten could thus conclude: "If normal actual capital cost were adopted as the rule for the future, accounting methods and rate regulation would be much simplified and the relations between the utilities and the public placed on a much more equitable and dependable basis" (Whitten 1914, p.436).

The superiority of actual cost was not merely practical, but, some argued, also theoretical. A parallel stream of criticisms focused on a major analytical flaw in the argument supporting the reproduction cost method. As we know, the approach found its rationale in the equivalence between the market value of a business and its reproduction cost – an equivalence that was guaranteed by the opportunity for every entrant in a free market to choose between starting a business anew and taking over an existing one. Underlying all this was the principle of perfect capital mobility among alternative uses, a pillar of classical economics. The problem – as the best railroad economist of the time, Arthur Twining Hadley, had explained as early as 1885 – was that railroads were a business like no other in the past. Railways services required huge investments in fixed capital that could not be withdrawn. Hence, railroads could continue for a long time pricing their services at a level that barely covered operating expenses. Their rates thus bore no necessary relation to their capital investment: "the rate at which it pays [for capital] to come in is much higher than the rate at which it pays to go out", Hadley (1886, p.223) famously proclaimed. This meant that observable market

conditions were no benchmark at all for assessing what it would cost to reproduce the infrastructure necessary for providing the service.

By the second decade of the 20th century, Hadley's analysis had become common wisdom. "The real cost of transportation", Whitten observed, "can only be determined by recognizing the only process by which transportation service can be supplied, that is, by devoting capital permanently to the enterprise" (Whitten 1914, p.424). Capital mobility – and the related profit equalization drive – simply did not hold in the railways industry. Against classical claims, no entry/exit mechanism thus existed to bring either the market price or the return on capital to their "normal" level. The equivalence between the market value of a business and its reproduction cost was consequently lost. Or, as Whitten put it: "Cost of production determined by the reproduction method is largely hypothetical. It is not based on the actual conditions that limit the production of the utility" (ibid., p.423). The critique seemed definitive. Nevertheless, the *Smyth* doctrine survived.

IV. *SMYTH* DEFENDED

Though embraced by a majority of scholars, neither the pragmatic nor the theoretical criticisms met with universal consensus. Some authors still defended the reproduction cost method and rejected actual cost. For example, New York lawyer Edward Cashman Bailly observed: "As engineering skill and experience increase, and the courts become more intimate with the valuation problem, the measure of present value afforded by the cost of present construction meets with more favor" (Bailly 1911, p.545). That engineers were the group more consistently in favor of employing reproduction cost[28] lent credit to the approach and provided the best reply to the pragmatic protest. "As for its accuracy and expediency", Bailly underlined, "the fact that [reproduction cost] has been approved as the best means of determining present value by nearly all the great public service commissions in the United States, that it has been repeatedly approved by the Interstate Commerce Commission, […] that it is given practically controlling effect in the more recent decisions of at least the federal courts of inferior jurisdiction, is answer enough" (ibid., p.546). His conclusion was orthogonal to Ripley's and Whitten's: "It can hardly be conceived to-day that a valuation would be undertaken without great weight being given to the cost of reproduction" (ibid., p.547).

This declaration of faith in reproduction cost was supported by the continued allegiance to the method by federal judges. The best example is a 1913 decision by the Supreme Court that,

[28] For an example in this sense, see Ford (1911).

notwithstanding the Justices' refusal to apply it in the specific case, reiterated the centrality of reproduction cost for regulatory matters. Writing for a unanimous Court in *Minnesota Rate Case*, Justice Charles Hughes defined the outcomes of the reproduction cost method as "mere speculation" and "mere conjecture"; unsurprisingly, he declined to endorse them.[29] But the denial only applied to the peculiar application of the method railroad stockholders had invoked in the case.

Railroad owners had argued that, in assessing the reasonableness of the regulated rates, allowance should be made for the fact that the "right of way" (viz., the right to use land for a railway line) cost more than the land's market value. This because the purchaser of the right, the railroad company, would find itself locked-in (in modern economic jargon) in its bargaining with landowners on account of its specific railways investment and massive sunk capital. The argument's goal was of course to inflate the reproduction cost and, therefore, obtain higher rates from Minnesota regulators.

