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THE RISE OF THE AMERICAN REGULATORY STATE: A VIEW FROM THE PROGRESSIVE ERA

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Marc T. Law & Sukkoo Kim

ABSTRACT:

We examine the rise of the US regulatory state with a specific focus on regulations that arose during the Progressive Era, the period during which state and federal governments became dominant actors in regulating economic activity. Our analysis highlights four key themes in the rise of regulation in America. The first is how a major shift in the structure of government during the mid nineteenth century preceded the rise of regulation at the state and federal levels. The second is how the forces of specialization created an environment conducive to the emergence of regulation. The third deals with the path-dependent nature of regulation. The final theme concerns the federal nature of the American political system and its implications for the rise of regulation.

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Despite being the world's largest free market economy, government regulation of economic activity is a pervasive feature of the American economy of the early twenty-first century. The foods we eat, the cars we drive, the medicines we take and the financial institutions from whom we borrow and to whom we lend are all subject to some kind of regulation. While governments from the colonial times played important roles in shaping the allocation of resources, for much of America's history regulation was local and relied on the courts. During the Progressive Era (*circa* 1880-1920), however, the scale and scope of government regulations grew dramatically. State and federal regulatory agencies became the dominant actors in the regulation of economic activities in America.

A key question for social science is why regulation of economic activity exists and why it has grown so dramatically over time. Why and how did the scale and scope of regulation expand? What political and economic forces contributed to the rise to the modern regulatory state, especially during the Progressive Era, the period when centralized state and federal governments became the nexus of regulatory activity?

For economists there are two standard theories of regulation: public interest and capture. The traditional public interest theory argues that government regulation arose to combat market failures whereas the more recent capture theory claims that producers sought regulation to restrain competition. But what factors account for the major change and growth of regulation during the Progressive Era? Were market failures more prevalent, or were key producers better positioned to "capture" industry rents through regulation? Glaeser and Shleifer (2003) suggest that the emergence of

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the regulatory state during the Progressive Era was caused by the rise of large, deep pocket firms that were able to manipulate the courts, the traditional tool of American regulation. In response, governments invented regulatory agencies to complement the court system.

In this paper we offer a new perspective. Because the use of force by the state is at the heart of all regulation, the scale and scope of regulation in America was intimately tied to the nature and form of the state. Therefore, in order to understand the rise of the modern regulatory state, we must first explore why centralized state and federal governments supplanted the courts and local governments as the loci of regulatory activity. In early America regulation was local and judicial because Americans distrusted centralized powers of government. The common law of nuisance and *salus populi* (people's welfare) tradition provided the main principles of regulation. Local courts and militia enforced these rules. Novak (1996) argues that local governments effectively used the common law to regulate public safety, trade, space, morality and public health. While it is beyond the scope of this paper to fully explain the causes of strong centralized government in America, there are reasons to believe that the causes were multifaceted. Most importantly, the rise of a more centralized government involved a major Civil War between the states of the North and the South. Accordingly, one theme this paper explores is how the rise of the modern regulatory state was preceded by a major structural shift in the form of American government during the late nineteenth and early twentieth centuries.

Another theme of this paper concerns how specialization creates an environment conducive to the rise of regulation. We argue that once the shift in the balance of power toward centralized state and federal governments set the stage for

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the rise of the modern regulatory state, regulation became an institutional response to the forces of specialization. In a dynamic market economy, specialization, technological and organizational change tilt the competitive playing field in ways that create new sets of winners and losers among producers and consumers. Regulation emerges in this environment. Sometimes, as the public interest theory suggests, these regulations help markets work better. While specialization increases the gains from trade, it also increases transaction costs because the more specialized individuals become, the less they know about the goods and services produced by others (North and Wallis 1986). Regulation, by creating uniform standards or requiring producers to disclose information about product quality, may reduce informational asymmetries, lower transaction costs, and improve the efficiency of markets. In other instances, however, regulation increases rents of politically organized constituents the expense of economic welfare. As capture theorists would argue, because regulation can create entry barriers, market participants who are harmed by specialization and technological change have an incentive to seek regulation to thwart new competitors (Stigler 1971, Peltzman 1976). To show how regulation emerges in response to specialization, we will focus on regulations that emerged during the Progressive Era, a period of rapid technological and organizational change, when state and federal regulation of various aspects of the economy began in earnest, and when the foundations of the modern American regulatory state were laid. In particular, we will discuss the adoption and evolution of railroad regulation, meat inspection, antitrust, food and drugs regulation and occupational licensing regulation.

