

COMMUNITITIES OF COMPETITORS: OPEN PRICE ASSOCIATIONS AND
THE AMERICAN STATE, 1911-1929

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Abstract

This paper looks at two successful efforts to “regulate competition” in the United States during the 1920s: open price associations and the Federal Trade Commission’s experiments in trade practice conferences. I argue that business associations made more progress in the United States than commonly thought. This is demonstrated by showing that 1) counter to the conventional wisdom, one strain of antitrust practice was supportive of price regulation by association and 2) open price associations were more capable of generating cooperation and economic progress than game theoretic interpretations of business associations in the United States suggest.

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Introduction

The predicament for business associationalism in the 1920s was to reconcile competition with cooperation. Trapped in the downward spiral of cut-throat competition, firms in a number of sectors tried to cooperate in order to lift themselves from “profitless prosperity.” However, once they ceased to see themselves as autonomous rivals capable of profiting by producing what people wanted at increasingly lower cost and higher quality, firms were apt to cheat on pricing agreements and cooperative arrangements would collapse.

An analogous predicament plagued the state. The state might help organize business, even enforce its agreements against cut-throat competition. But, as neoclassical antitrusters in the 1920s argued, such associations were likely to exploit the rest of society. In the short run, consumers would pay more for less of what they desired; in the long run, the absence of competition would kill the incentive to improvement altogether. Once it offered its hand in marriage, the state was apt to be suckered by infidelity.

This paper provides evidence that the seeds of reconciliation can be found in a set of experiments that populated state and civil society in the 1920s: the Federal Trade Commission’s (FTC) trade practice conferences and private efforts to organize open price associations. A loose coalition of manufacturers, cost accountants, antitrust practitioners and lawyers designed associations that promised to channel competition away from prices into products and production processes. By making it impossible for individual firms to conceive a strategy outside of collective discussion over the best practices in their industry, open price associations would circumvent malfeasance and provide incentives for perpetual improvement. Through public trade practice conferences, the FTC would participate in such industry level standard setting. Although these experiments registered initial successes, they came under attack by another loose coalition of lawyers, economists and public officials in the Department of Justice and the courts. This stalemate, not the failure of associations to enforce agreements or the mere existence of antitrust, undermined the promise of open price associations in the 1920s.

The history of open price associations and the state contributes to two issues in the sociology of industrial governance, the first mainly empirical, the second theoretical. Recent work in economic sociology, institutional political economy and business history has discovered a wide variety of “industrial governance structures” between markets and hierarchies—from relational contracts to trade associations and industrial districts. Among their many purposes has been perpetual innovation or “dynamic” efficiency: through interfirm cooperation in research and development, production, technology transfer and information sharing, such hybrid governance structures often achieve higher levels of innovation in products and manufacturing processes than do purely competitive markets or corporate hierarchies (Hollingsworth 1991: 51-66; Lindberg, Campbell, and Hollingsworth 1991: 18-25; Sabel 1989; Scranton 1991; Storper 1993; Streeck and Schmitter 1985; Jorde and Teece 1992; Wilkinson and You 1994; Best 1990). Comparative research has revealed a relative dearth of industrial governance of this sort in the United States, however. The proximate cause, scholars agree, is antitrust. At best the law has made interfirm governance structures unenforceable; at worst it has subjected them to prosecution by the state (Hollingsworth 1991: 66-73; Lindberg and Campbell 1991: 357-95; Jorde and Teece 1992; Badarraco 1985; McCraw 1982).

While this paper concurs generally with these findings, it also demonstrates that an alternative approach to regulation came from *within* the antitrust debate itself. One group of prominent antitrust theorists and practitioners in the 1910s and 1920s thought associations were necessary to achieve the ends of the law. But this was not merely a debate over means; it turned on differences over ends, as well. Since the content of antitrust was so deeply contested, it cannot be taken as an exogenous constraint upon business’s search for a solution to a profitability crisis in the 1920s. Indeed, a number of managers perceived the law as plastic and the state their potential ally. Thus we need an account of the evolution of industrial governance that accords conflict and deliberation over the *principles* of efficiency and justice far more importance than the conventional understanding suggests.

A similar lesson is true for associative governance in industry. Drawing from recent advances in economic sociology and institutional political economy, I contend that routine deliberation over foundational standards of

efficiency plays a far more important role in economic cooperation than generally acknowledged by the two leading theories of market associations—rational choice and culture. Where the former conceives economic action individualistically and the latter collectively, a *deliberative* or *discursive* approach hypothesizes the necessity for talk among economic agents: only through dialogue do individuals fix preferences or determine the interpretation of norms.

Consider the cultural and rational choice interpretations of the role played by antitrust in the development of American industrial governance. On the former, the law is a reflection of an individualistic culture. Where business attempted to organize, it was blocked by a state imbued with Jeffersonian norms. Even in the absence of legal restraint, management has been ideologically reluctant to form strong associations capable of addressing sectoral concerns (Dietrich 1991; Dobbin 1994; Lodge and Vogel 1987; McCraw 1982: 80-142; Badarraco 1985). Moreover, absent norms of cooperation, business associations tend to fall prey to malfeasance, that is, individual members find it more in their self interest to violate collective agreements and go it alone.¹

From this perspective, cultural explanations begin to look like a species of rational choice theory. Cooperative norms, on this view, are but one solution to the problem that plagues all business associations, namely, enforcement. According to rational choice theory, association members will act to maximize their profits. In principle, then, even though all partners can do better by complying with an agreement to fix prices, individual firms will benefit by secretly shaving prices to select customers. However, because all rational associators hope to “free ride” on the goodwill of others, in the absence of enforcement such agreements collapse.

In the United States antitrust has presented a threefold problem for enforcement. First, it reflects a culture of individualism that, even without legal interdiction, makes private enforcement difficult. Cooperative norms, on this view, act as sanctions: potential free riders who value the costs of being shunned by others in the community more than the benefits of malfeasance are likely to comply with collective agreements. Second, antitrust has made the only obvious actor in society with legitimate control over

coercion—the state—unavailable for enforcement. Third, antitrust often deems private methods of coercion, such as “third party enforcement” by subcontractors or banks, unlawful. Where American business associations have succeeded in enforcing collective agreements, they have found ways surmount or bypass these obstacles (Gordon 1994; Bowman 1985, 1989; Campbell, Lindberg and Hollingsworth 1991).