The Court dismissed the thesis on two grounds. First, railroads had been granted eminent domain power over landowners precisely to escape these lock-in situations (*Minnesota Rate*, at 451). Hence, a railroad enjoyed a privilege over the land that already compensated it for the potential loss of bargaining power. Inflating the land's value by recognizing its higher "railway value" would unconstitutionally sanction a railroad's right to enjoy privilege-based, supra-competitive profits. Second, Hughes found it impossible to evaluate what the value of "right of way" through a certain land would have been in the absence of the railroad already built upon it. "[I]t is manifest", he averred, "that an attempt to estimate what would be the actual cost of acquiring the right of way if the railroad were not there is to indulge in mere speculation" (at 452). The existing railroad could not be "obliterated" in order to recalculate the "railway value" of the land. Hence, the reproduction cost method could not be applied *in that specific circumstance*.

Ripley eagerly jumped on Hughes's statements and concluded that *Minnesota Rate* had buried reproduction cost for good (Ripley 1915, pp.355-6). Yet, this conclusion was far-fetched. The Court had actually proclaimed: "The 'cost of reproduction' method is of service in ascertaining the present value of the plant, when it is reasonably applied and when the cost of reproducing the property may be ascertained with a proper degree of certainty" (*Minnesota Rate*, at 452). Clearly, the Justices had no problem with the method itself, provided it was based upon demonstrable facts. Their decision simply meant the method could not be applied when grounded upon mere conjectures or, worse, when its use would grant constitutional protection to the profits generated by railroad privileges.[30]

Minnesota Rate is just one among a score of cases where federal courts confirmed their allegiance to the *Smyth* doctrine. In the early 1920s, Justice Pierce Butler even came close to affirming

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[29] *Minnesota Rate Case*, 230 U.S. 352 (1913), at 452.

[30] See Siegel (1984, p.229). The Justices' unwillingness to assess reproduction cost on conjectural bases highlights once again the distance separating their views from the core tenet of neoclassical economics, viz., subjective evaluations.

something the *Smyth* Court never explicitly held, namely, that reproduction cost was the *only* factor to be considered in determining a railroad's, or other public utility's, present value.[31] Keeping into account the inconclusive results reached by the economics of valuation, it is thus unsurprising that the debate between friends and foes of the reproduction cost method continued through the decade.

Clearly, no definitive answer could come from purely theoretical or practical arguments. As Siegel (1984, p.242) remarks, commitments to values other than the purely economic motivated the supporters of alternative approaches. A broader issue was at stake under the surface of a seemingly technical subject. Under the original *Munn* doctrine (see Introduction), government regulation had the potential to spread across several branches of economic activity. The "public interest" notion developed by the *Munn* Court was so vague that it could be stretched up to the point of establishing some general forms of public control over the economy. Decades of later jurisprudence by increasingly pro-laissez faire courts had significantly reduced the risk of undue government activism. Still, competing conceptions of private property versus public welfare returned to the fore under the guise of the apparently neutral choice between reproduction and actual cost. Rate regulation thus remained a key battleground in the war between conservative and progressive approaches to constitutional law – a war that only ended with the so-called constitutional revolution of 1937 (with a coda, for *Smyth*, until 1944).

The history of economic thought may cast new light on this broader controversy. The early 20th-century debate over evaluation techniques for regulatory purposes brings to the fore the difference between *economics* and *political economy* – and their possible irreconcilability. This is what happened in the case of classical economics and classical political economy, when applied to the analysis of industries that, like railroads, were characterized by massive fixed costs and non-standard forms of competition. Both the difference and the irreconcilability, it is argued, offer an original perspective for assessing the economic foundations of the New Deal upheaval.

By political economy I mean here a discourse on the relationships between individuals and society, and between the market and the state, which draws upon fields as diverse as economics, political science, law, philosophy and sociology – the whole bag, that is to say, of what today goes under the "social science" label. Political economy usually involves a discussion of the general principles pertaining to the economic side of human activity, an assessment of the normative desirability of the different behaviors, and a catalog of the policy actions furthering those behaviors that are desirable and deterring those that are not.[32]

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[31] *Bluefield Water Works v. Public Service Commission*, 262 U.S. 679 (1923), at 692.

[32] In Joseph Schumpeter's ([1954] 1986, p.22) synthetic description, political economy is "an economics that includes an adequate analysis of government action and of the mechanisms and prevailing philosophies of political life".