This paper will also emphasize the path dependent nature of regulation in a dynamic market economy. Regulation, once introduced, seldom disappears. While particular statutes may be repealed, or the enforcement of particular regulations may

shift from one agency to another, in general, regulation tends to “stick.” Interests that benefit from regulation become powerful constituencies in favor of its persistence. Additionally, regulation often takes on a life of its own, serving objectives and interests that did not exist when the regulation was initially introduced (see North 1990 for a discussion of path dependence in economic history). We will use the same Progressive Era regulation case studies to show the path dependent nature of regulatory evolution.

A final theme that we will touch upon in this paper concerns the federal structure of the American political system and the rise of regulation. A peculiar feature of regulation in contemporary America is that two levels of government (state and federal) sometimes regulate the same activity. Regulation often begins at the state level, diffuses across states, and proceeds upward to the national level. A decentralized process of experimentation across space and over time often accompanies the rise of a particular type of regulation. The emergence of national regulation generally does not preclude state regulation, however. Indeed, in some instances, regulation remains at the state level.

American federalism and regulation

Since the colonies in America evolved independently for over a century and fought for independence from a perceived despotic British government, their first Constitution to form a union, the Articles of Confederation in 1781, provided for an almost non-existent central government: no federal executive, no federal courts, no federal taxes, and no federal coercive authority over states. In six short years, when

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the Articles proved too weak an instrument to bind the newly formed states, delegates were chosen to amend the Articles. The second Constitution of 1789 established a more powerful central government by instituting the executive branch, federal taxes, federal courts, and federal powers to regulate foreign and interstate commerce. But the fight over the nature and extent of the federal governmental powers implied by the new Constitution continued unabated over the next century.

When Washington became the first president under the new Constitution, the executive branch had little administrative capacity for any kind of regulatory activity: he inherited a foreign office, a Treasury Board, a Secretary of War, and a dozen clerks. When Congress created the Department of Foreign Affairs it even debated whether the president should be given the authority to remove the Secretary without the consent of the Senate (White 1948). Washington and Adams, both federalist presidents, with considerable advice from Hamilton, took actions in taxation, banking, finance, public works and military organization to establish a stronger federal government with centralized powers in the executive branch, but their initiatives were vehemently attacked by antifederalists such as Jefferson and Madison.

Thus, when Jefferson became president in 1801, the federalist movement for a stronger central government came to a halt. Indeed, the hallmark of American government throughout most of the nineteenth century was the devolution and diffusion of powers to states and localities (Skowronek 1982). For example, when bills were proposed to develop the national system of roads funded by the federal government, they were repeatedly vetoed by presidents such as Madison and Jackson who did so on the ground that federal funding violated the sovereignty of states as guaranteed under the Constitution. The diffusion of political power in America was

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most profoundly reflected in the locations of her capitals. Unlike their counterparts in Europe and Latin America, national and state capitals in America were primarily located in geographically remote small towns and rural places rather than in major cities (Galiani and Kim 2009).

Given the sovereignty of states and localities and the minimal administrative capacities of the federal executive branch during the antebellum period (White 1948, 1951, 1954, 1958), it is not surprising that regulation of the economy was left to the courts. The most important jurisdiction, however, was local and state courts rather than the federal Supreme Court. The original Judiciary Act of 1789 required federal cases to be tried by a district judge and a Supreme Court justice. When they disagreed the judgment of the district judge prevailed. As a lame-duck president Adams attempted to strengthen the role of the federal judiciary with the Judiciary Act of 1801, but the act was promptly repealed and dismantled by Jefferson (Ackerman 2005).

Since the regulation of economic activity was left to state legislatures, local governments and, most importantly, their respective courts, regulatory behavior across the states was not uniform. While systematic evidence across the states is still lacking, an historical examination of Massachusetts and Virginia suggests that political and legal institutions in these two states likely diverged from the colonial through the antebellum period (Kim 2009). In Massachusetts, the state legislatures played a more active role in the regulating the economy; additionally, Massachusetts' the legal system went from jury-based, common law to "instrumental" law. Similar developments did not occur in Virginia. Indeed, with the spread of democracy and the emergence of Industrial Revolution, state governments throughout the Northeast

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became more centralized. In these states, legislatures, judges and justices of state Supreme courts played more prominent roles. However, the main tool of regulation remained judicial.

