

The State, Regulation and the Economy

An Historical Perspective

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4. Origins of the myth of neo-liberalism: regulation in the first century of US railroading*

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Laissez faire ... has taken an exaggerated hold on the public imagination, and has been regarded as a fundamental axiom of economic science, when it is in fact only a practical maxim of political wisdom, subject to all the limitations which experience may afford. (Arthur Twining Hadley 1903 p. 14)

INTRODUCTION

Neo-liberalism has two components. One is historical, and it revolves around the idea that advanced economies – particularly those of Britain and the US – developed under conditions that are best characterized as *laissez-faire*. The other is definitional, and it revolves around the idea that one group of industrial policies can be defined as ‘non-interventionist’ (that is, those that reinforce the unabated competition of free markets) while another group can only be defined as ‘meddlesome’ (that is, those that contravene free markets). Neo-liberalism combines these components as follows: Britain and the US became economic giants by allowing free markets to build their respective economies and by embracing non-interventionist policies. Other nations have obtained – or will obtain – similar results by following the examples of Britain and the US. Put another way, neo-liberalism posits that economic reality conforms to transcendent laws and policies that reinforce such laws lead to growth and prosperity. This position has gained staunch support in segments of academia and government (see Adams and Brock 1991; Eisner 1991; Sciulli 1999; Shonfield 1965; Yonay 1998).

Much scholarship reveals that neo-liberalism is at odds with the reality that it describes. Classic analyses reveal that the initial burgeoning of the British and US economies occurred under policies that were antithetical to free markets (see Goodrich 1960; Handlin and Handlin 1947; Polanyi 1944). Comparative research finds that nations have attained advanced economies and prosperity under a variety of policies, including those that neo-liberals would clearly label

as 'meddlesome' (Hall 1986; Hicks and Kenworthy 1998; Katzenstein 1984). Finally, a growing literature demonstrates that markets do not conform to transcendent laws but, instead, vary widely by social and historical context (see Zelizer 1988; Zukin and DiMaggio 1990); industrial policy is perhaps the most salient source of this variation (Fligstein 1996; Lindberg and Campbell 1991; Zysman 1983). Neo-liberalism thus offers a myth, for its rhetoric diverges from the practices that it purports to explain (see Meyer and Rowan 1977).

In the present chapter, we extend the critique of neo-liberalism by making two arguments. The first is simple. The exceptional industrial policies found in the US emerged for identifiable political reasons, and they spawned the business rhetoric that now undergirds the neo-liberal myth. We show this by demonstrating how such policies dramatically altered business strategy and how these policies were later recast as conforming to overarching economic laws. Our second argument is only a bit more complex. US industrial policies were indeterminate because they did not stipulate the strategies that firms should adopt. Consequently, the resulting strategies were neither obvious nor inevitable but were drawn from viable alternatives. We show this by demonstrating how firms responded to policy shifts in different ways before powerful actors led them to converge in practice. Both arguments thus turn the neo-liberal myth on its head and reveal that economic activity is driven by the interplay between public policy and private interests rather than by transcendent laws.

Our arguments draw on a theoretical tradition that extends from the seminal work of Max Weber (1946, 1978) to the current neo-institutional paradigm found in organizational analysis (see Scott 1995). This tradition suggests that the neo-liberal myth is emblematic of modern times, wherein actors tend toward explanatory accounts that bear the imprint of rationality and science. That is, actors – be they academics or practitioners – portray various social realms (for example, business) as governed by natural laws just as the physical realm is. While these social laws need not be empirically accurate, and they often are not, they have very real consequences.

The Weberian tradition suggests that the neo-liberal myth parallels, and builds on, tendencies found in the realm of business. Indeed, neo-institutionalists find that business personnel glean 'laws' from experience and invoke those laws to guide their subsequent actions. Because these economic laws are cast as 'natural', they orient the tacit assumptions of managers and thereby escape empirical scrutiny. However, severe challenges to the status quo bring these tacit assumptions to the fore and force an articulation of new economic laws. Policy shifts, for example, initiate this process when business personnel must devise strategies that comply with new laws and regulations. Given the modern tendencies described by Weber and others, managers elide the impetus of policy shifts and, instead, frame their new strategies as an inevitable response to natural economic laws (see Edelman 1990, 1992). We demonstrate this articulation

and re-articulation of economic laws by focussing on early US railroading. In the process, we hope to show how the myth neo-liberalism took root in the US.

Policy Regimes and Strategies in Early US Railroading

Early US railroading provides an important case for assessing neo-liberalism. The first modern industry, railroading accounts for much of the dramatic growth of the US economy in the 1800s (Atack and Passell 1994; Dunlavy 1993). Moreover, it was arguably the industry in which current ideas about markets and management first developed (Chandler 1977; Dunlavy 1993). As Roy (1997:79) summarizes, 'If the railroad had not developed in the form that it did, modern enterprise would not have taken the institutional forms we know as corporate capitalism'.

For our purposes, what is perhaps most important is that railroading developed under two divergent policy regimes before experiencing antitrust as a *mature industry* (Dobbin 1994). During the public capitalization regime that reigned from 1825 to 1870, competition for capital and customers was often absent. During the pro-cartel regime that reigned from 1871 to 1897, competition for capital emerged and competition for customers was eventually quashed. During the antitrust regime that reigned after 1897, competition for capital was sustained while competition for customers became common. Note that railroaders fought these new policy regimes. Regulation was won by rail customers who feared the specter of European baronial tyranny: hence, the progression of policy regimes was essentially exogenous to the system of railroad economics (Hartz 1948; Lipset 1963).

We pursue our case via historical and quantitative analyses. In historical analysis, we show that each new policy regime produced a similar pattern among railroaders. They initially objected to each policy shift as a meddlesome intervention in the private economy. They next experimented with new strategies so as to cope with each policy shift. Finally, they settled on new strategies, and in the process, they came to view the newly adopted strategies – and the respective policy shifts that spawned them – as conforming to newly articulated economic laws. In sum, railroaders came to describe *divergent* policy regimes and strategies as 'natural'. The disjuncture between the rhetoric and practice of early railroaders presaged the disjuncture currently found in neo-liberalism.

In quantitative analysis, we further demonstrate that, rhetoric aside, the US did not pursue *laissez-faire*, and what it did pursue mattered a great deal to this first of modern industries. We do so by focussing on the founding and acquisition of firms. Using time-series data on some three hundred railroads, we show the palpable effects of policy regimes while controlling for profitability, demand, and other factors. The public capitalization and pro-cartel

regimes both spurred foundings and limited acquisitions, while the antitrust regimes virtually eliminated foundings and unleashed acquisitions. Thus while antitrust was later recast as a means for enforcing competition, its initial impact led to severe consolidation in the railroad industry. In subsequent years, antitrust formed the core of US industrial policy, and it provided the template for neo-liberalism (Fligstein 1990; Roy 1997; Adams and Brock 1991; Eisner 1991).

The Relevance of Policy Regimes

Understanding the effects of policy regimes on American railroading is an important task in itself, but understanding their effects is more broadly relevant because all three are empirically common. The public capitalization regime has been common in French history, from the time of Louis XIV's canal policies to François Mitterrand's high-technology policies (Dobbin 1992; Shonfield 1965); it also was used to promote early American banks, canals, turnpikes, shipyards, and textile factories (Callendar 1902; Hartz 1948; Roy 1997). The pro-cartel regime has been in force in different British and German industries since the late nineteenth century (Chandler 1990; Florence 1953). More recently, public capitalization and pro-cartel regimes have played roles in the flourishing of Pacific Rim economies (Hamilton and Biggart 1988; Johnson 1982; Wade 1990). Of course, the antitrust regime operates in most US industries today and has diffused, in some form, to other nations (Fligstein 1990; McCraw 1997). In short, our findings about business strategy under these policy regimes are potentially generalizable to many other industries, countries, and periods.