Classical political economy was predicated on faith in competitive markets; classical economics substantiated this faith with, among other things, the profit equalization theorem. Yet in the case of heavily-invested industries, the latter could no longer work in the absence of its necessary premise, perfect capital mobility. A new economics was needed to account for new competitive conditions. But while the brightest minds of the younger generation of American economists were building the new theory, the political economy inspiring American judges was still that developed by the previous cohort of classical writers. Nowhere was the chasm between the allegedly eternal principles of classical political economy and those actual market conditions invalidating the theorems of classical economics so large – and its practical consequences so significant – than in the case of the railroad industry.[33]

V. VALUE IS NOT A FACT

Throughout the long debate over the *Smyth* doctrine, only one conclusion was unanimously accepted. Everyone agreed that a railroad's market value could not be used to measure the validity of regulated rates. Market value was exchange value; exchange value was the equivalent to capitalized earnings; capitalized earnings depended on rates, including regulated ones. In other words, value could not be the basis of rates because rates were the basis of value. This circular reasoning – which was implied by railroads' complaints that a given rate did not pay enough interest on the value of their capital – was denounced by both friends and foes of the reproduction cost doctrine. Whitten's 1912 treatise may be taken as exemplar: "Market value has nothing to do with the rate question as thus considered. It is only set up after the rates are in fact determined. To be sure, the theory is that rates are based on a fair return on the market value of the road under reasonable rates. The impossibility of basing reasonable rates on a market value that is itself determined by reasonable rates is apparent. It is a clear case of reasoning in a circle. […] Market value is not really a part of the process but the final result." (Whitten 1912, pp.54-5).

The issue struck at the heart of classical economics. As Siegel (1984, pp.246-7) remarks, only a notion of intrinsic value could break the circular relationship between value and rates. This was precisely what the alternative evaluation rules – reproduction cost and actual/historical cost – tried to do: to break the circle in the absence of an objective notion of value. Choosing between the rules

[33] The chasm existed independently of the obvious circumstance that a business like railroads, which had been heavily supported by policy-makers at all levels through land grants, cash subsidies, tax exemptions, etc. (see e.g. Perelman 2006, Ch.3), was hardly the embodiment of classical laissez faire. Indeed, most courts reasoned as if the system of natural liberty ruled even in that industry.

thus did not mean selecting the most proper measure of a railroad's value, but, more correctly, the best *substitute* for it. As usual, Hadley provided the most lucid statement: "it is quite certain that the attempt to apply the term valuation to the assessment of a rate based on duplication cost as a primary factor or to call the result of such assessment a value results in grave confusion of thought and many practical mistakes. […] a cost assessment neither produces value nor measures it" (Hadley 1928, p.176, 180).

For classical economists, value was a physical phenomenon, an objective fact: typically, a certain amount of labor or the gravitational attractor of market forces (viz., natural value). This notion of intrinsic value was lost with the transition to neoclassical economics: "Value is not a physical phenomenon", a leading neoclassical author like Hadley stated, "but a social one – not an inherent quality of objects, but a measure of their adaptation to social needs". Markets determined the actual value of property, not regulators or courts. It followed that assessing value for regulatory purposes was "essentially a political" endeavor, "not a scientific one" (ibid., p.176, 179).[34]

Within the neoclassical framework, the choice of the best rule to make up for the inscrutable value of a railroad was driven by the functional goal of approximating the most efficient allocation of resources without exceeding the boundaries of administrative feasibility. Luckily enough, competition provided a benchmark that catered to both classical and neoclassical sensibilities. The natural value of classical economists and the optimal, first best price of neoclassical theorists converged in the value determined by competitive markets. As we know, here lay the main reason for choosing the reproduction cost rule, for that notion made express reference to – indeed, was defined with respect to – the outcome of competitive markets.[35] The "competitive" label was especially appreciated by American courts, which could find in reproduction cost a familiar reference to classical economic ideas, in particular to the equivalence between competitive and natural outcomes.[36] When in 1898 the Supreme Court embraced reproduction cost as the constitutionally compelled notion of value, it had behind it a whole worldview supporting the choice. It was the worldview of classical political economy, where natural – i.e., competitive – values enjoyed a sort of ethical superiority over all others.

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[34] John Rogers Commons, the institutional economist, put it slightly differently. "All value is expectancy", he wrote, because the market value of property is just the present value of expected income flows (Commons 1924, p.25). The outcome was identical, though: expectations of future streams of income were as immaterial as any other "social convention". Even the policy implications were the same: any jurisprudential rule determining a "fair value" of property represented an implausible legal guarantee of the constancy of a future stream of income.