To be sure, there are instances where business has cooperated “spontaneously” without coercion. Drawing from recent advances in game theory, Bowman (1985: 50-55) argues that when firms expect to gain from continuous cooperation, place a high value on those future gains compared to current takings, and know that other members of their association do the same, they will comply with pricing rules in the absence of enforcement. The stability of such agreements, however, depends largely upon the capacity of members to monitor one another’s preferences. Where associations have been successful in the US such information has been provided by banks, insurance companies, trade associations, and in fewer instances by the state. In principle, then, it has been possible to cooperate without state sovereignty and outside of the purview of antitrust rules against enforcement.

Sophisticated and nuanced as these accounts of industrial governance are, this paper argues that they rest upon far too restrictive theories of cooperation. The conditions necessary are rarely present and when they are tend to be indeterminate. Consider the limiting case for rational choice theory, namely, enforcement by a sovereign state. Should government make the cost though fines or imprisonment of malfeasance higher than its benefits then compliance will be forthcoming. But, as public choice theorists point out, consistency demands that we apply the same utilitarian assumptions to the state. If so, public officials will be subject to free rider incentives as well. One can readily imagine a regulator accepting secret side payments from a cartel cheater in return for looking the other way. The same problem plagues “third party enforcers” such as trade unions and subcontractors.

Or take Lorenz’s (1988) critique of “spontaneous cooperation.” Recall that spontaneous cooperation is only possible if parties can monitor one another’s preferences. However, in the absence of trust—that is, the mutual confidence that parties to an economic transaction will not exploit unforeseen

circumstances to their own advantage—there is no reason to think that parties will be truthful in providing one another with information. Malfeasance in pricing will be reproduced in communication. Finally, norms of cooperation do not, in and of themselves, solve the problem. As critical legal scholars, natural language philosophers, and critical sociologists have abundantly shown, norms or rules are typically so ambiguous in application that parties to an agreement might act on them in dramatically different ways (Kennedy 1976; Unger 1975: 88-100; Kelman 1987: 15-63; Wittgenstein, 1968; Bourdieu 1977: 22-30, 140-43). Like spontaneous cooperation, norm based behavior requires trust. As Sabel (1994) writes, unless individuals provisionally presume trust—a sense of charity that others are not attempting to deceive them—they will not be able to hold a conversation steady enough to interpret what one another is saying.²

The problem, Granovetter (1985) has pointed out, is that rational choice theories of cooperation are “undersocialized” where normative or cultural theories are “oversocialized.” The former mistakenly assumes that individuals can form preferences outside of the language that binds them to one another. The latter commits the opposite error: it assumes that individuals compulsively follow norms that are highly ambiguous in practice. (Which norm applies to a given situation? How does one arbitrate between conflicting norms? And which of the many possible facts are applicable to a given norm?)

Building upon Granovetter’s insights, I contend that what makes human action possible—in economy as well as other spheres of life—is the capacity to locate and continually revise the terms of consent. Individuals only know their preferences or identities through dialogue with others; norms only guide action when situated in context. The problem of business association then is not only for firms to locate common ground, but also to develop sufficient capacity and trust to revise the terms of an agreement *before* cheating becomes necessary. Suppose a group of firms agree to a price or production standard and then conditions change in a way that effects them differently. Absent the capacity to revise standards in mutually agreeable ways, individual firms will have an incentive to break an old agreement or, for that matter, exit the association altogether. Thus firms in association must be able to “monitor,” but not so much to learn one another’s preferences (as game theory argues) as to periodically (re)open deliberation over what those preferences are.

This paper shows that the architects of open price associations in the 1910s and 1920s conceived their problem as one of building trust among rivals. They believed it possible to do so incrementally by designing governance structures that provided firms with incentives to share information, and set and periodically revise industry price and production standards. Cooperation was not so much intended to eclipse competition as it was to channel it from prices into products and production processes. A detailed case study of the Bolt, Nut and Rivet Association reveals that the seeds of success were sown once members could no longer imagine a competitive strategy outside of a collective discussion with their rivals over what the best practices were in their industry. When individual calculation became inseparable from discussions of collective standard setting, the problem of malfeasance became largely irrelevant.

The body of this paper proceeds in two main parts. Part I, which explores the conceptual foundations of associative governance, is divided into three sections. The first summarizes Louis D. Brandeis's approach to antitrust, namely, the theory of "regulated competition;" the second explores the theory of open price associations as it was articulated by Arthur Eddy; and the third looks at early efforts by the Federal Trade Commission to encourage regulated competition through associative cost accounting and trade practice conferences. Part II turns to a critical case study: the Bolt, Nut and Rivet Association. I show how it successfully encouraged cooperation through collective information sharing and standard setting and then recount its conflict with the state. If it was undermined, I conclude, this was not because it failed to coerce its members; it was because of a protracted public stalemate over the principles of antitrust.

Regulated Competition

Brandeis on antitrust³

Public policy initiatives to reconcile competition with cooperation through association and regulation initially came from *within*, not in opposition to, antitrust. Perhaps the most influential antitrust reformer of the Progressive Era to argue that associations were necessary to achieve the ends of the law was Louis D. Brandeis. Counsel to private antitrust plaintiffs, public reformer,

and adviser to Woodrow Wilson, Brandeis became a key actor in the first major round of antitrust reform (from 1908 to 1914). Antitrust law, he said, embodied numerous goals. Like his nineteenth century predecessors, but unlike the early neoclassical economists of his time, Brandeis did not make a sharp distinction between economic and political ends. I have explored his political economy more extensively elsewhere (Berk 1994b). For the purposes of this paper, I shall emphasize only the economic. In this sphere, Brandeis said, the law's purpose was to ensure the conditions for perpetual improvement and invention in products and production processes.

Though the means to this end were diverse, in general Brandeis thought it necessary to preserve competition among relatively small and medium size firms. To be sure, counter to his critics over the years, he well understood the importance of scale economies to industrialization. However, he thought many sectors of the American economy in 1910 were populated by firms far larger and with more market share than necessitated by economies of scale. More often, they were created to suppress competition not to achieve productive efficiency. In some instances, the motivation was illicit: to drive competitors to the wall and take monopoly profits. In others, production and market conditions gave rise to cut-throat price competition among all firms in an industry. The reasons for the latter were diverse, hence not readily reducible to a single proposition. Nonetheless, Brandeis's many examples reveal that price competition routinely became cut-throat in industries populated by firms with long term obligations to lenders, suppliers, subcontractors and skilled workers. In order to maintain production during bad times to protect those relationships, firms often slashed prices and sparked periodic price wars. In the absence of associational limits upon such cut-throat pricing, Brandeis observed, the result was typically consolidation. (For a similar contemporary perspective, see Wilkinson and You, 1994.)