The policy regimes are also relevant because it reminds the reader that the US economy did not emerge under the *laissez-faire* regime that neo-liberals tout. Indeed, early US railroading underscores how 'un-liberal' the early American state was. The public capitalization and pro-cartel regimes were each, for a time, seen as the way of the future, and they were each cast as non-interventionist. The third regime, antitrust, is the foundation for the neo-liberal myth that now appeals to the global community. Had the largest economy in the world retained one of its earlier policy regimes, instead of enforcing the antitrust regime, we might today define '*laissez-faire*', 'non-intervention', and 'liberalism' in quite different terms.

POLICY REGIMES, RAILROAD STRATEGIES, AND ECONOMIC LAWS

In this historical section, we begin by outlining the industrial policy and business strategies that prevailed in railroading between 1825 and 1870; we then examine

how policy shocks in 1871 and 1897 altered both the strategies and economic laws espoused by railroaders. To document such changes, we draw on the letters of industry leaders compiled by Thomas Cochran (1965), the writings of state railroad commissioners, and the voluminous literature on railroading. Our story suggests hypotheses about railroad foundings and acquisitions. We spell out those hypotheses as we proceed, and then in the quantitative section, we test those hypotheses with time-series analyses of data that span nearly a century of Massachusetts railroading. In the historical section, then, we pay particular attention to state policies in Massachusetts, which were typical.

We emphasize one state because states established the relevant legal constraints for the early time period and because detailed national data do not exist before 1887. However, we heed national events and trends that affected this state. We chose Massachusetts because it was where railroading first emerged in the US, in 1825, and because it published the most complete railroad data of any state. We end in 1922 because Massachusetts ceased publishing its railroad reports.

The Public Capitalization Policy Regime, 1825–1870

Policy environment

When railroading technology came to the US in the mid-1820s, American industrial policy was marked by the following arrangement: the federal government played a small and contested role in commercial activity, while state and municipal governments played major and accepted roles (Dunlavy 1993; Scheiber 1975). This arrangement had nothing to do with notions of *laissez-faire* and everything to do with notions of democracy (Dobbin 1994). Americans feared that federal involvement in commercial activity could lead to a concentration of power that undermined democracy (Sciulli 1999), while they viewed the involvement of local governments as the incarnation of democratic self-rule (Lipset 1963; Tocqueville 1945). Such local involvement occurred as state and municipal governments, in efforts to build their respective economies, used public monies to stimulate a wide range of commercial enterprises (Handlin and Handlin 1947; Kennedy 1963). Local governments proffered loans, stock subscriptions, land grants, and public bonds to railroads (Cleveland and Powell 1909; Dunlavy 1993; Ripley 1912).

Two factors reinforced the proffering of public monies to railroads. The first entailed the competition between locales. State legislatures pursued economic vitality by promoting competition *against* other states rather than competition *within* their respective states; as a result, they did not want to fall behind in railroad construction (Goodrich 1949; Scheiber 1981). Massachusetts politicians, for example, were determined to build railroads westward so as to compete with the railroads sponsored by New York, Pennsylvania, Maryland,

Virginia, the Carolinas, and Georgia (Massachusetts, General Court 1828). Municipalities were equally sensitive to competition: 'No ambitious town could stand idly by and see a new railroad go to a rival place. There was no option but to vote bonds' (Ripley 1912:38). The second factor was the initial lack of private capital. Investors hesitated to fund railroads because lines were often built in anticipation of demand and, hence, did not guarantee profits (Cleveland and Powell 1909; Hadley 1903). State and municipal governments, by contrast, expected that public monies would stimulate demand for railroads and would spur subsequent economic growth (Adams 1893; see also Massachusetts, General Court, 1828). Consequently, local governments were generous in their funding; they provided capital for establishment and for operational costs. State governments were equally generous with railroad charters; they granted companies exclusive monopolies over their tracks (Dobbin 1994), and they sometimes granted temporary monopolies over geographic areas (Cleveland and Powell 1909).

US railroading emerged and expanded under a policy regime that embraced public capitalization of private companies. States and municipalities were the primary architects of this regime, as both focussed on stimulating rather than regulating commercial activity (Shonfield 1965). Railroaders responded to this regime with founding and acquisition strategies oriented toward the public trough and with pricing strategies that exploited monopolies and minimal regulation. The public capitalization regime found in the United States, however, was not inevitable. Vibrant railroad industries likewise developed in countries that eschewed public capitalization, such as Britain and Prussia, and in countries that lacked privately owned railroads, such as Belgium and France (Dobbin 1994; Dunlavy 1993; Roy 1997).

Railroading strategies

Railroaders prescribed a founding strategy based on the availability of public capitalization, thereby curtailing competition for private capital (Hartz 1948; Stover 1970). Because most locales sought to capitalize only one railroad, railroaders identified those locales that lacked service and they sought aid from each one (Cleveland and Powell 1909). Sometimes they even initiated bidding wars between locales that desired rail service (Roy 1997). Fortunately for railroaders, numerous locales were willing to fund the establishment and operation of railroads (Goodrich 1960; Ripley 1912). By 1871, Massachusetts and its municipalities provided railroaders with nearly 14 million dollars (Cleveland and Powell 1909). Over a comparable period, states and municipalities in every region of the country accounted for at least one-half of US railroad capital. The vast majority of railroads benefitted from public capital, and all major railroads had done so (Dunlavy 1993; Goodrich 1960, 1968). Given such efforts to stimulate railroads, we expect the following:

Hypothesis 1: The availability of public capital will greatly boost the founding of railroads between 1825 and 1871.

Railroaders prescribed a delimited acquisition strategy that likewise was attuned to public capitalization. On the one hand, state and municipal governments viewed the local railroads that they capitalized as integral parts of their respective economies, and they resisted the control of these lines by distant railroads that might not heed local interests (Ripley 1912; Cleveland and Powell 1909). Rather than expand their existing lines via acquisition, railroaders typically established new railroads that remained independent so that each could return to local government for capital infusions to cover losses (Goodrich 1960; Roy 1997). Small wonder that the average Massachusetts railroad operated less than 40 miles of track in 1870, nearly 50 years after the genesis of US railroading (Massachusetts, Board of Railroad Commissioners 1871). On the other hand, local governments welcomed acquisitions under certain circumstances. For instance, they would encourage prospering railroads to buy and operate failing railroads, thereby preventing the disruption of local rail service. Some local governments went so far as accepting little or no remuneration for the purchase of their stake in a failing railroad (see Handlin and Handlin 1947). Railroaders thus advocated the purchase of failing railroads as a low-cost means of acquiring new routes. The following hypothesis may seem trivial, but below we suggest that under the antitrust regime, railroads that performed poorly were *not* more likely to be acquired.

Hypothesis 2: Between 1825 and 1871, railroads that performed poorly were more likely than others to be acquired.

In the wake of government largesse, railroaders adopted pricing strategies that responded to minimal regulation rather than competition. Given that most locales – apart from large cities – capitalized only one line, most railroads held service monopolies before 1850. Pricing strategies at this time, then, were likewise monopolistic. The potential for competition emerged during the 1850s as the tracks of various railroads began to cross (Dunlavy 1993). This meant that customers could now reach destinations via a number of different railroad firms. The situation, however, did not lead to an unabated competition for customers.