[35] Another way to say this is to underline that its competitive foundations suffice to characterize reproduction cost as an autonomous notion, regardless of its hybrid, neither-classical-nor-neoclassical nature (i.e., regardless of its being objectively or subjectively evaluated). See again footnote 10.

[36] The idea that, as the forces of demand and supply work themselves out, market (i.e., competitive) values would inevitably converge to natural ones was another cornerstone of classical economics. See e.g. Blaug (1985, p.39).

Problems for the *Smyth* rule arose under both viewpoints, classical and neoclassical. The trouble with the former was that the necessary reference to the outcome of competitive markets was completely lost when the rule was applied to the regulation of industries such as railroads, where no classical competition could ever subsist. This destroyed the only anchor classical economics could provide to ground reproduction cost in the absence of any other objective notion of value.

Functional justifications of the rule, typical of the neoclassical approach, did not work either. American courts could not subscribe to a functional standard because deep constitutional reasons militated against doing so. Functional evaluations were the quintessential matter of legislative policy, upon which courts could not exercise judicial review without infringing the separation of powers. In other words, either the reproduction cost rule found itself a non-functional justification, in some "higher value" deserving constitutional protection – values akin to those of justice and equality promoted by classical political economy – or it would find itself bereft of any logical foundation. The distance separating classical *economics* from the reality of the railroad industry thus sealed the rule's fate.

Devoid of its intellectual mainstays, the very notion of property evaluation, not just the specific technique of reproduction cost, began to be seen by more acute observers for what it really was. Value was not an objective reality, a fact to be discovered. It was, as Hadley put it, a social convention. No complex inquiry could establish the fact of a railroad's value for the simple reason that there was no such fact to be established in the first place. Take Justice Harlan's list of factors in *Smyth*. These factors could no longer be a list of types of evidence to be considered in valuation proceedings because, again, no fact existed for the discovery of which evidence was required.[37]

The consequences of recognizing that value was not a fact were momentous. If it wasn't a question of fact, then value could well be a question of *policy*. This conclusion did not escape progressive scholars, who understood that the demise of valuation as a fact-finding procedure offered an invaluable opportunity to redirect values – and the policies determining them – towards goals different from traditional ones. A brand new kind of *political economy*, cleansed of any classical dogma, looked like a concrete possibility.

In the new political economy, value would have no natural connotation; it would be a plastic, goal-based concept policy-makers could adapt to varying social needs. At the same time, property and competition, detached from the Smithian system of natural liberty to which they owed their ethical superiority, would lose their absolute status. They would become socio-economic goals like any other, the protection of which would always be contingent on utilitarian, cost-benefit tests. Indeed, if value was a matter of policy, property rights themselves would be stripped of their role as

[37] See Siegel (1984, p.248).

safeguards and would become nothing more than means to achieve socially desirable ends – means that legislators could mold at will.

Columbia economist Robert Lee Hale was among the earliest to recognize that the conclusions drawn from the public utility area could be generalized to all kinds of property. "[I]n regulating the rates of utilities", he wrote, "the law is trying the experiment in one limited field of turning its back on the principles which it follows elsewhere". Hale had a clear grasp of where the novelty lay: "We are experimenting with a legal curb on the power of property owners". The law, he explained, usually "acts on the assumption that whatever income a property owner can get without fraud by virtue of his ownership is legitimately his". But in the case of public utilities, "standards of what it is proper for an owner to get out of his ownership have to be worked out *de novo*". The upshot was radical: "The revision of property rights worked out within the utility field may very well serve as a model, wherever applicable, for the revision of other property rights" (Hale 1922, p.213).[38]

In the field of regulation, the new political economy meant acknowledging that the relation between a regulated company and the regulator was open-ended, amenable to being directed by proper regulatory choices towards any kind of social goal – be it the maximization of investments, consumer protection, or other embodiments of the public interest.[39] It meant recognizing that only two kinds of regulated prices existed: those that were *useful* in pursuing the regulator's policy goals, and those that were not. Utilitarian considerations – themselves subordinated to the specific aims pursued by the policy-maker – not absolute moral categories, should drive regulation.

VI. "THE ILLUSION OF JURISTIC NECESSITY"

The progressive jurist who most clearly understood that the world of classical regulation rested upon thin air was Harvard lawyer Gerard Carl Henderson. In the final pages of a long 1920 essay, drawing conclusions from his scathing review of three decades of regulatory jurisprudence, he denied that fair value – the pillar of the *Smyth* doctrine – could ever be "scientifically ascertained by observation and induction". He deemed it "merely a cloak which conceals a process of arbitrary decision based on considerations of policy" (Henderson 1920, p.1055).