Either way—for good motivations and bad—the result was firms too large and cumbersome to take up new ideas and a dearth of competitive incentive to do so. Brandeis's solution was twofold. First, the state ought to proscribe the many illicit methods business used to turn otherwise temporary advantages into unassailable market power. Second, where necessary, associational and bilateral (e.g. resale price maintenance) limits upon price competition should be made lawful and subject to perpetual monitoring by the state (the FTC).

Although Brandeis found some support for the first proposal among early neoclassical economists, they parted company on the second. In the absence of obvious technological economies of scale, neoclassicals thought unfettered price competition should rule. Unlike Brandeis, they failed to acknowledge the potentially destructive effects of price competition upon the institutions necessary for productive and innovative capacity. Where Brandeis deemed collective price regulation necessary to ongoing improvement in products and production processes in a variety of industries with and without scale economies, neoclassical economists saw only allocative inefficiency.

The 1914 antitrust reforms—the Clayton and Federal Trade Commission Acts—left the debate over price regulation by association wide open. Together these statutes proscribed a variety of destructive competitive practices, such as interlocking directorates, tying contracts, and predatory pricing, and licensed the FTC to regulate “unfair methods of competition.” The legitimacy of governance structures between unfettered markets and corporate hierarchies would be tested again and again in the following two decades. Nonetheless, there remained a cogent justification for regulated competition by association *within* the debate over antitrust. In 1914 the law did not necessarily preclude associations.

Open price associations

As a practicing attorney in the decades before and after century’s turn, Brandeis helped to write rules of interfirm governance in the New England shoe, paper and textile industries. After 1910, however, he turned his attention increasingly to public policy and the judiciary (he was appointed Supreme Court Justice in 1916). Others took up the task of private governance. More to the margins of national attention in the Progressive Era, a novel set of experiments was launched in 1911 under the name of “open price associations.” Led by New York attorney, Arthur Jerome Eddy, the open price movement spread from steel construction and fabricating to specialty textiles, furniture and natural resource industries like lumber and coal over the next two decades.

We focus on open price associations for two reasons. First, like Brandeis their architects in manufacturing and construction recognized that limits upon

price competition were often necessary to encourage ongoing rivalry over product quality and diversity and production processes. Second, they attempted to craft organizations that would generate cooperation without obvious methods of enforcement. Thus, open price associations represent an historical alternative in the evolution of American industrial governance that promised to address the normative problem of economic efficiency and the positive problem of cooperation.

Although open price associations differed from sector to sector, they all emphasized collective dissemination and discussion of information pertaining to prices, costs and quantities. In 1911 Eddy launched his first association, the New York Bridge Builders' Society and completed a polemic and manual for open price associations entitled *The New Competition* (Eddy 1912). The "old competition"—brutal and cut-throat—he wrote, was rapidly being eclipsed by cooperation. However, unlike his peers among economists, who equated cooperation with corporate consolidation, Eddy conceived the "new competition" as informed rivalry, checked and channeled by association among independent firms.

His first experiment brought together the twenty-five leading companies doing structural steel and bridge work, who agreed to report, once a month, all contractual bids, terms, and final prices to the association's secretary (Nelson 1923: 5). The problem in this sector, Eddy explained, was not as recent histories (Bowman 1985; Gordon 1994; Brand 1988) argue, merely overcapacity. Virtually all industries, he acknowledged, faced periodic overcapacity, since they needed plant and equipment to service peak loads. The root cause of cut-throat pricing lay in the systematic asymmetry in information and market power between buyers and sellers. By taking secret bids, customers were able to deceive contractors, play one builder against another, and drive prices down, often below costs. Suppose, Eddy wrote, contractors disclosed and discussed freely their costs, work in hand, work in prospect, all bids actually made, and the general conditions in the industry.

Competing in the open with knowledge of all the conditions influencing others, no man would make a ruinously low price or an arbitrarily high one. The competition would be real, keen, and healthful. Prices would vary but they would not vary widely; in dull times prices would approach costs, but the

educational value of the association would tend to deter ruinous bidding; open criticism of work inefficiently done would expose the tricky bidder (Eddy 1912: 100-101).

From a game theoretic perspective, Eddy's open bidding scheme appears to be a good example of a monitoring system designed to allow parties to a price agreement to assess whether their partners continue to value cooperation over defection. However we have seen how game theory underestimates the necessity for trust: there is no reason, on rational choice assumptions, that bridge builders would be truthful. Indeed, Eddy was fully aware that neither monitoring nor enforcement were effective substitutes for trust. He noted over and over again that efforts to detect and punish cheaters always failed and when they did only exacerbated the problem of cut-throat competition by fostering mistrust. Besides, price fixing did little to equalize the asymmetries in market power that caused brutal competition; they only shifted the advantage from buyers to sellers.⁴

Eddy's answer lay in a set of procedural rules that built trust incrementally through interdependence and gave association members the chance to evaluate the trustworthiness of others through routine discussion of industry standards. Suppose, Eddy said, contractors were unwilling to risk openness in the heat of competitive bidding: they feared others would not be as candid as they were. Why not provide full and open information *after* the job had been secured and then get together to discuss the bidding process? Suppose only some firms were willing to provide open bids during the bidding process, then why not make open bidding act as a key to other's open bids. Those who chose to submit closed bids could do so and then discuss them after the fact.

The idea was to reward openness and information with more information. Moreover, in discussing the bidding process *ex post*, Eddy learned that association members inevitably talked about more than prices. Conflicts over underbidding, for example, always led to a discussion of costs. Did winners have genuine cost advantages, or had they used shoddy materials or bid below cost? Discussion of prices in other words led to a discussion of products and production process. Open price associations thus became open cost associations.

Once the discussion of costs was broached, firms had crossed the border into industry standard setting. When manufacturers meet to discuss costs, Eddy wrote, debate became heated: “*no two agree upon all the items that should be charged against a given piece of work...Differences in opinion and practices... [are] so surprising that a competent committee [must be] appointed to work out a cost system applicable to the industry. If the association should do more than this it would justify its existence*” (Eddy 1912: 148).