The absence of pricing regulations enabled two strategies that curtailed competition for customers. First, railroads practiced ‘rate discrimination’: they charged low rates for transport between the large cities at their endpoints, which were served by multiple railroads, and high rates for transport to isolated towns along their routes, which were typically served by one railroad (Adams 1893; Ripley 1912). That is, they discriminated against passengers and freight that traveled *short distances* on monopoly routes, and they discriminated in favor

of those that traveled *long distances* on competitive routes. 'It has long been a favorite object with me', wrote the director of Massachusetts' Western Railroad, 'to attract passengers from greater distances ... by ticketing [them] through at reduced rates' (from Cochran 1965:263). Second, railroaders co-operated to ensure that rates on competitive routes did not drop too low. In the 1850s, for example, freight agents for Massachusetts railroads held meetings to fix prices (Adams 1893; Dunlavy 1993). Their efforts were indicative of a general tendency. As one railroader surmised, in 1863, 'it has come to be the fashion in these days ... to strike hands to prevent and swallow up competition' (from Cochran 1965:471). Thus competition for customers was offset by rate discrimination, which subsidized competitive routes with revenues from monopoly routes, and it was contained by cooperative agreements between railroads and their agents.

Naturalization of policy and strategy

In the earliest years of railroading, *laissez-faire* had yet to appear in the lexicon of state and municipal governments (Dunlavy 1991; Lipset 1963). Local governments embraced 'meddlesome' policies in order to stimulate their respective economies. Such policies, furthermore, had widespread public support. Pennsylvania's Chief Justice epitomized this when he wrote, 'To aid, encourage, and stimulate, commerce ... is a duty of the [states] as plain and as universally recognized as any other' (quoted in Hartz 1948:304).

US railroading emerged amidst a policy regime that made public funding and monopoly privileges commonplace (Cleveland and Powell 1909). Railroaders operated on the assumptions that they could routinely turn to governments for capital and that they would not compete directly with other railroads (Cochran 1965). When the potential for customer competition emerged, they embraced strategies that mitigated competition. Thus, railroaders – like local governments – did not have an idealized view of free markets. They instead saw extant policies and strategies as natural. Albert Fink (1979 [1876]:57) encapsulated such a view when he wrote about rate discrimination, 'the nature of things make them necessary ... It can not be maintained that it is the duty of the common carrier to equalize these existing inequalities at his own expense'.

The Rate Regulation/Pro-cartel Regime, 1872–1896

Policy environment

American railroad policy underwent two dramatic changes that culminated around 1871. First, public capitalization of railroads ended because of widespread graft (Henry 1945; Skowronek 1982). Scores of railroaders misappropriated public funds, and by 1870, 14 states passed amendments that

prohibited government aid to all commercial enterprises. Massachusetts, for example, limited municipal railway aid to 5 percent of a railroad's total cost, and it soon foreswore state aid to new projects (Cleveland and Powell 1909; Goodrich 1960). Second, customer complaints about rate inequities prompted states to impose rate regulation. In 1867, Massachusetts responded by requiring that railroads give 'reasonable and equal terms, facilities, and accommodations' to all customers; in 1869 they created a board of commissioners to oversee disputes (Kennedy 1961:17). In 1871, Massachusetts passed the 'short haul' law, which made rate discrimination illegal. Rate regulation by state commission quickly became common across the US (Massachusetts, Board of Railroad Commissioners 1881; Sanders 1981; Wilcox 1960).

The end of public capitalization and the introduction of rate regulation produced a financial crisis for railroaders: they could no longer rely on public monies for costs of establishment and operation, and they could no longer charge high rates on exclusive routes to offset low rates on competitive routes (Goodrich 1960). Railroaders responded in two notable ways. First, they resisted the policy shift and charged that rate regulation was unconstitutional. The Massachusetts Supreme Court would render that response ineffective; it ruled that, because of the benefits associated with their state-granted charters, railroaders were subject to rate regulation (Massachusetts, Board of Railroad Commissioners 1881). Second, they experimented with new strategies – initially emphasizing predatory strategies before settling on cooperative strategies. Their eventual reliance on cooperation marked the end of their crisis.

US railroading eventually thrived under a policy regime that enforced rate regulation and, as shown below, tolerated collusion. Financiers and public officials shaped the response of railroaders by discouraging cutthroat competition and by encouraging reliance on cartels. Besides their cooperative pricing strategy, railroaders would respond to this regime with founding and acquisition strategies that were also attuned to cartels. The rise of this new regime, however, was not inevitable. In the face of graft, the US government could have expanded its control of railroads, as the French state had done, rather than reducing its fiscal involvement (Dobbin 1994).

Railroad strategies

Railroaders experimented with business strategies designed to overcome the financial crisis wrought by the policy shift. We outline how they responded with several types of strategies before converging on one. In the process, we show that policy did not overdetermine railroad strategy.

First, railroaders responded with pricing strategies that were meant to damage, if not eliminate, competitors. William H. Vanderbilt offered rebates to firms that shipped large amounts of goods (for example, oil companies), thereby enticing large shippers away from competing railroads. Such rebates soon

became commonplace, as other railroads reluctantly followed suit (Cochran 1965). In Massachusetts, competition for large shippers occurred ‘through well-understood systems of agencies, rebates, drawbacks, underbilling, etc.’ (Massachusetts, Board of Railroad Commissioners 1878:40). Jay Gould of the Erie devised another form of predatory pricing. His railroad would offer below-cost rates; this would force less-endowed competitors to follow suit and, in turn, likely expire. Many railroads imitated Gould’s strategy, fearing that the growing number of competitors left them little choice (Adams 1893; Bruchey 1990).

Strategies of predatory pricing eventually waned because of the reticence of railroaders and the ardent opposition of financiers. While some railroaders embraced predatory pricing with enthusiasm – particularly those with resources to weather rebates and below-cost rates – others looked askance at such strategies (Cochran 1965). The latter group noted that predatory pricing could indeed drive competitors to bankruptcy, but it did not drive them out of business. Bankrupt firms continued to operate because their primary asset – the road itself – could not be transferred to other uses (Cochran 1965; Hadley 1903; Chandler 1977; Roy 1997); furthermore, these desperate companies would offer rock-bottom prices to win business (Adams 1893). ‘The New York Central is undoubtedly powerful enough to push both the Pennsylvania Co. and the Balt. & Ohio to bankruptcy’, observed one railroad president in 1878, ‘but if they do so, they will have a still worse competitor in insolvent companies’ (Cochran 1965). While railroaders were split on the utility of predatory pricing, financiers were united in their opposition. They saw it as inimical to their interests because their holdings in small railroads would be wiped out (Cochran 1965). Their opposition would prove influential because the end of public capitalization made railroaders dependent on private funds. Indeed, financiers only backed railroads whose strategies were compatible with the interests of finance (Roy 1997).

Second, railroaders responded with strategies to gain control of competing lines. On the one hand, Gould, Vanderbilt, and others sought control by leasing and acquiring lines that connected with their respective roads (Berk 1994). They typically did so for reasons other than expansion: ‘We bought the Road merely to get rid of competition’, wrote a railroad chairman in 1878, ‘and not with the view of adding a first class Road to our line’ (from Cochran 1965:346). On the other hand, Vanderbilt and others sought control by ‘parallel building’. They built tracks adjacent to those of their competitors. They did so in hopes of winning business for that locale and in turn damaging, if not destroying, their competitors. When discussing a bothersome road that had invaded its territory, for example, one director wrote, ‘I believe that I can stop this business immediately if the Board will authorize me to say ... that for every mile of road that they construct hereafter ... we will build a mile parallel with their main line’ (from Cochran 1965:243).