Henderson explained: "The relation between the public utility and the community cannot be expressed in terms of a simple, quantitatively ascertainable fact, for the relation involves numerous and complex factors which depend on compromise and practical adjustment rather than on

[38] On this aspect of Hale's thought, see Horwitz (1992, pp.163-4); Duxbury (1995, pp.107-11).
[39] "Any value which is still to be allowed to a utility company must be justified on some independent ground of policy" (Hale 1922, pp.214-5).

deductive logic". The *Smyth* doctrine thus rested upon "a gigantic illusion" (ibid., p.1051), namely, that "there is a fact which can be discovered, if we are only persistent enough in our search for it, and which, once it is found, will provide a mathematical solution of all rate-making problems" (ibid., p.912). Alas, this fair value, "the fact which for twenty years the [Supreme Court] has been vainly trying to find *does not exist*". The notion thus deserved to "be shelved among the great juristic myths of history, with the Law of Nature and the Social Contract. As a practical concept, from which practical conclusions can be drawn, it is valueless" (ibid.; emphasis added).

Recognizing the mythological status of fair value could not be without consequences for the judicial approach to regulation. Henderson dedicated amusing pages to illustrating what would happen in an ideal community, requiring a railroad system and having to decide how best to deal with a privately-owned provider of the service (ibid., pp.914-24). There could only be one outcome of the inevitable lengthy negotiations, to which everyone – citizens, shareholders, engineers, and, of course, lawyers and economists – would contribute: the admission that "[t]here is no generally accepted norm to which a contract embodying [the relation between the owners of a public utility and the government] can be assumed to conform" (ibid., p.925). Thus, "when both lawyer and economist have had their say, there would still remain a substantial variety of possible adjustments, each different from the other, and each nevertheless accomplishing the primary objects which the parties had in mind" (ibid., p.928). The only indisputable truth in the matter of regulation was that "the decision must turn largely upon considerations of justice and policy", which can never be exactly formulated, neither juristically nor scientifically (ibid., p.1055). This, in Henderson's view, should prompt the Supreme Court to adopt a well-defined jurisprudential attitude, namely, to "widen largely the scope of discretion accorded to the non-judicial body which in the first instance conducts or directs the valuation". The judiciary should step back, because valuation for regulatory purposes had to "be regarded as a task which is largely legislative and administrative, in which the judgment of Congress, or of an administrative tribunal which adheres to the forms of due process, must within wide limits of discretion be deemed conclusive" (ibid.).

Henderson gave specific directions as to what his appeal for judicial restraint should entail: "If Congress formulates general principles of rate-making or of compensation, the [Court] should not upset these principles merely because it is of opinion that a different formulation would be juster". Congress's principles should always stand judicial scrutiny, "unless so clearly unfair as to outrage the common sense of justice". Ditto for the discretionary deliberations of any administrative commission "appointed to investigate the relevant facts, to negotiate with the railroad interests, and to fix a fair and workable measure of compensation", whenever "the commission has examined the evidence honestly and impartially, and has given all parties a fair hearing". Regulation was a matter

of "justice and policy", not of imaginary facts; hence, "conclusions based upon considerations of justice and policy should not be overruled unless utterly beyond the pale of fairness and common sense" (ibid.).

The "illusion of juristic necessity" that Henderson (ibid., p.910) blamed on the *Smyth* doctrine went beyond regulatory issues. Treating a railroad's value as "a pure question of fact" conformed to so-called *categorical thinking* – the cornerstone of traditional legal analysis against which progressive jurists like Henderson were waging their war at the time.[40] Ascertaining whether a regulated rate guaranteed a fair return on capital to the railroad was conceived of as a dichotomic, yes-or-no question; accordingly, the answer was amenable to a clear, bright-line classification – fair versus unfair rates – of the type categorical jurisprudence so much appreciated. That the decision could be reduced to a fact-based yes or no – never overstepping the bounds of judicial discretion – was precisely the illusion that, according to Henderson, had lured the *Smyth* Court into the reproduction cost doctrine. Exposing the purely conventional character of all evaluation exercises and, from there, the emptiness of any sharp categorization based upon them, meant showing that discretion was unavoidable, that no simple yes-or-no questions existed, that every decision was always a matter of "justice and policy" – in short, it meant striking a decisive blow at the foundations of categorical thinking.