Yet, despite the absence of a federal regulatory state to provide for uniform national regulation, Novak (1996) argues that the U.S. possessed a powerful governmental tradition devoted to the vision of a “well-regulated society” in the nineteenth century. At the heart of this society was “a plethora of bylaws, ordinances, statutes, and common law restrictions regulating nearly every aspect of early American economy and society” (Novak 1996, p. 1). Moreover, these laws were “the work of mayors, common councils, state legislatures, town and county officers, and powerful state and local judges” (Novak 1996, p. 1).

In the antebellum era, the demand for regulation was greatest in major urban areas. In 1837, the city of Chicago had no less than thirty-four regulations that ranged from the regulation of public highways, gaming, selling of spirits, to the burial of the dead. To combat epidemics, cities and states created the medical police and the board of health with broad policing powers. In courts, the common law of public nuisance was used to regulate public safety, noxious trades, adulterated food, obscenity, contagious diseases, theatres and monopolies. In regulating public safety, especially in the prevention of fire, common law of public nuisance was used to regulate the manufacture, storage and sale of gunpowder and the prohibition of wooden building in dense urban areas (Novak 1996).

With industrialization and the growth of the modern economy, however, the early American polity, whose powers were situated in localities and the courts, became unsustainable. During the Progressive Era, American political institutions

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underwent a revolutionary change where political power became centralized in state and federal governments. Yet, due to its peculiar history, an important precondition for these developments was the resolution of North-South divisions. With the military victory of the North over the South, southern insistence on states' rights receded into history and set the stage for the birth of a more centralized federal government (Bensel 1990). Without the military victory by the North, it is very likely that the rise of a strong federal government would have been long delayed. Southern slave owners had strong financial incentives to keep government powers local and state-based in order to shield themselves from national anti-slavery influences. Even with the outcome of the Civil War, however, the road to a more of centralized federal bureaucracy was difficult as centralization involved a sharp break from the established political institutions (Skowronek 1982; Nelson 1982). Thus, the rise of centralized government also involved the reform of civil administration and the reorganization of the army.

By the late nineteenth century, the Jeffersonian agrarian vision of the primacy of state and local governments became severely outmoded. The functioning of a modern economy based on manufacturing was much more complicated and beyond the simple understanding of average citizens. While scholars still do not agree on the causes American political centralization during the Progressive Era, we believe that one of the causes was a response to the greater complexity of the modern economy that required specialized knowledge (Law and Kim 2005). Professionals and specialists were required to understand the causes of diseases, chemical compositions of food and drugs as well as pricing practices of chains and large corporations. Not surprisingly, the professionals in the Progressive Era were one of the greatest advocates for a more centralized federal government (Skowronek 1982).

Yet, even with the growing powers of the state and federal governments, the early regulatory agencies reflected the historical American distrust of the powers of government. The Massachusetts Board of Railroad Commissioners, an early pioneering regulatory agency entrusted to regulate the state's railroads, possessed limited powers and relied on investigation, appeals to the public, and voluntary cooperation from the regulated (McCraw 1984). While a few Midwestern states created stronger regulatory commissions, many regulatory agencies such as the Securities and Exchange Commission (SEC), as well as the early Food and Drug Administration (FDA) adopted this "sunshine" approach. Finally, perhaps because the weak regulatory system relied on close cooperation from the regulated, regulatory agencies may have been vulnerable to "capture" by the industries that they regulated.

Railroad regulation

Many scholars trace the beginnings of the modern regulatory state to the emergence of federal regulation of interstate transportation. In 1887 Congress enacted the Interstate Commerce Act (ICA), which gave the federal government sweeping authority to regulate the rates charged by railroads engaged in interstate shipping. The emergence of the ICA followed unsuccessful attempts by several state governments to regulate the railroads. The regulatory agency spawned by the ICA, the Interstate Commerce Commission (ICC), was the first so-called independent regulatory agency. In the twentieth century the ICC eventually obtained authority over interstate trucking. In 1995 the ICA was abolished and its functions were transferred to the Surface Transportation Board.

According to the conventional historiography, the ICA was a political response to agitation by western farming interests who desired regulation to reduce the monopoly power enjoyed by the railroads. In this pseudo-public interest account of regulatory adoption, the ICA was enacted to solve a market failure arising from the fact that individual railroad companies enjoyed significant market power on particular routes. While there is some truth in this, this account is not completely consistent with the evidence. For one thing, the railroads themselves played an important role in drafting the ICA. Additionally, since Kolko (1965), it has been commonly argued that the ICC's rate setting power was used to enforce a cartel agreement among competing railroad lines.