Reticent railroaders and ardent financiers once again quelled the predatory strategies that Gould, Vanderbilt and others devised. Some railroaders questioned the utility of controlling competing lines. Given that competitors served overlapping locales, the leasing and acquiring of such lines meant that railroads were duplicating service that they already addressed (see Fink 1979 [1880]). Other railroaders questioned the wisdom of parallel building. One president surmised that, 'I cannot conceive it to be a wise policy to build a Road which at the outset competes with a line already constructed and thoroughly equipped and organized' (from Cochran 1965:423). Financiers uniformly derided the intent of such predatory strategies: they would destroy small railroads, which was contrary to national interests and to the interests of financiers with diversified rail holdings. J.P. Morgan warned that the key banking houses were 'prepared to say that they will not negotiate, and will do all in their power to prevent negotiation of any securities for construction of parallel lines' (quoted in Chandler 1977:171). Railroaders heeded his warning.

Third, railroads responded by creating formal cartels, which were designed to circumvent rate regulations by buoying rates. Amasa Stone, who ran railroads in Massachusetts, Connecticut, and the Midwest, outlined the emerging view of railroad interests in 1874: 'the time will come when there will be little value in railroad property without general cooperation of competing lines' (from Cochran 1965:469). The three leading railroads in the US – the Pennsylvania, the Erie, and the New York Central – created a railroad pool that would standardize rates, and they created a central organization to enforce the rates (Massachusetts, Board of Railroad Commissioners 1878). Cartels spread quickly. Some were simple price-fixing clubs. Others pooled profits, or traffic, to guarantee that each member received its fair share of revenues (Chandler 1977; Massachusetts, Board of Railroad Commissioners 1878; McCraw 1984).

Public officials encouraged railroads to join cartels and eschew predatory strategies. Officials argued that it was not in the public interest to see railroads ruined, especially when public monies had helped build them. The courts had long found written agreements between competitors to be legal – although they would not enforce them. The US Congress had edged toward the position of the courts in 1866, when it passed a law that facilitated the sharing of rolling stock and track by railroaders; it tolerated such agreements but passed no laws that penalized railroads for breaking their written agreements (Kennedy 1991; McCraw 1984). State governments also would tolerate, if not tout, cartels. In 1875, Massachusetts' Board of Railroad Commissioners (1875:41) advocated co-operation and combined rate-making: 'an open and reasonable combination would probably be found far less fruitful in abuses than a secret and irresponsible one'. Its commissioners (1878:80) later argued that 'uncontrolled competition is but one phase in railroad development and must result in some form of regulated competition', and they encouraged railroads to establish

formal price-setting arrangements in the open. Railroaders followed such encouragement: cartels became the dominant strategy in railroading (Cochran 1965; Massachusetts, Board of Railroad Commissioners 1881).

The proliferation of cartel strategies held implication for railroad foundings. To be sure, the level would not be as high as it was under the previous policy regime: the end of public capitalization now meant that a prospective railroad had to convince financiers about its potential for profit (Bruchey 1990). Nevertheless, the security of cartels should result in a moderate level of foundings. As Albert Fink (1979 [1880]:23) explained before Congress, cartels could guarantee 'the separate existence of a great number of competing roads' by stabilizing the income of new and small railroads. We thus expect the following:

Hypothesis 3: The security of cartels will boost foundings moderately between 1872 and 1896.

The proliferation of cartel strategies likewise held implications for railroad acquisitions. Industry leaders touted acquisition as a means to police maverick railroads that broke cartel agreements. Their counsel, however, had certain qualifications. On the one hand, business writers and economists such as Henry Carter Adams (1954 [1886]) advised that railroads should pay attention to the size of capital investments when buying railroads. Asset specificity and high fixed costs would make it difficult for railroads with high capitalization to operate as effectively as railroads with low capitalization. On the other hand, Charles Francis Adams (1893) advised that a railroad that had wiped out its capital obligations through bankruptcy could be more profitable than a railroad that had not done so. The implication of the two qualifications was clear: acquire failing railroads for bargain prices and use the low marginal cost of operation to make money in cartelized regions. We expect the following hypothesis to hold. While the business rationales that inform this hypothesis differ from those found in the public capitalization regime, the predicted outcome is the same.

Hypothesis 4: Between 1872 and 1896, railroads that performed poorly were more likely than others to be acquired.

Naturalization of policy and strategy

The rhetoric of *laissez-faire* entered the lexicon of local governments, as they withdrew public capitalization and forced railroaders to compete for private capital (see Lipset 1963; Roy 1997). The rise of *laissez-faire* rhetoric belied another notable development: local governments increased their regulation of railroads via railroad commissions and 'short haul' laws. The political establishment and citizenry saw the end of public capitalization and the onset of rate

regulation as natural responses to the graft of railroaders and to their abuses of monopoly privileges (Dobbin 1994).

Railroaders initially objected to the new policy regime, but after embracing cartel strategies, they viewed it as reinforcing natural laws of railroad economics. Albert Fink once deemed rate discrimination as natural and hence resisted rate regulation (1979 [1876]); he *now* represented conventional wisdom when he argued that no justification existed for rate discrimination (1979 [1880]). Others concurred and heralded the naturalness of railroad co-operation and unnaturalness of railroad competition. The benefit of competition, wrote one president in 1877, 'applies to most business but it does not apply to Railroads' (from Cochran 1965:161). Charles Francis Adams (1893:80) would likewise write in 1877 that, for railroads, 'the recognized laws of trade operate but imperfectly'. Another president wrote, 'There cannot be permanent competition between Railroads. Legislation can no more establish permanent competition ... than it can nullify the laws of gravitation' (from Cochran 1965:342). Such comments were typical of both the rhetoric and practice of railroaders.

In sum, by cutting off railroads from the public trough and by regulating rate inequities, local governments undermined the tacit assumptions of railroaders and forced them to articulate new economic 'laws'. Railroaders responded with three types of strategies, and for political reasons they settled on cartel strategies as resonating with the economic laws of railroading. Moreover, they argued that the extant policy regime naturally followed from these natural laws.

The Antitrust Policy Regime, 1897–1922

Policy environment

Two federal acts threatened cartels: the Interstate Commerce Act of 1887, which governed railroading, and the Sherman Antitrust Act of 1890, which governed industry more widely. Both were adopted to protect the economic liberties of small enterprises and consumers by preventing the 'restraint of trade'. The impetus for both acts was not, as some have since suggested, to create competition. The idea was to curtail the power of large firms and their combinations, which Americans feared as undemocratic (McCraw 1984; Wilson 1980). In the words of Senator Sherman: 'If we will not endure a king as political power we should not endure a king over the production, transportation, and sale of any necessities of life. If we would not submit to an emperor we should not submit to an autocrat of trade' (quoted in Eisner 1991:49). Together the Commerce and the Sherman acts outlawed the co-operative arrangements that railroaders used to stabilize their industry.

The end of the pro-cartel regime and the onset of antitrust produced a managerial crisis for railroaders: they could not collude to manage competition (Chandler 1990). Railroaders responded in two notable ways. First, they

maintained that cartels were still appropriate and legal. Indeed, some railroaders lambasted the *meddlesome* character of these policies. 'Railroads either are or are not business enterprises. If they are ... it seems obvious that Government must leave them alone commercially' (from Cochran 1965:440). In 1897, the US Supreme Court went against this position and ruled that collusion was indeed illegal (Binder 1988). Second, they experimented with a range of strategies – exploring both predatory and co-operative strategies before settling on consolidation strategies. The triumph of consolidation strategies marked the end of the managerial crisis.