Long before Henderson another outstanding jurist had invoked the abandonment of traditional categorical analysis along similar lines. In 1894, future Justice Holmes had argued that the complexity of modern society required a jurisprudential move from differences in kind – typical of categorical reasoning – to differences in degree. Conflicts among alternative policies did not lend themselves to sharp, categorical solutions – the very fact that alternatives existed denied the possibility. A judge's decision as to which of two or more alternative policies was the "right" one could never rest on absolute rational grounds. Law was a social creation, Holmes had proclaimed. Policy outcomes had always to be balanced before lines could be drawn (Holmes 1894, pp.6-9).

With its trademark cost-benefit analysis neoclassical economics offered the ideal tool to administer differences in degree and balancing tests. The technique required that weights be assigned to individual elements of cost and benefit. While applying cost-benefit analysis was a technical task, requiring the specialized knowledge of administrative bodies, assigning weights was an eminently political activity, fully within the bounds of legislative powers. Courts should interfere with neither task, limiting their interventions to the few cases when, as Holmes famously averred in his *Lochner* dissent, "it can be said that a rational and fair man necessarily would admit that the statute proposed would infringe fundamental principles as they have been understood by the

[40] On the "categorical mind" underlying much of 19th-century legal thought, see Horwitz (1992, pp.17-19).

traditions of our people and our law" (*Lochner*, at 76). The legislature, with its appended administrative bodies, rather than the courtroom, was the proper place in which the competing interests affected by public policies were to be balanced. Judicial deference had to be the rule; activist courts the rare exceptions.

While Holmes never expressly applied this philosophy to regulatory matters, his support for a more liberal substantive analysis of regulation – in which rates would be evaluated according to their "usefulness" with respect to policy goals – was implicit. More generally, underlying his approach was the belief that classical political economy should occupy no special position in judicial review. The Smithian system of natural liberty was only one among several other policy views legislators might entertain – and an outdated one at that. Alternatives existed, including those entailing a more invasive role of the state in economic affairs, accompanied by a parallel limitation of property owners' freedom of contract. This was indeed the rationale of his epoch-making *Lochner* dissent.

Historically speaking, the *Lochner* era would come to a close when a majority of the Supreme Court endorsed the views of progressive jurists like Holmes and Henderson. In the case that officially buried a half-century of laissez faire constitutionalism, Chief Justice Hughes declared: "The Constitution does not speak of freedom of contract. It speaks of liberty and prohibits the deprivation of liberty without due process of law. […] Liberty under the Constitution is thus necessarily subject to the restraints of due process, and *regulation which is reasonable in relation to its subject and is adopted in the interests of the community is due process*".[41] This last, rather categorical statement marked the end of the *Lochner* era.

Another implication of the progressive view was the exponential rise of the role of economic experts.[42] In the absence of a method to determine values objectively, the value question had to be avoided altogether and alternative forms of legitimization for government intervention had to be found. Society could be an alternative source of legitimacy. Yet society had first to be described and understood. As law historian Morton Horwitz put it: "Social reality – the Is – became the source of the Ought. Description was privileged over prescription. Value was to be discovered from social fact" (Horwitz 1992, p.211). This was the social scientists' task. The 20th-century's increasing delegation to positivist social science of crucial legislative, or quasi-legislative duties thus embodied the attempt to evade the value question by elevating expertise and professionalism to the

[41] *West Coast Hotel Co. v. Parrish*, 300 U.S. 379 (1937), at 391, emphasis added.

[42] On the joint, early 20th-century rise of the administrative state and the economic expert profession, see Leonard (2015); (2016, Ch.3). Combining an emphasis on the experts' role with the dogma of administrative deference – as Progressive jurists did – was not unproblematic. If no objective foundations for value existed and if every kind of regulation could be justified invoking political discretion, one could then question the relevance of the scientific expertise on which administrative decisions had allegedly to be based. I thank one of the referees for this insight.

status of main source of legitimization. Neoclassical economics was at the forefront of the task – or, at least, it should have been.

It was at this juncture that the analysis of leading economists like Hadley and Frank William Taussig (neither of whom supported reproduction cost) could have rescued the Supreme Court from progressive attacks, at least as far as regulatory jurisprudence was concerned. A curious inversion took place. Economic theory at its best did offer a lifeline to the conclusions of classical political economy. Even bereft of classical assumptions, like perfect capital mobility, and results, like profit equalization, early neoclassical economics could still provide a rationale for deeming rate regulation unnecessary, thereby defending the system of natural liberty of *Smyth* and *Lochner*.