A standing committee devoted to uniform cost accounting would serve several purposes. First, it would provide small and medium sized firms with access to expertise only the largest of corporations could typically afford. Second, it would help to stabilize prices: “if every man would figure his costs correctly and know what he is doing, there would be no need of any agreement regarding prices” (Ibid.: 148). Finally, a uniform system of cost accounting in conjunction with open cost reporting would provide the small producer with a yardstick, a way to compare his own progress in cost reduction with others in the industry.

Thus, beginning with incremental experiments in sharing price information, Eddy thought that manufacturers would come to discuss costs and set industry-wide accounting standards. Once the door was open to routinely sharing cost information, he thought that price stability would take care of itself. Firms that depended upon collective information and discussion to evaluate their own production methods would be likely to set prices according to general notions of a fair mark-up above costs. Routine discussion would be necessary to re-evaluate individual strategies as well as the range of costs within the industry as a whole.

The Federal Trade Commission (FTC)

Born with the general mandate to check “unfair methods of competition,” the FTC’s early mission was relatively open. Its first two chief commissioners, Edward Hurley and Nelson Gaskill, perceived the agency’s enabling statute in quite Brandeisian terms, that is, as a mandate for the state to check anticompetitive practices before they killed competition altogether and to encourage and oversee regulation by association. Two innovations, they hoped, would help achieve these ends. First, like Eddy, they were sanguine

about cost accounting by association. Second, Gaskill devised the “trade practice submittal” to involve the commission in regular industry standard setting and monitoring.

At the close of his first year on the commission, Hurley wrote that the lack of widespread information concerning costs was perhaps the greatest handicap in American industry. Without it individual firms were unable to effectively monitor and assess their own progress in improving production. “The main purpose of [cost] statistics,” he wrote, “is to enable every member [of an association] to compare the conditions in his business with the average for the industry and thereby keep his plant at a high state of efficiency at the lowest possible cost....One of the great advantages which result from a system of cost accounting uniform throughout an industry is that companies may compare their costs readily and ascertain on what items such costs are excessive and where economies may be effected” (Hurley 1917: 58-59; see also Previtiz and Merino 1979: 187-188). Admittedly, variations in products and production methods made it difficult to derive uniform accounting methods. Even an arbitrary agreement over accounting methods was better than nothing, however. It provided a baseline against which firms could improve both accounting methodology and production processes themselves. Hence, like Eddy, Hurley thought that dampened price competition would be a byproduct of an ongoing discussion over costs and industry standards.

Hurley’s successor, Nelson Gaskill, came to similar conclusions. In 1926 he told the National Association of Cost Accountants (NACA) that “the so-called conflict between government and business as expressed in the anti-trust law can be resolved in terms of a failure to apply continuously and generally the right relation of cost to price. *It is just as big as that* (NACA Yearbook 1926: 20). Like Eddy, Gaskill learned from practical experience at the FTC that asymmetries in information and market power result in cut-throat competition or, as he put it, competition without regard to cost. It is worth recounting Gaskill’s account of competition in the automobile tire market at length, since it illustrates his point so well.

Here was a classic case of uneven market power, where auto dealers were able to use their advantage to “whipsaw the...tire makers against each other.” Dealers, hoping to make an extra premium, arranged to substitute stock tires

with a competing brand. Although competing manufacturers took no financial compensation, they received the substantial advantage of return trade (when consumers replaced worn tires). They also got the original tires, which they promptly dumped on the market at an exceedingly low price. The result was to “break [a] competitor’s market price to smithereens” (Ibid.: 21-23).

Prices demoralized, the initial manufacturers felt “they must do something.” So they launched an aggressive sales and advertising campaign and then came together in an effort to fix prices. The first increased costs; the second aroused the state, because it was against the law. Suppose, Gaskill told the accountants,

that at the time when the car maker is open to contract for tires as original equipment, all tire makers are working under the rule that their minimum selling price is their production cost plus selling cost and none of them will contract below that price. Their bids then are limited by this figure and exceed it by the amounts of margins which they individually require. The first pressure of competitive bids will be found to affect the items which lie outside production cost so that there should be a tendency to reduction of selling cost instead of increase. As production cost is the point on which the next wave breaks,...competitive pressure would naturally work to the reduction of the production cost, which is most desirable. Price competition on this basis would inevitably reduce selling cost first and then production cost (Ibid.: 23).

In other words, only by regulating competition through setting prices at a fair markup above cost would there be an ongoing incentive for tire manufacturers to improve their methods of production and distribution. Unfettered price competition in the face of unequal market power and ignorance of costs resulted in demoralized competition, cartelization, and a sure battle between state and industry.

Aftermarket tire sales was only one of many practices that demoralized markets. No sooner had the FTC been licensed to regulate unfair competition than it was awash in similar complaints. In short time, the commission acknowledged Eddy’s insight that seemingly small excesses in the exercise

of market power left unchecked could ruin whole markets. Unable to process the many complaints of unfair competition separately, Gaskill initiated the “Trade Practice Submittal” or “Conference” in 1918 (Henderson 1924: 78-82; Stone 1977: 58-59; Holt 1922: 23-24; Blaidsdell 1932: 92-102). Where the FTC logged multiple complaints of seemingly systematic practices or where incipient associations were attempting to gain purchase on demoralized markets, it would organize a conference open to all principals. The idea, Gaskill (1936) later wrote, was prophylactic. It was to identify inequalities in market power and trade practices that resulted in cut-throat competition well before prices were driven so low that industries had little choice but to organize cartels. Like Eddy, he thought the very act of bringing competitors together to name industry problems could recast individual identity.

The...development of the Trade Practice Conference...implies transition from the accepted conventions of free competition, a lessening of individual and personal antagonisms, a willingness to surrender somewhat of individual liberty for the benefit of the whole. *It recognizes the individual self-interest as bound up in a community of interest.* It translates the stated concepts of unfair competition out of the status of private rights and wrongs and makes them general rules of group public policy....In last analysis this device of a self-regulatory process sees competition as a systematized method of expressing individual actions rather than as a confused struggle in the dark (Gaskill 1936: 11, emphasis added).

Moreover, once an industry had named its problems, the commission might use those insights as evidentiary support in its own definitions of unfair competition. “And these definitions,” Gaskill concluded, “the Commission would enforce by its statutory procedure” (Ibid.: 12). Coupled with uniform accounting and cost-based pricing, trade practice conferences might successfully regulate competition without killing it.