In order to understand the forces that led to the adoption of railroad regulation it is important to consider the impact of the expansion of the railroad industry in historical context. During the nineteenth century the US railroad network grew by leaps and bounds. The total miles of railroad track in the US increased from just over 20 miles in 1830 to over 52,000 miles in 1870 and in excess of 166,000 miles by 1890. While it is important not to overstate the importance of the railroad for overall economic growth of the US economy, it is clear that the development of the railroad industry influenced the geographic distribution of economic activity and the degree of urbanization (Kim 1995; Atack *et al* 2009). By connecting far-reaching corners of the country, the railroads facilitated regional specialization and allowed products to be transported more efficiently to urban areas and coastal ports.

Farming interests were most acutely affected by the growth of the US railroad network. This was for several reasons. First, on certain routes, railroad freight charges still consumed a significant portion of the market value of crops. Accordingly, high

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transportation costs provoked protest on the part of farming interests that were, during this time, becoming increasingly politicized. Second, while competition between railroad lines as well as from canal and riverboats kept long-haul prices low, railroads were able to charge near-monopoly prices on short-haul routes. This situation also provoked reaction on the part of farmers and other short-haul shippers who paid more to transport goods for short distances (usually within a state) than long haul shippers paid to transport goods from the interior to the coast (across several states).

Farmer-based agitation resulted in state-level regulation of railroad rates. Several states enacted laws regulating railroad rates in the 1860s through 1880s, largely in response to the politically influential farm lobby that desired to use the power of the state to curb the monopoly power enjoyed by railroads over short-haul routes (Kanazawa and Noll 1994). In response to these laws, which appear to have temporarily reduced short-haul freight rates, the railroad industry challenged the constitutionality of state-level railroad rate regulation, claiming that it violated the commerce clause of the constitution. Two Supreme Court decisions played a key role in shaping the regulation of the railroad industry. In the first case, *Munn vs. State of Illinois* (1876), the court ruled that states had the authority to regulate railroad rates and other business activities. This was perceived to be a victory for farming interests. In the second case, *Wabash, St. Louis & Pacific Railroad Company v. Illinois* (1886), the court reversed its earlier position and argued that only the federal government had authority to place “direct” burdens on interstate commerce. The upshot of this decision was that states could only regulate rates on routes within their own state. This implied that interstate railroad rates were not subject to regulation.

The political response to the regulatory vacuum created by the *Wabash* case was the Interstate Commerce Act of 1887. While, as noted earlier, prior scholarship has focused either on the public interest or pure industry capture explanations for the ICA, the most widely accepted view among scholars today is that the ICA was introduced in response to pressure from multiple interest groups. According to Gilligan, Weingast, and Marshall (1989), the ICA was not purely an attempt to reduce the monopoly power of railroads, nor was it a strict cartel enforcement mechanism. In particular Gilligan *et al* argue that the ICA was designed to advance the interests of short-haul shippers and the railroads at the expense of long-haul shippers. In other words, the ICA was designed to placate the two most politically powerful groups at the time: farmers and other short-haul interests (who sought lower short-haul rates), and the railroad companies themselves (who wanted regulation to facilitate collusion over long-haul rates, and to forestall more onerous state-level regulation). These authors demonstrate that the bicameral nature of Congress, in particular the need to obtain majorities in both the House and the Senate, combined with the configuration of interests in the two Congressional chambers, required that any railroad regulation cater advance the interests of both the railroads themselves (who were influential in the Senate) and the interests of short-haul shippers (who were influential in the House).

Stock market evidence suggests that the passage of the ICA increased the abnormal returns earned by long-haul railroads and reduced the abnormal returns earned by short-haul railroads (Prager 1989; Gilligan, Marshall and Weingast 1990). This suggests that both short-haul shipping interests and the long-haul railroads expected to benefit from railroad rate regulation under the ICC. However, in subsequent decades, the ICC was gradually captured, not by the railroads, but by

shippers. Indeed, the ICC repeatedly refused to allow the railroads to raise rates in spite of evidence of increasing input costs that significantly reduced railroad profitability (Mullin 2000). Rates were kept low, and eventually the railroads were forced into insolvency (Martin 1971). This does not imply, however, that the influence of the railroads on the ICC was entirely eliminated. Evidence presented by Stigler (1971), for instance, suggests that the railroads were able to use their influence over the ICC to limited the growth of interstate trucking during the early decades of the twentieth century. Regulation, once in place, is often re-adapted to tilt the competitive playing field in response to technological changes. Clearly, however, the role that the ICC played in hindering the growth of interstate trucking was entirely unanticipated by those interests that initially desired railroad regulation.