VII. THE NEOCLASSICAL LIFELINE

Despite the absence of free entry and the substantial immobility of capital, competition still drove the railroads' rate-making practices, including the most despised of all – and the true reason of a large chunk of regulatory efforts – rate discrimination.[43] This was the main lesson that could be drawn from the pioneering work of scholars such as Hadley and Taussig.

Hadley was the first economist to link the necessary conditions for successful price discrimination – monopoly power and the ability to separate markets – with a simple elasticity specification.[44] In Appendix II of his *Railroad Transportation* the relationship between traffic carried and the rate charged was given both a mathematical statement and a diagrammatic illustration by way of a traffic demand curve. The basic assumption of Hadley's analysis was that railroads are profit-maximizers: "The practical railroad manager has one general principle in this matter. He lowers rates whenever he thinks it will increase net earnings – in other words, as long as it will increase gross earnings faster than it increases operating expenses" (Hadley 1885, p.261). The principle – which in the Appendix took the form of a differential equation – led the manager to lower rates "until the differential of gross earnings on a particular line of traffic ceases to be greater than (i.e., becomes equal to) the differential of the operating expenses" (ibid.). Under the implicit assumption of elastic demand, Hadley applied the marginalist principle to conclude, both in words and in formulas, that railroads would seek new traffic as long as the increase in revenues brought about by additional traffic exceeded the increase in cost (ibid., p.263).

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[43] Of the three evils of railroad pricing – monopolistic extortion (caused by either sheer monopoly or cartelization), rate instability (often the outcome of so-called ruinous competition) and rate discrimination – the latter was widely held as the worst. See Smalley (1906); Giocoli (2016).

[44] For more details, see Cross and Ekelund (1980, pp.217-22).

Hadley's was a *competitive* theory of rate discrimination, in that he explained the phenomenon as an essential part of the competitive process in the railroad industry – of the way, that is to say, competition deployed its beneficial effects even in a market characterized by largely imperfect resource mobility. The railroads' financial health, their ability to expand service to new markets and lower the average price of transport (thanks to market expansion under decreasing costs), even the possibility itself of their supplying any service at all – everything depended upon the adoption of rational discriminatory practices.

Even more explicitly than Hadley, Taussig foreran what is modernly called the second-best approach to efficient pricing. Today we know that in the presence of a multiproduct firm, whose overheads need be covered by total revenues but cannot be assigned to individual products, a proper use of differential pricing can raise total output, spreading the joint costs' burden among more customers. The idea is that the firm would set each product's price above its marginal cost, at a level sufficient to cover overheads and obtain a normal return on investment. An optimal set of markups exists that would generate the required total revenue with a minimum loss of output with respect to the first best. These efficient markups depend on the elasticities of demand and are known in modern jargon as *Ramsey prices*. Whenever total revenues exceed total costs, including overheads and a normal return, the firm is earning supra-competitive profits. Hence, the proper test for monopoly power looks at total revenues and total costs, not at the size of the markup on any specific product: even a very high markup is not by itself an indicator of monopolistic profit.[45]

As early as 1891, Taussig showed a clear understanding of the technique and its implications. In his terminology, the most efficient way to repay railroad investments meant charging "what the traffic will bear". The principle aimed at maximizing railroad traffic on the basis of the customers' willingness-to-pay, i.e., of the different elasticity of the various portions of demand. Like Hadley, Taussig concluded that price discrimination – whatever its basis: freight classification, geography, or the amount of competition along a particular route – was rational economic behavior, and an efficient one at that. Regulators should not interfere with it; competition should be let free to deploy its beneficial allocative effects even in the railroad industry (Taussig 1891, pp.454-6).

The bottom line of both Hadley and Taussig was of course that competitive forces could only work within a system that guaranteed the most complete protection to property rights and contractual freedom. Defending railroads from arbitrary regulation was not therefore a way of upholding their privileges – as progressive critics complained – but, on the contrary, the only available path for having competition destroy those very privileges, albeit only in the long run. In

[45] On Ramsey pricing, see e.g. Viscusi et al. (2005, Chs.11-12). For the history of the multiple (re)discoveries of the technique, see Baumol and Bradford (1970, pp.277-80).

short, explicitly *non-classical* (viz., neoclassical) economic theory could be employed to buttress the gist of classical political economy, namely, the intangibility of individual rights on property and contract under the neutral policing of market forces.