As carefully justified as open price associations and trade practice conferences were, they came under attack by economists and lawyers, the Department of Justice and the courts. Steeped in a neoclassical theory of competition and a laissez faire constitutionalist theory of regulation, they perceived cost based pricing as no more than inefficient price fixing and the trade practice

conference an unlawful delegation of congressional power. It was the outcome of this conflict that undermined open price associations and trade practice conferences, not technical invariability.

The Bolt, Nut and Rivet Association

Consider the case of the Bolt, Nut and Rivet Association (BNR). Organized under Eddy's guidance in 1917, it implemented a full scale price reporting system. Members who voluntarily furnished information on contract quotations and closing prices were provided with the equivalent from other members who were competing in the same market. Monthly reports of total orders quoted, filled, and unfilled were also afforded to all members who voluntarily provided the same. In addition, the Bolt, Nut and Rivet Institute established a committee to work with the US Bureau of Standards and the Department of Commerce to standardize and simplify its well over 100,000 products. Within a year, twenty-four of the Institute's thirty members were actively participating in price reporting schemes (Benham 1921).

Two events dashed the Eddy plan in this industry: the 1920 antitrust case against the Hardwood Producers Association and the post war recession. The former declared the very idea of open price competition "a misnomer"; true competitors, the Court said, do not reveal price information to one another (*American Column Co. v. United States*, 257 U.S. 377). In response, the Institute's executive committee resolved to suspend the association's central task: "the filing and distribution of price information." Coupled with the crash of an overheated war-time market, the Institute virtually collapsed in 1920 (Benham 1921). By 1924 the industry was incurring losses of 12 million dollars on a gross business of 75 million dollars (Hardy 1928).

A year later, the Institute was resurrected as the Bolt, Nut and Rivet Association. Reorganized by Pittsburgh manufacturer and Eddy protégé, Charles W. Graham (Eddy had died in 1920), the association shifted its focus from price to cost reporting. Graham's first initiative was to reinvigorate the long-standing use of price lists. This was an industry of enormous diversity in products. In order to simplify sales, as early as the 1880s manufacturers published catalogues of common commodities with standardized price lists. Each company made its prices by quoting discounts from the common lists (Ibid.).

The 1926 price list was novel because it was constructed according to uniform cost accounting rules and prices. A special committee was formed, chaired by the assistant comptroller and chief cost accountant in the bolt and nut department of a leading steel fabricating company. "This committee consisted of a number of the operating heads of our various companies," Graham told his colleagues in other industries, "the sales departments having nothing to do with it." As such, it was "the strongest...ever appointed in the history of our industry." The result was "that today we have the only scientific basic [price] list ever prepared, based on actual manufacturing costs" (National Distribution Conference 1928: 5-6). "The list was compiled," on a uniform measuring standard, that is, "a machine-hour rate basis [was established] so that the operation of a 1/4 in. machine will return the same proportionate profit as the operation of a 2-in. machine, the cost of equipment, floor space occupied, cost of tools and dies, cost of maintenance and percentage of overhead all being taken into consideration" ("Conference Plans More Profitable Distribution" 1928: 124-26).

From this data, the committee calculated average costs and then wrote a detailed price list based upon a fair mark-up from the average. The object of "voluntary cooperation" in pricing off of the "average unit" in the industry was to reconcile stability with ongoing improvement (Graham nd: 9). On the one hand, the price list provided manufacturers with a cue for uniform pricing. To be sure, Graham pointed out, "price fixing in general [was] not conceivable as either sound or economically possible. So long as supply [was] greater than demand, prices and profits must necessarily diminish to some level where the *average unit* can no more than exist, and where those below the average in efficiency must disappear. [B]ut if through voluntary cooperation, competition that *destroys the average unit* and depletes all without ultimate gain to the general welfare, can be averted, it would appear that it would be in the general interest" (Ibid.).

The alternative, Graham said, was to drive production into few units. "But it is our feeling that this would not be to the best interests of the country." It drives perfectly efficient average producers to the wall, ultimately kills competition altogether, and tends only to increase labor problems associated with huge firms. If many industries facing similar problems were left to such unfettered competition, widespread bankruptcies would likely bring on

“crash and panic” in the economy as a whole. Hence, there were good reasons to strive for stability with the average firm in mind (Bays 1928: 11).

On the other hand, should voluntary cooperation hold, those with “antiquated machinery... [will] not survive because the margin is so small even for plants which are strictly up to date.” Thus, uniform cost accounting also provided each manufacturer with the information and incentive to improve. Below average producers would learn that they are so, and with specific cost information, they could identify precisely where they must improve. They would also learn that price cutting in the short run was not a viable long term strategy for survival. “Cooperation,” Graham wrote, “is the means by which the least capable can acquire the intelligence and share in the profits made possible by the skillful management of the most capable” (Graham nd: 9). As the leading cost accounting manual of the era read

If a manufacturer can not make money in competition with other concerns when using the same methods of figuring costs, he can only conclude that his goods or his marketing, or both of them, are costing him too much. His next step, naturally, is to analyze closely the methods and conditions under which he is manufacturing and marketing his product, until he finds and corrects the inefficiencies which are handicapping him so seriously (quoted in FTC 1929a: 164).

The incentive to improve was not limited to high cost producers. Above average manufacturers also had to advance productivity. Although they captured higher profits in the short run, they also knew that laggards were likely to catch up (See “Conference Plans More Profitable Distribution:” 125; Bays 1928: 8-10). Still, they would continue to participate, because it was high cost producers that tended to demoralize prices: in a panic to survive, they often slashed prices below their own costs. A low cost manufacturer himself, Graham agreed that from a “selfish point of view,” it would have been in his interest to see only a few firms left in the industry. But he thought it better for his own as well as the industry’s progress to share cost information and cooperate in voluntary average cost pricing. Finally, Graham expected the cost committee to be an ongoing part of the association. As such, it would continually monitor costs in the industry, periodically revise basic price lists as average costs changed, and routinely (re)assess its accounting rules.

“Our market during the progress of this work had become more stable,” Graham told representatives of other industries considering a similar plan, “proving to a degree the idea we had at the start that if we would carry on what we termed a Constructive Campaign, our selling prices would readjust themselves and eventually the price situation would more or less take care of itself. However, we found the greatest antagonism to our fairly well stabilized market, came from the distributors.” Investigation revealed that in the struggle to secure enough orders to run plants to capacity after the war, manufacturers had become the most aggressive competitors to the distributor for retail trade. They were “soliciting trade which by virtue of [the distributor’s] facilities he could handle in a more satisfactory and economical way.... We were not only disrupting his trade, but our own as well,” Graham told the manufacturers (National Distribution Conference: 7).