The rail industry continued to expand under a policy regime that outlawed cartels and, as a result, heightened competition for customers. The federal government was the architect of this regime, as individual states were in no position to regulate railroads that spanned numerous states (see McCraw 1984). Financiers shaped the response of railroaders by continuing to discourage cutthroat competition. The consolidation strategies that they would embrace had other ramifications: foundings came to a virtual halt, while the largest railroads acquired railroads representing the range of profitability. The rise of the antitrust regime, however, was not inevitable. Rather than dismantling co-operation between railroads, the federal government could have strengthened cartels by legally enforcing their agreements – as US railroaders had requested and as the British government had done with its expanding railroad industry (Dobbin 1994; Fink 1979 [1880]).

Railroading strategies

Railroaders experimented with strategies in order to overcome the managerial crisis that first materialized with the Commerce Act and later came to fruition with the Supreme Court enforcement of antitrust in 1897. We outline how they responded with three types of strategies before converging on one. Once again, we show that policy did not overdetermine the strategies of railroaders

First, railroads responded with dramatic rate reductions designed to drive competitors out of the market. 'The Interstate Law is responsible for the existing rate war', surmised a railroad president in an open letter, 'Pooling ... has been prohibited and nothing provided to take its place' (from Cochran 1965:447). The rationale for the rate war hearkened back to the 1870s: hardy firms might prosper by driving their competitors out of the market to create a monopoly. However, the lessons from the 1870s still held. Rate wars did not clear out competitors because, in the words of one economist, a railroad can 'be used for one narrowly defined purpose, and for no other. The capital, once invested, must remain' (Hadley 1903:192). As in the 1870s, then, most bankrupt roads did not abandon operation. Instead, they became more competitive after bankruptcy wiped out their capital obligations (see Roy 1997). Meanwhile financiers with diversified railroad holdings opposed rate wars that would bankrupt many of

the firms in which they held stock, and they coerced railroaders to abandon such cutthroat competition (see Chandler 1977; Roy 1997).

Second, railroaders responded by continuing their reliance on cartels, particularly those involving the collective fixing of rates. J.P. Morgan, for example, responded to the Commerce Act by restructuring the Southwestern pool into a rate-fixing club and proclaiming the club legal (Chandler 1977; Cochran 1965). Railroaders across the country followed Morgan's lead. While various rate-fixing systems emerged, perhaps the most common was to designate a weak railroad to set prices on a route (Hilton 1966; MacAvoy 1965; Ripley 1915).

Railroaders initially continued their cartel strategies because of the ambiguities of antitrust policies and because of their successes in courts. Regarding the Commerce Act, many railroaders were not certain that it actually undermined cooperative arrangements. As one railroad president wrote to another, 'Kindly advise me whether or not in your opinion the passage of the Inter-State Commerce Bill will ... abrogate the existing arrangements between the various lines working between Boston and New York' (from Cochran 1965:290). Railroaders also fought the Commerce Act in court for a decade and won 15 of 16 cases that reached the US Supreme Court. They had hopes, then, that the act would be struck down (Stover 1970). Regarding the Sherman Act, railroaders and others considered the vague language and absence of a means of enforcement (no funds were allocated) to be auspicious (Eisner 1991). Thus between 1887 and 1897, many railroads remained in cartels of some sort, albeit in unstable ones because the federal government continued its refusal to enforce inter-firm agreements (Bittlingmayer 1985). But in 1897, the US Supreme Court's *Trans-Missouri* decision reversed the tide by upholding the central tenets of both the Commerce and the Sherman acts. It explicitly outlawed pooling and price fixing (Binder 1988). Cartels of all sorts thereby met their demise.

Finally, railroaders responded by steering a middle course between cooperative strategies, which were now illegal, and cutthroat strategies, which raised the ire of financiers. The largest railroads avoided rate-wars by acquiring roads, even when those railroads were geographically distant from their current roads (see McCraw 1984). Many of the remaining railroads likewise avoided rate-wars by selling out before ruinous competition began. As would be the case for manufacturers, the mere possibility of pricing battles prompted many railroads to exit rather than fight (Roy 1997). Ironically, consolidation strategies followed the letter of antitrust law. After the Supreme Court enforced the Commerce and the Sherman acts, railroaders could not manage competition via co-operative arrangements; they could do so, however, via merger and acquisitions. It was only in the wake of later antitrust law that mergers became problematic (Fligstein 1990). Consolidation strategies thus appeased the concerns of both public officials and private financiers.

Consolidation strategies had a notable impact on railroading foundings. Incumbent railroads, rather than new ones, were typically responsible for the expansion of railroad service. As one railroad president advised, 'it is wiser to buy existing Roads than to build new ones' (Cochran 1965:320). The annual reports of Massachusetts indicate that others concurred with the logic of such advice. Figure 4.1 shows that the foundings of new railroads came to a virtual halt, while Figure 4.2 shows that the mileage of Massachusetts railroads continued to climb while the number of railroads declined. This suggests the following hypothesis:

Hypothesis 5: The rise of consolidation strategies will dampen foundings after 1896.

Consolidation strategies likewise had a notable impact on acquisitions. In the 1890s, railroads representing one-eighth of all US mileage (25 000 miles) merged (Ripley 1915). New England railroads were little affected by these mergers, in which competitors for business between the East Coast and the Mid-West combined (Ripley 1915). Figure 4.3 shows, for example, that Massachusetts did not have a rash of mergers following the Supreme Court ruling of 1897. Nevertheless, the Court's enforcement of antitrust changed the logic of mergers for all railroads, even those located in New England. On the one