Yet, the Supreme Court never endorsed the teachings of top-notch railways economics. Lack of proper analytical understanding, or maybe sheer ignorance, made the turn-of-the-century Court unable to catch hold of the lifeline. A hiatus remained, separating the Justices' awareness that many classical economic categories did not apply to the railroad industry and their continuing adherence to the philosophy of the classical system of natural liberty. The latter without the former could not survive, if alternative basis could not be found elsewhere. The stubborn application of reproduction cost, even in the face of convincing critiques like those by Ripley, Whitten or Henderson, testified to the Court's inability to comprehend that, by sticking to a technique the foundations of which lay in discredited classical economics, it exposed its flank to a more devastating attack on *Lochner*'s deepest roots, namely, those residing in classical political economy.

CONCLUSION

The regulatory jurisprudence of the Gilded Age is a rare instance of an area of the law where the Supreme Court did endorse a specific economics. Although it did not fully belong to the classical tool-box, the reproduction cost principle was grounded on the profit equalization theorem, itself a mainstay of classical analysis. In this specific case, the laissez faire, anti-regulation standard typical of the *Lochner* era had thus both an analytical and a philosophical basis. Hence, at least in one quantitatively important area of the law, the Court did apply "a particular economic theory", as Justice Holmes would protest in his *Lochner* dissent. Yet it is a testimony to the much greater sway classical *political economy* had over the Court than classical *economics* that the latter's dismissal, in the wake of the new world of corporate giants and massive fixed investments, did not lead the Justices to lose their confidence in reproduction cost. For decades after its analytical underpinning – full resource mobility – had vanished, the principle remained at center stage of regulatory jurisprudence as a symbol of the Court's willingness to solve the regulatory conundrum by constitutionalizing the free market.

The *Smyth* doctrine perfectly harmonized with the classical system of natural liberty, namely, with an idealized economy where property rights and contractual freedom were the utmost values and where competition was always deemed effective, regardless of business size and entry barriers. So strong was the Court's commitment to this vision that, willingly or not, it even forfeited the

opportunity of strengthening its rulings by discarding reproduction cost and replacing it with the more robust findings of early neoclassical analysis, themselves consistent with a free market approach, that economists like Hadley and Taussig were proposing at the time.

When in the 1920s neoclassical economics finally rose to dominance and economic experts gained an enhanced role, memory of the lessons of Hadley and Taussig had been lost. More precisely, their views had become only one of the possible readings of the railroad phenomenon that a properly trained economic expert could entertain. Being just a tool-box, devoid of its own political economy beyond the basic welfare-maximization principle,[46] neoclassical economics could in fact lend its services to any kind of policy goal. Granted the proper weights and time discounts, cost-benefit analysis (a.k.a. Holmes's differences in degree) could uphold various forms of regulatory endeavors, or none at all. Social welfare, resting upon utilitarian considerations, became the guiding light of public intervention. Legislators should simply provide the weights and then leave neoclassical economists to perform the utilitarian calculus in order to establish the best way of reaching the social goal implicit in the weights themselves.

By definition, this approach clashed with the hostility to any form of special privilege (like favoring shippers over railroads) and the obsession for procedural neutrality (as when granting identical rights to employers and employees) that were the landmark values of *Lochner* era courts – values that found their ideal counterpart, at the level of constitutional principles, in the fundamental ideas of classical political economy. The latter did share with Lochnerian jurisprudence a presumption in favor of the individual, a sacred respect of her economic rights, a strong commitment to justice and equality, and the ideal of an atomistic, privilege-free economy. No surprise at that, given that both groups, classical economists and *Lochner* era judges, had common roots in the 18th-century classical liberal tradition, as embodied by the Smithian system of natural liberty and the American Constitution. Still, it was just a matter of time for progressive jurists to exploit the intrinsic weaknesses of a political economy no longer anchored to solid analytical roots to jettison it and propose in its stead a brand new economic worldview, one where acknowledging that "value is not a fact" sufficed to legitimize several kinds of government intervention in the marketplace. The very *Smyth* doctrine that well before *Lochner* had marked the courtroom triumph of classical political economy also caused the decisive breakthrough in the edifice of laissez faire constitutionalism.

[46] Differently from the moral-laden classical approach, neoclassical economics prides itself on being value-free, its only guiding light being the maximization of (a monetary measure of) individual or collective welfare.

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