Under Graham’s leadership, bolt, nut and rivet makers “tried an experiment.” They called a conference of all the manufacturers and distributors in the Pittsburgh region, and asked the distributors to furnish a list of all their customers. They turned up 29,000 names, from which the manufacturers culled a list of 11,000 bolt and nut buyers within a 200 mile radius of Pittsburgh, from which the 275 largest customers (wholesale and retail) were selected.

The manufacturers agreed to solicit business from this list only and to do everything in their power to have the remaining trade go through wholesale channels. Should they receive direct inquiries from customers not on the list, however, they would remain free to respond. Nevertheless, in so doing, they would set prices with due regard for the “average jobbers resale price” in the territory. “The proposition... worked so satisfactorily...in the Pittsburgh district,” Graham said, “that we determined to make it nation-wide in its scope, and we carried it to every important distribution center in the United States” (Ibid.: 8). Thirty-four such committees of jobbers and manufacturers were formed throughout the United States, thereby reducing the total number of national accounts solicited in 1928 to 2690, including the distributors (less than 10%, that is, of the previous amount for the Pittsburgh territory alone). The result, Graham told manufacturers from other industries,

has been that the distributors attitude has changed from one of antagonism to one of a willingness to support a stable market;

to be willing and anxious to pay a stable market price, they realizing fully that a stable market for them is just as important as it is for the manufacturer. The result to the manufacturer is far beyond the removal of pressure from the distributor for lower prices. The plan has developed into the greatest factor of cost reduction of anything ever taken...It reduces cost in every department. Our machines are able to operate to better advantage on quantity production. Our packing expense has been greatly reduced,...our shipping expenses are greatly reduced...[and] it reduces clerical help, accounting expense, stenographic expense, in fact every item that goes into overhead (Ibid.: 9).

Jobbers, Graham concluded, have substantial economies of scale in distribution that were lost under the former condition. By 1927, the Graham Plan had succeeded in turning a twelve million dollar loss into a six million dollar net gain. From a game theoretic perspective, the distribution plan was no more than a vertical enforcement scheme, whereby jobbers punished defecting manufacturers by denying them access to low cost distribution. There are two problems with this analysis. First, denied access to cost information provided by the jobber, there is no reason why a manufacturer would not risk a free ride. Indeed, fragmentary evidence indicates that the Graham plan did not unravel in the face of defection. As one manufacturer testified, "we are making money now on our bolt business which we didn't before. We do have two...complaints; one against jobbers who don't see fit to secure the profit they are entitled to, and the other against the manufacturer who does not observe the large buyers list in the solicitation of business." Even so, neither undercut the benefits achieved (Ibid.: 11). Or as a West Virginia distributor said, "the situation in the bolt line is very good in Wheeling. However, in some cases we notice various manufacturer's agents coming down there and soliciting the lighter package business. We feel that this is wrong. However, all in all, the situation is very good" (Ibid.: 12).

A game theoretic analysis also runs into secondary enforcement problems, that is, there is no reason that a rational enforcer would not also defect. Since the distribution list included large customers as well as jobbers, wholesalers would have an incentive to shave standard prices in order to steal large retail customers away from manufacturers. In 1929, Graham told a gathering of

manufacturers and wholesalers that even though the distribution plan had been enormously successful “certain jobbing houses, particularly in the central west, have continued to be very aggressive in an endeavor to secure an unfair advantage over their competitors by soliciting and accepting secret confidential prices and rebates.” Nonetheless, the agreement did not collapse (US Department of Justice nd: 3).

More generally, there are two problems with a game theoretic interpretation of the Graham plan. First, it falsely assumes that the interests of economic actors are fixed and so the problems of association are merely those of coordination and enforcement. This case illustrates that talk and rule formation in association can be far more than this. The distribution plan cannot be separated from the sharing of cost information. As such the solution to this collective action problem was not to coordinate and enforce shared interests, it was to redefine those interests themselves. The idea was to make talk about voluntary cooperation over prices inseparable from talk about how to improve production methods, that is, to transform individual rivals into a community of competitors, whereby their very identity as rivals would become dependent upon information shared by others in the industry.

The distribution plan was critical to such deliberation for several reasons. As Graham told a gathering of jobbers, “Of course, the whole basis of our plan is the elimination of solicitation of accounts which naturally should be handled through the distributor but on the other hand the distributor ought to be willing to cooperate with the manufacturers to the extent of supporting a stabilized market” (Ibid.13). By reducing the number of customers, the Graham plan reduced competition and made price coordination easier. A smaller number of wholesalers could also monitor the pricing behavior of manufacturers and report regularly to the association the success of the plan. Finally, like the agreement to share production costs, the Graham Plan provided a mechanism for sharing information about and reducing distribution costs. Since the distribution list could, in principle, be revised, distributors also had an incentive to improve.

So successful was the Graham Plan that the association sponsored a National Distribution Conference in June of 1928. In addition to a variety of wholesalers, it was attended by manufacturers of steel, belting and leather,

machinery, fire safety equipment, chains, fencing, hand tools, electrical equipment, bridges, cordage, rubber, abrasives, nails, books, and metalwork. Both the distribution and the cost accounting aspects of the plan were enthusiastically received. For some, the Graham plan resembled systems already in place in their industries. For others, it promised success where previous efforts to fix prices had failed.

Perhaps the greatest enthusiasm came for uniform cost accounting. From the small wire manufacturer to the conference's keynote speaker, Charles Schwab of Bethlehem Steel, participants agreed that sharing cost information helped to equalize market power and channel competition away from prices into production processes. As Schwab said, there was but one way for the independents in his industry to compete with US Steel, that is, to "submit to each and everyone of them every month a comparison of costs... We would then compare... costs and get all the benefit of [multiplant] manufacture that the Steel Corporation has. If [cost comparisons] showed one works doing better than another they (sic) could immediately inquire why the other works don't do as well" (National Distribution Conference: 14, 28).

By 1928, it had become clear that the Graham Plan was being considered in a variety of other industries. Graham announced his intention to seek a trade practice conference with the Federal Trade Commission to gain a public seal of approval for the plan, and thereby make it widely available. But far from public approval, the commission initiated an investigation of the association, which it eventually turned over to the Department of Justice for prosecution. In order to understand how Graham could have so miscalculated the state's position, we need to review the evolution of public policy toward open price associations after the antitrust reforms of 1914.