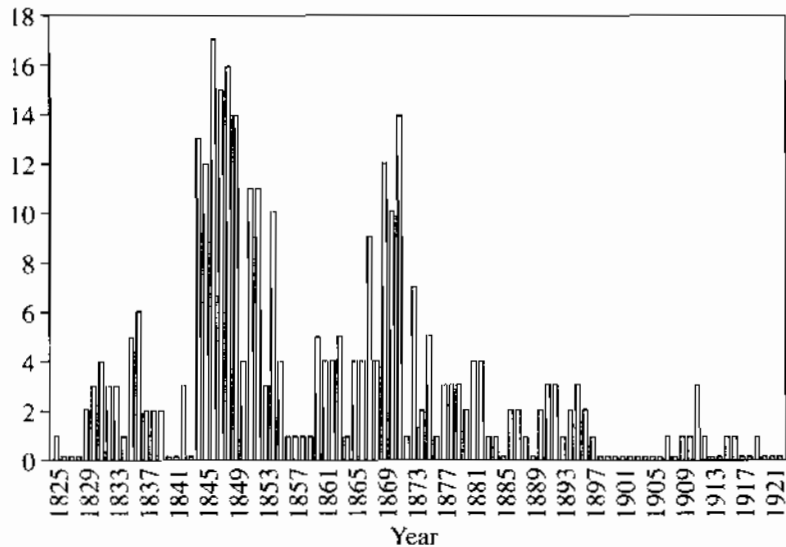


Figure 4.1 Railroad foundings

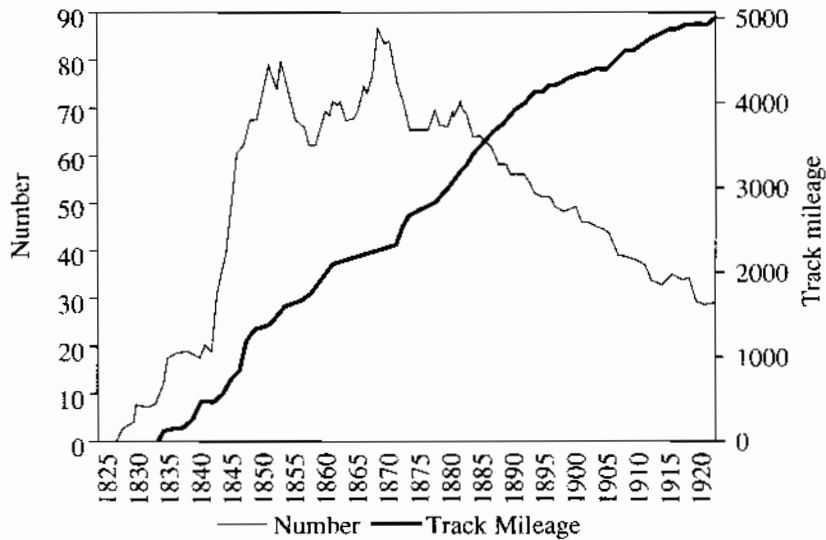


Figure 4.2 Number of railroads and track mileage in Massachusetts, 1825-1922

hand, railroads now bought railroads to build and expand their systems (McCraw 1984). The performance of the acquired road, then, had little bearing in their acquisition calculus. On the other hand, industry dominance and acquisition now went hand in hand. A declining number of firms dominated the industry, in part, by acquiring an expanding number of railroads (see Bittlingmayer 1985). These developments suggest the following hypotheses:

Hypothesis 6: Between 1897 and 1922, the performance of a railroad will not affect the likelihood of its acquisition.

Hypothesis 7: Between 1897 and 1992, rising concentration (that is, the extent to which a few firms dominate the industry) will increase the likelihood that a given railroad will be acquired.

Naturalization of policy and strategies

Railroaders had carefully monitored the political maneuverings that preceded the Supreme Court ruling of 1897. As legislation moved from state governments to the federal government (Eisner 1991), concern was rampant among railroaders (Dobbin 1994). When the Commerce Act neared its passage, for example, one railroader lamented that it was a 'cross between socialism and

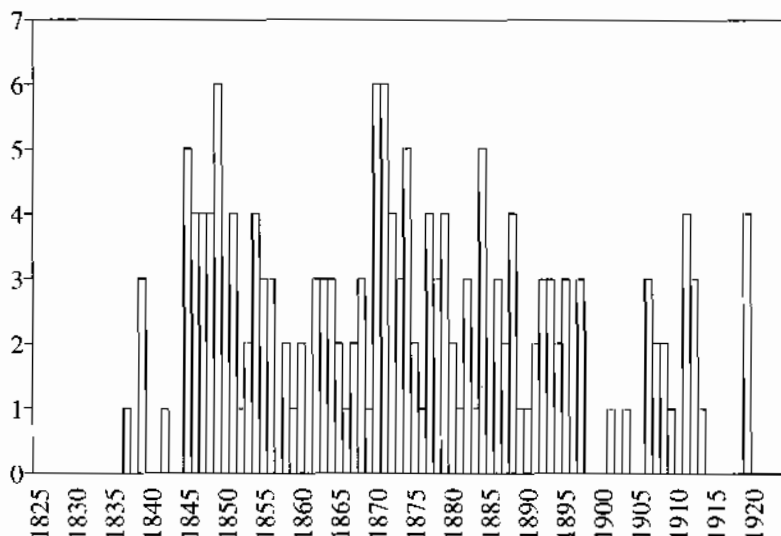


Figure 4.3 Massachusetts railroad acquisitions, 1825–1922 (n = 167)

paternalism ... this assumption of the right to manage private property by Government Officials' (from Cochran 1965:342). Others feared that the Commerce Act departed 'from well known and natural laws of trade' (from Cochran 1965:301) and that it would reap the 'danger of meddling with commerce' (from Cochran 1965:401).

The concern of railroaders regarding the Commerce and Sherman acts eventually gave way to acceptance, particularly after the Supreme Court ruling of 1897. C.F. Adams, Henry Carter Adams, Albert Fink and others had long suspected that railroading would consolidate if co-operative arrangements were prevented or ignored (Fink 1979 [1880]; McCraw 1984; Skowronek 1982). As their suspicions were borne out, railroaders went a step further and viewed their industry as both inherently competitive and naturally monopolistic. Because of these conditions, wrote Adams (1893:121), 'the effect of competition is ... to bring about combination and closer monopoly. The law is invariable. It knows no exception'. Consolidation strategies, then, were merely a natural response. One president wrote that the 'law of Railroad nature, namely that each line must own its own feeders. This law, like other natural laws may work slowly, but it is the law nevertheless' (from Cochran 1965:433). The idea of a natural monopoly, in effect, emerged as a corollary to the notion of the 'free market'. It supported the general idea that competition is natural but it explained why it could be lacking in railroading.

In sum, the outlawing of cartels by the federal government undermined the tacit assumptions of railroaders regarding the naturalness of cooperation. Railroaders responded with three types of strategies, before public officials and financiers winnowed this range to one type: consolidation strategies. While initially resisting the ‘meddlesome’ intervention of antitrust, railroaders developed new tacit assumptions: antitrust and consolidation reflected the natural condition of railroading. Thus it was through this naturalizing process that railroaders and others came to view antitrust – which was adopted for political reasons rather reasons of economic efficiency – became part of the *laissez-faire* lexicon (see Eisner 1991; Wilson 1980).

TESTING THE EFFECTS OF POLICY ON FOUNDINGS AND ACQUISITIONS

We have argued that under each policy regime, railroaders settled on one broad type of strategy and they articulated economic laws to explain extant policy and strategy. The third policy regime that they addressed, antitrust, was especially important: it became the foundation of the modern American economy (Fligstein 1990; McCraw 1997) and it shaped modern economic theory (see Adams and Brock 1991; Eisner 1991; Skowronek 1982). To demonstrate that the strategies that railroaders advocated were more than rhetoric, we quantitatively test the hypotheses detailed above. We bolster our analysis by deriving control variables from the research of population ecologists and industrial organization (IO) economists.

Control Variables

The work of ecologists and IO economists has import for our analysis. Both groups make clear predictions about factors that spur the proliferation of new firms. Ecologists make explicit predictions about factors that affect organizational failures of all kinds. Below we examine one class of failure: acquisitions. IO theorists make explicit predictions about factors that predict acquisitions.

Ecologists have found that sheer numbers shape both foundings and acquisitions. First, the total number of firms in the industry (density) has an inverted-U-shaped effect on foundings. As the number of firms rises, the legitimacy of the industry is established and new firms gain access to customers and capital. As density continues to rise, competition kicks in and fewer firms are founded. Second, density likewise has an inverted-U-shaped effect on failures. Third, the number of foundings shows an inverted-U-shaped effect on the subsequent number of both foundings and failures. This occurs as rising

numbers signal a hospitable environment, but very high numbers signal a crowded industry. Finally, the prior number of failures shows an inverted-U shaped effect on current foundings; rising numbers make room for future entrants but excessively high numbers denote a volatile industry (Carroll and Huo 1986; Delacroix and Carroll 1983; Delacroix and Solt 1988; Hannan and Freeman 1989; Tucker et al. 1990).