Antitrust and open price associations

The state was internally divided over open price associations and trade practice conferences. Unlike the commission, the antitrust division of the Department of Justice and the courts were hostile to both practices. No sooner had the FTC routinized trade practice conferences, than the Supreme Court gutted them. In *FTC v. Grae* (253 US 421, 1920), the Court said the commission had over-stepped its statutory powers by defining unfair methods of

competition in consultation with business. This was a judicial task, informed by common law and thirty years of antitrust case law. Consequently, all that industry could do under this ruling was to agree to comply with prior law. The commission, in short, had no license to establish or enforce a code of business morals. Now an associate justice on the high court, Brandeis dissented. The very purpose of the Federal Trade Commission, he wrote, was to prevent unfair methods of competition before they resulted in monopoly. Given the wide variety of circumstances and the necessity for ongoing monitoring, Congress had followed the precedent of the Interstate Commerce Commission and licensed the FTC to determine “whether the method pursued in a particular case was unfair.” Thus, to bar the commission from this task was to make it virtually useless body (Miller 1930: 74-81). Gaskill joined Brandeis: “The effect of the *Graz* decision on the Commission was to paralyze its activity. The Trade Practice Submittal, which was the original form of the Trade Practice Conference, was necessarily abandoned.” And without it, “the Commission struggled along, lame, halt and sometimes blind” (Gaskill 1936: 71-72; Blaisdell 1932: 46, 259-284; Henderson 1924: 101-102).

Coupled with antitrust doctrine on open price associations, judicial evisceration of the FTC left little space for experiments like the Graham plan to flourish. In its earliest rulings on the matter, the Supreme Court broke up Eddy plans in hardwood lumber, linseed oil and other industries, declaring the very idea of an “open competition plan” a misnomer. Its “purpose and effect [was necessarily] to restrict competition and thereby interstate commerce...by curtailing production and increasing prices” (*American Column Co. v United States*, 257 US 377, 1921). Following the Court, the attorney general wrote that revealing the details of one’s business was “entirely inconsistent with the normal attitude of real competitors...[The] tendency of a competitor, when fully informed by such statistics, [was] to be, in effect, invited and to be naturally inclined to imitate the conduct of his most successful competitor” (quoted in FTC 1929a: 20). Where Eddy, Graham, Hurley and Gaskill had seen this in positive terms—a nonprice incentive for firms to improve—the Court and the Justice Department saw nothing but price fixing that undermined allocative efficiency. Steeped more and more in the neoclassical distinction between artificial and natural barriers to competition, the Court could find no place for associational forms of

regulation. Where there were technological economies of scale, markets were naturally replaced by large scale hierarchies. And under such conditions, the state might step in to ensure unintended market power was not abused. In the absence of scale economies the market should regulate. Thus efforts to make collective prices were artificial and unlawful (Berk 1994b).

By mid-decade the Supreme Court relaxed this rigid position on open price associations. No longer was collective information considered a per se violation of the law. *Use* determined legality now. Information exchanges were deemed lawful as long as they were not used to “reach any agreement or any concerted action with respect to prices or production or restraining competition” (FTC 1929a: 21). They might even be beneficial, conceded courts, the Department of Justice and some economists. Should industry-wide information help individual firms to more effectively calculate price and quantity decisions and so better clear markets, then open price associations were good. As Brookings economists Leverett Lyon and Victor Abramson wrote, “open price plans may serve socially desirable objectives through diminishing price fluctuations arising out of a misunderstanding of market factors, and through facilitating those price adjustments which give expression to the changing conditions of the market” (Lyon and Abramson 1936: 79).

As a result of the Court’s new posture, FTC chair William Humphreys resurrected the Trade Practice Conference in 1928. Still, the commission remained cautious about their utility. “Perhaps with better education and enlightenment on the subject of trade statistics,” the FTC wrote, “the appropriate adjustment of production to demand will become largely automatic through the prudent action of individual concerns. Meanwhile, the emphasis placed upon the avoidance of seeking volume of business instead of a good profit margin, in the trade journals and in trade-association circles, is sufficient ground for watchfulness on the part of those charged with the duty of enforcing the antitrust laws” (FTC 1929a: 26, 90-91).

The fate of the Graham Plan

By the mid 1920s the limits to open price associations had been established by the Supreme Court, the Department of Justice and the economics profession, not by the Federal Trade Commission or the cost accountants.

To be sure, the latter alliance had influence, and to a number of participant-observers at the time, it was not clear whose vision of associationalism would become dominant. Charles Graham was one of those. In 1928 he misjudged the FTC's interest in the Bolt, Nut and Rivet Association as benign. At the very moment the commission initiated an investigation into the putatively unlawful practices of the BNR, Graham requested a Trade Practice Conference in order to legitimate the distribution plan. But, as Gaskill (now retired from the FTC) pointed out, the resurrection of trade practice conferences was no more than a "medicine show," leading industry into the "swamp of uncertainty." Despite the Court's new-found liberalism, the commission remained powerless to collect facts independently or to define the law (Gaskill 1936: 106-124).

Nor did the association's relationship with the Coolidge administration help. (Its counsel, James Burke, was a White House aid to Coolidge and, by the time he defended the BNR Association, the general counsel for the Republican National Committee (Himmelberg 1976: 93-94).) By 1929, the Justice Department had joined the FTC in its investigation. The National Distribution Conference had convinced officials in both agencies that the Graham Plan would become a prototype for other industries if they did not act quickly (Levy to Donovan 1928). In September of 1929 the FTC held an informal hearing, at which it charged the Bolt, Nut, and Rivet Association with, among other offenses, fixing resale prices and price discrimination (FTC 1929b: 8).

The commission's new-found sympathies for open price associations ceased at the limits of price fixing. The Graham Plan, it charged, adopted a uniform price list with fixed discounts. The agreement between manufacturers and wholesalers to restrict the channels of trade and set resale prices enabled the Bolt, Nut and Rivet Association to enforce the price list. Finally, the jobbers' list violated Clayton Act provisions against price discrimination.