Ecologists have also found that resource availability and industry composition have an impact on foundings. First, capital availability and the health of the economy each show a positive effect on foundings, as both facilitate access to resources (Hannan and Freeman 1989). Second, in industries where a firm's success depends on the size of its total network (for example, telephones, railroads), industry size has a positive effect on foundings (Barnett and Amburgey 1990; Barnett and Carroll 1987; Hannan and Carroll 1992). Finally, ecologists find that when a few firms dominate an industry, new firms proliferate to meet the peripheral demand that dominant firms ignore. That is, industry concentration has a positive effect on foundings (Carroll 1985; Hannan and Carroll 1992).

Ecologists have also found that the age of a firm affects its likelihood of failure. New firms are susceptible to failure because they lack resources, experience, and stable connections to customers and suppliers (Baum 1998).

IO economists have considered the effects of competitive processes on market entry and acquisitions (Bain 1956; Stigler 1968). First, in industries characterized by high fixed costs, such as railroading, capital accumulation reduces production costs for incumbents, thereby making it difficult for new entrants to compete. They expect the opposite of what ecologists predict: capital accumulation will have a negative effect on foundings and a positive effect on acquisitions (Stackelberg 1952; Tirole 1988). Second, in industries with economies of scale, concentration is a threat to new firms because it means that their competitors enjoy economies of scale (Bain 1956; Shepherd 1979). Concentration will have a negative effect on foundings and a positive effect on acquisitions. Third, failing firms are most likely to sell out, so that their owners can reinvest the proceeds in profitable ventures. Profitability will be negatively associated with the likelihood of being acquired (see Marris 1964; Weir 1997). Finally, firms are at greater risk when the economy is faltering. Gross state product will be negatively associated with acquisition (Beckett 1986; Gort 1969).

Data

We have complete data on foundings and acquisitions from 1825, when the Granite Railway won the first US railroad charter, through 1922. We examined each of the state's annual railroad reports for evidence of foundings and acqui-

sitions (Massachusetts, Committee on Railways and Canals, 1838–1856; Massachusetts, Secretary of the Commonwealth, 1857–1869; Massachusetts, Board of Railroad Commissioners 1869–1922). Next, we cross-checked founding and acquisition dates in the commonwealth’s annual Acts and Resolves of the General Court (1825–1922), which contains copies of rail charters. Finally, we cross-checked once again for the early period in Henry Poor’s *History of the Railroads and Canals of the United States of America* (1860). There were 318 railroads chartered between 1825 and 1922, excluding charters granted to local street car lines and those granted to incumbent firms when they acquired other firms or entered receivership. There were 167 acquisitions during the same period. We truncated the analysis in 1922 because Massachusetts ceased publishing annual reports in that year. Most covariates come from the same published Massachusetts sources.

Methods

We used negative binomial regression to model railway foundings. Although analysts commonly use Poisson regression to model annual event counts, Poisson regression depends on the assumption that the conditional variance and mean of the number of events are equal (Barron 1992; Cameron and Trivedi 1986). A *t*-test of the hypothesis that the overdispersion parameter, α , differs significantly from zero verified overdispersion in every equation we report below, confirming the need for negative binomial analysis (Barron 1992). We derived the negative binomial estimates by maximum likelihood estimation using the software package LIMDEP. Given that the first year of our series is constrained to have one founding (that is, that of the Granite in 1825), we begin the founding analysis in the subsequent year. We thus analyse the incidence of foundings from 1826 to 1922.

We used loglinear event-history models, estimated with SAS, to model railway acquisitions (Allison 1995). We modeled factors that predict the acquisition of a railroad. We interact binary variables representing periods with other variables to represent the effects of those variables within periods. The 318 railroads in our population of Massachusetts railroads experienced a total of 167 mergers and yield a total of 4818 annual spells. Because of missing values on net income, some analyses do not utilize the full 4818 spells.

Findings

In analysing both foundings and acquisitions, we entered the variables in blocks. First, we enter the variables representing the ecological controls. Then, we enter the variables representing the IO economic controls. Finally, for the sake of parsimony, we enter our policy variables along with all controls that remained

significant; furthermore, this last block includes a time-trend variable, so as to demonstrate that the policy effects are not merely capturing secular trends. When we have alternative specifications for a given variable, we report the results from the specification that showed the strongest effects (see Table 4.1). When the results for alternative specifications were roughly identical, we report results for the specification most frequently used in previous studies.

Results of the negative binomial regression support our predictions about the effects of policy on railroad foundings (see Table 4.2). First, policy regimes show robust effects on railroad foundings, even in the presence of a time-trend variable. The public capitalization regime entailed the generous proffering of public monies; it has a large and positive effect on foundings. The pro-cartel regime dampened competition for customers and created a secure environment for small railroads; it has a moderate and positive effect on foundings. Second, policy regimes condition the impact of density. Only in the presence of the policy regimes does density show its expected impact: it initially boosts foundings by expanding resource availability and then it depresses foundings by expanding competition. Third, the effect of policy regimes persists in the presence of ecological controls, two of which were significant. State railroads, including those of Massachusetts, relied on Britain for capital (Heydinger 1954; Massachusetts, Committee on Railways and Canals 1839). The availability of British capital spurs railroad foundings. The previous number of railroad failures likewise affects current foundings, but in a linear fashion rather than an inverted-U fashion. Finally, the results do not support industrial organization arguments. While capital accumulation and concentration initially show the effects expected by IO economists, both effects disappear in the presence of other variables.

Results of the event-history analysis support our predictions about the impact of policy on acquisitions (see Table 4.3). First, policy regimes mitigate the relationship between a railroad's profitability and its likelihood of being bought. We hypothesized that the preferences of local governments, in the public capitalization regime, and the preferences of financiers, in the pro-cartel regime, led railroaders to favor the purchase of failing railroads; meanwhile, consolidation strategies in the antitrust regime led railroaders to buy *both* unprofitable and profitable railroads. The interaction between the time period and profitability variables strongly supports these hypotheses, as poor profitability only mattered from 1825 to 1896. Second, policy regimes mitigate the relationship between industry concentration and acquisition. We hypothesized that concentration would only have an effect in the wake of the antitrust regime, as dominant railroads now eschewed co-operative arrangements and embraced consolidation strategies. The interaction between the time period and concentration variables strongly supports this hypothesis, as the impact of concentration occurs from 1897 onward.

Table 4.1 *Independent variables*

Variable	Definition
Log density	Natural logarithm of the number of railroads in existence at the beginning of the year
Density ²	Square of simple density
Foundings	Number of railroads chartered in previous year
Foundings ²	Square of foundings
Failures	Number of railroads that failed in previous year
Failures ²	Square of failures
Log capital accumulation	Log of total railroad capitalization in Massachusetts, in constant dollars
Concentration	Herfindahl concentration index; sum of squares of market shares of operating firms
Public capitalization, 1825–71	Binary variable for public capitalization regime
Pro-cartel policy, 1872–96	Binary variable for pro-cartel regime
Antitrust policy, 1897–1922	Antitrust regime
Profitability	Return on revenues
Demand	GSP in constant dollars
Prior-year acquisitions (in state)	Number of Massachusetts railroads acquired in prior year
Previous acquisitions (cumulative for ego)	Sum of focal firm's previous acquisitions
Size	Track operated, in miles
Age (log)	Log of years since charter was granted
Age ²	Age*age
Number of firms	Number of railroads in existence
Time trend	1–97
Capital availability (UK)	Months British economy held steady or grew in $t-1$, with years of US war activity set to zero
Specifications omitted from reported results	
Log independent density	Log of number of non-leased railroads operating at beginning of the year
Independent density ²	Square of independent density
Log population	Population of Commonwealth of Massachusetts
Log gross state product	Gross product of Massachusetts
Log mileage mass	Log of total working rail mileage in Massachusetts
Log revenue mass	Log of total railroad revenues in Massachusetts, in constant dollars
4-firm concentration	Combined market share of four largest firms
8-firm concentration	Combined market share of eight largest firms
Capital availability (US)	Months US economy held steady or grew in $t-1$, with years of US war activity set to zero

Table 4.2 Negative binomial regression estimates of factors affecting foundings, 1826–1922

	Equation		
	(1)	(2)	(3)
Variables			
Intercept	0.265 (0.583)	13.937** (2.230)	-2.778* (1.409)
Log density	-0.242 (0.487)		1.087** (0.440)
Density ² /1000	0.039 (0.116)		-0.172* (0.100)
Foundings	0.230 (0.106)		0.094** (0.038)
Foundings ² /1000	-8.064 (6.817)		
Failures	0.170 (0.128)		
Failures ² /1000	-7.447 (11.000)		
Log capital accumulation		-1.545** (0.277)	
Concentration		-3.064** (0.450)	
Capital availability (UK)			0.038** (0.018)
Public capital, 1826–1871			2.556* (1.265)
Pro-cartel, 1872–1896			1.689* (0.885)
Time trend			-0.001 (0.019)
α^2	0.519** (0.147)	0.754** (0.202)	0.250* (0.106)
Log likelihood	-200.55	-207.74	-182.32
N (years)	97	97	97

Notes: Standard errors in parentheses; * $p < 0.05$; ** $p < 0.01$; one-tailed tests.

Table 4.3 Event history analysis estimates of factors affecting acquisitions, 1825–1922

Variables	Equation		
	(1)	(2)	(3)
Intercept	-3.225** (0.545)	-22.213** (7.357)	-16.444 (10.012)
Age	-0.024* (0.005)		-0.012* (0.007)
Foundings	0.051 (0.075)		
Foundings ² /1000	-0.003 (0.005)		
Log Density	-0.091 (0.078)		
Density ² /1000	0.009 (0.005)		
Failures	0.025 (0.027)		
Failures ² /1000	-3e ⁻³ (3e ⁻³)		
GSP		-0.101** (0.036)	-0.075 (0.041)
Log capital accumulation		2.430** (0.945)	1.287 (1.387)
Net income		-0.267** (0.084)	-0.152 (0.219)
Concentration		1.617 (1.132)	7.772** (2.942)
Pre-antitrust 1825–1896			2.831 ⁺ (1.228)
Net Income* 1825–1896			-3.367** (1.172)
Concentration* 1825–1896			-7.702* (3.371)
Time trend			0.018 (0.014)
χ^2	-702.99	-554.47	-540.40
N (spells)	4695	4288	4288
N (events)	167	124	124

Notes: Standard errors in parentheses; ⁺ $p < 0.05$; ** $p < 0.01$. one-tailed tests.

Our policy findings obtain in the presence of ecological controls, with only age of firm showing a significant effect. Foundings, density, and failures do not show significant effects. They also failed to show significant effects when modeled separately. As population ecologists have generally collapsed all sorts of failures – bankruptcy and acquisition – into a single outcome variable, it may be that acquisitions are driven by different dynamics than are other forms of failure. Our policy findings also obtain in the presence of IO economic controls, three of which are significant. Gross state product (GSP) shows a negative effect, suggesting that in periods of economic decline acquisitions are more frequent. Industry capital accumulation shows a positive effect, suggesting that capital accumulation makes it difficult for firms to survive and increases the likelihood of acquisition. Net income shows a negative effect, in support of the failing firm hypothesis: firms with lower income are more likely to be acquired.

CONCLUSION

Our central argument has been driven by the Weberian notion that modern actors describe various social realms in terms of natural law. In particular, we have sought to show how under three historically specific industrial policy regimes between 1825 and 1925, railroaders prescribed three different types of strategy and that they depicted each as conforming to economic laws rather than to a particular policy regime. They thus divined three different sets of economic laws in the first century of US railroading.

These policy regimes produced different prescriptions for founding and acquiring railroads. The first policy regime, of public capitalization, led railroaders to describe railroads as enterprises designed to serve local producers and consumers and as permanently attached to local economies. This suggested that all railroads would succeed, and hence that railroads should be founded wherever possible and that thriving firms should acquire faltering railroads. The second policy regime, which favored cartels, led railroaders to describe the industry as naturally co-operative and to describe joint operation and pricing as inevitable. This suggested that cartelized railroads would prosper, and hence that prospective entrepreneurs should found railroads freely and that existing railroads should acquire faltering firms. The third policy regime, of antitrust, led railroaders to describe the industry as naturally predatory and monopolistic. This suggested that only monopolies would prosper, and hence that new track should be built only by existing railroads (that is, no new railroads should be founded) and that railroads should acquire their successful competitors as the industry became concentrated and should not acquire faltering firms.

We have shown, in quantitative analyses of railroad foundings and acquisitions, that railroads in fact behaved as railroad leaders prescribed. In the case of foundings, the first policy regime has a strong positive effect on foundings; the second a considerable positive effect; the third a negative effect by comparison. In the case of acquisitions, we find that the fact that a firm was failing predicted acquisition only before the antitrust policy regime was enforced, and that the concentration of the industry predicted acquisition only after the antitrust policy regime was enforced. These results, furthermore, remain robust in the presence of numerous controls.

Social scientists of many stripes treat economic behavior as driven by laws that make such behavior predictable across a wide range of settings. Many pay little attention to institutional conditions, assuming that they have relatively modest effects on behavior. We have shown at the very least that railroad foundings and acquisitions were influenced palpably by changes in public policy. By showing that after each policy shift railroaders experimented with at least three quite different business strategies, we hope to have shown that business strategy was worked out in political negotiations and was not over-determined by the character of public policy.

The bigger story here concerns the origins of the myth of neo-liberalism. Our most simple goal was to remind readers of what economic historians have never forgotten: the American economy did not rise under the *laissez-faire* regime that neo-liberals tout. Our more ambitious goal was to trace the origins of neo-liberal thinking to the particular history of American industrial policy. The tendency to divine natural laws to explain social behavior is common among modern actors. We found the process at work under each of three very different policy regimes. Railroaders worked hard to come up with business practices that would allow them to prosper in each of three different kinds of environments. They then worked doubly hard to divine economic principles that would explain both the policy environments and the business strategies. The principles that they found to explain the final pair, antitrust and business practices oriented to price competition, became the foundation of the neo-liberal thought that now dominates global economic discourse.

Given that under each of these policy regimes, railroaders found natural economic laws to explain economic behavior, we suspect that had either of the earlier policy regimes survived, neo-liberalism would look quite different today. American economic thought came to dominate global thinking in large measure because the United States appeared to be the best example to follow. Americans themselves were largely responsible for refining and formalizing the theory they derived from their own success story, and their peculiar variety of provincialism ensured that they would seldom encounter evidence that would challenge their assumptions. Had the Supreme Court struck down the Sherman and the Interstate Commerce acts in 1897, as some had expected it would, neo-

liberalism might now be defined by the pro-cartel policies that Britain continued to pursue into the twentieth century. The freedom to pursue production and pricing agreements with competing organizations might be the ultimate neo-liberal freedom. The idea that modern economies require interfirm co-ordination to prevent price competition that destroys productive firms might be the mantra of the World Bank.

- * We thank Jan Ottosson and Lars Magnusson for incisive comments on an earlier draft.