Perhaps the most striking thing about the association's response was the absence of a defense rooted in Brandeisian notions of competition or in dynamic efficiency. Instead, Graham and Counselor Burke heeled closely to the charges at hand. The Graham Plan, they said, included neither a price agreement, nor an enforcement mechanism. Price data showed significant dispersion among members. And although manufacturers agreed to refrain

from soliciting accounts from customers not on the distribution list, they were free to respond to any retail or wholesale request. The list, Graham said, was intended as no more than a distinction between wholesale and retail trade. As such, it was well within the law. If manufacturers made better prices for listed customers, this was for legitimate economic and legal reasons. Economically, the industry had learned that it was destroying a valuable asset, namely, substantial scale economies in wholesale trade. Hence, it made sense to renovate the jobbing trade (FTC 1929b: 20-24). This said, there was nothing unlawful in granting wholesalers a lower price. The Clayton Act, Burke added, made exceptions for quantity discounts (Burke and Feldstein nd: 26-36).

Within six months the Commission handed the case over to the Department of Justice, where the Bolt, Nut and Rivet Association was charged, once again, with price fixing and discrimination. "When trade followed its natural course," wrote a special assistant to the attorney general, retailers "were solicited by the manufacturer and they had the privilege of purchasing from him at the same prices charged others. By combination and agreement...they are deprived of these valuable trade practices" (Fly 1930: 4).

On March 17, 1931 a consent decree handed down in US District Court dissolved the Bolt, Nut & Rivet Association, with the proviso that it could be re-formed at a later date. A substitute organization, however, would be subject to a list of restrictions. Among other things, the defendants were enjoined from fixing prices in concert, maintaining or using any price list or average cost or profit figures "for use in connection with any of the activities forbidden in this decree;" from maintaining or promoting the purposes of the list of wholesale distributors and large consumers; or from engaging in price discrimination by giving listed consumers special prices (US District Court 1931). The Graham Plan dashed, the National Distribution Conference's goal to share the association's success with other industries was shelved.

Conclusions

The Bolt, Nut and Rivet Association came to life once again under the blue eagle of the National Recovery Administration. (Bolt, Nut and Rivet Industry 1934) The failure to resolve the conflict between open price associations

and the state in the 1920s, however, would not only be the downfall of the Graham Plan. It would undermine the NRA more generally. For some, the temporary success of experiments like the Graham Plan proved that open and regulated competition could lift industry out of the trap of stagnation. For others, the NRA represented the same old violations of the law: price fixing and an unlawful delegation of legislative power.

Had the promises of associationalism in the NRA not been so grand, the advocates of open price associations might have made incremental gains. In 1932, the House Committee on the Judiciary held hearings on a bill to formalize the trade practice conference and make the FTC's findings legal as to fact and law (Himmelberg 1976: 161-164). As it was, the Court reiterated its old findings and associationalism was set aside as a potential solution to the great depression. Moreover, with the stock market collapse and widespread reports of corruption in securities, banking and utilities, the accounting profession was enlisted to the daunting task of financial regulation. With the advent of uniform financial reporting mandated by the Securities and Exchange Commission Act, the accounting profession turned enduringly from cost to finance (McCraw 1982: 188-192, 201-203; Previtiz and Merino 1979: 278-279).

This paper has shown that the associational alternative made far more progress in the 1920s than commonly noticed. In the Bolt, Nut and Rivet case we can see just how far manufacturers went in forging communities of competitors capable of dampening price rivalry and providing institutional foundations for dynamic efficiency. In so doing, the Graham Plan overcame the free rider problem by ignoring it, that is, it stabilized prices without an obvious method of enforcement. It also began to meet the normative objections of neoclassical economists by providing nonprice incentives for members to improve their products and manufacturing processes.

Nor did the exceptional nature of American government and culture necessarily preclude associationalism. According to a leading early twentieth century interpretation of antitrust (perhaps the most influential), institutions on the order of open price associations were necessary to achieve the goals of the law. In a number of industries, only such associations could preserve small and medium sized firms and channel rivalry among them from wages

and prices into products and production processes. Proponents of this view were not limited to those with an obvious “interest” in price fixing. Normatively committed to a conception of economic improvement we might term “dynamic efficiency” today, they were found throughout the public and private division of labor—in the professions of law and accounting, among business executives from industries with and without scale economies, and within the state (in the FTC and in a minority on the Supreme Court).

To be sure, the Bolt, Nut and Rivet Association is but a single case in the diverse economy of the 1920s. Nonetheless, key actors at the time saw it as a critical case. Graham and his associates attempted to institutionalize their plan by enlisting other sectors and the state to the principles of open price association. Justice Department officials singled out the Graham Plan because they saw its potential for diffusion. And, despite the supposed relaxation of the law at mid-decade, the state moved successfully against similar associations in sanitary pottery, furniture and wood products (Stern 1994). In short, the evidence shows that neither enforcement problems nor American exceptionalism in state or culture explains the failure of open price associations.

The victory of Court over commission, Justice Department over association, and economists over cost accountants was not ensured by background conditions. A substantive contest over the place of associations in the political economy not only divided these institutional actors from one another, it divided them from within. And if the outcome by 1929 was against open price associations, within two years it was reversed (in the National Industrial Recovery Act). If anything, the Bolt, Nut and Rivet case illustrates the ongoing struggle among Americans over institutions *between* state and market. Still, the failure to fashion a temporary settlement undermined the experiments to forge communities of competitors in American manufacturing in the 1920s.

Notes

1. I emphasize culture over other factors because it figures prominently in the literature on two debates emphasized in this paper: the causes of antitrust and the solutions to capitalist collective action problems. On the first, antitrust has long been a marker for American exceptionalism in this sphere. On the second, culture or norms of cooperation and individualism figure prominently in current debates over collective action problems. To be sure, other explanations of antitrust include material conditions and institutions. But these also face similar problems to cultural explanations, namely, they fail to explain why influential advocacy for associations came from *within* the antitrust debate or why support for that position can be found among a such a wide array of institutional actors, from professionals to regulators, judges, and managers from both “center” and “peripheral” industries. For a more extensive critique of the new institutionalist interpretations of regulation on these grounds, see Berk 1994a: 8-11.
2. There is a growing multidisciplinary literature that demonstrates that trust is a precondition for all economic action in markets. See for example Best (1992); Gambetta (1988); Granovetter (1985); Hirsch (1977); Wilkinson and You (1994); Sabel (1993 and 1994).
3. This section is drawn from Berk 1994b.
4. Eddy (1912: 122n1) adds that the experience of German cartels demonstrated that enforcement did not resolve fundamental problems. Effectively policed by the state, the German steel combine nonetheless fell into a protracted crisis. Faced with overcapacity caused by high prices, members pressed one another into a stalemate over quotas.

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