Meat inspection and antitrust

Shortly after the ICA, Congress enacted two additional pieces of legislation that greatly increased the scope of federal regulation of economic activity: the first federal Meat Inspection Act (1891), which gave the US Department of Agriculture broad powers to inspect the safety of meat sold in interstate commerce, and the Sherman Act (1890), the first federal antitrust law.

Far more scholarship has focused on the origins of antitrust regulation than the origins of meat inspection, but the two were products of similar sets of political-economic forces. The late 1880s were a time of significant technological change in the US economy. Falling transportation costs brought about by the emergence of a national rail network, combined with technological changes that created new products

and new, large firms tilted the competitive playing field in ways that disadvantaged smaller producers and traditional products. These forces played a key role in the emergence of both antitrust regulation and meat inspection.

While conventional accounts of the Sherman Act (see Bork 1966, for instance) posit that the law was introduced in order to reduce the market power of trusts and increase economic efficiency, more recent accounts of the Sherman Act and its state-level antecedents argue that antitrust was desired by industry groups representing farmers and small firms who were at a competitive disadvantage relative to the large, multiunit firms (the so-called trusts) that were gaining market share in many industries (Stigler 1985; DiLorenzo 1985; Boudreaux *et al* 1995). Evidence provided by these scholars suggests that the trusts did not enjoy significant market power during this time, and that antitrust was generally desired by specific industries and producers who were at a competitive disadvantage relative to the trusts. Among the trusts singled out by advocates of antitrust regulation were John D. Rockefeller's Standard Oil and the large Chicago meatpacking firms (Swift, Armor, for instance).

Let us first consider the role of Standard Oil in creating a demand for antitrust regulation. The nineteenth century witnessed an enormous expansion in the market for oil. On the demand side, the growing consumer demand for oil and oil related products—most, significantly, refined lighting oil—allowed oil refiners to expand output and exploit economies of scale. On the supply side, several technological changes—the replacement of oil barrels with oil tanks, the growth of the railroad network, the invention of tank cars and the development of oil pipelines—combined with oil discoveries and the expansion of refinery capacity contributed to lower oil prices. Among oil producers at the time, Standard Oil was the industry's leading

innovator. It was among the first to replace oil barrels with oil tanks; it aggressively used oil pipelines to link oil drilling centers to urban markets; additionally, it was able to exploit its significant monopsony power over the railroads to negotiate highly favorable transport rates. As a result of these developments, Standard's share of total oil refining capacity increased dramatically, from 10 percent in 1870 to more than 90 percent a decade later (Troesken 2002).

In this environment of rapid technological change, smaller refineries were simply unable to compete with Standard Oil and the other industry leaders. Faced with the possibility of extinction, these smaller producers turned to government to tilt the competitive playing field in their favor. Claiming that Standard Oil was using its dominant position to obtain unfair advantages from the railroads, as well as to preclude entry on the part of other oil producers, smaller producers lobbied for state and federal antitrust regulation. At the federal level, small oil producers found a political ally in Senator Sherman. Sherman successfully argued in Congress that, by keeping smaller refiners alive, antitrust regulation would increase competition. The result was the Sherman Act of 1890 (Troesken 2002).

Contemporaneous with the emergence of antitrust laws were meat inspection regulations that mandated inspection of meat products prior to slaughter. Libecap (1992) has noted the connection between these two seemingly disparate regulatory initiatives. Libecap argues that political pressure for meat inspection and antitrust emerged in response to the consolidation of the meat packing industry in large Midwestern centers like Chicago. As a result of the introduction of refrigerated rail cars, it became possible to slaughter meat centrally in Chicago, and transport beef carcasses ("dressed beef") to eastern markets. This was significantly cheaper than

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shipping live cattle to eastern markets (Yeager 1981). According to Libecap, a coalition of interests—specifically, cattle raisers in western states and local slaughterhouses in eastern markets—desired meat inspection and antitrust regulation simultaneously. Cattle raisers desired meat inspection and antitrust in order to counter claims that Midwestern cattle was diseased and to reduce the perceived monopsony power enjoyed by the large Chicago packing firms, who were among the largest purchasers of live cattle. Local slaughterhouses desired the two types of regulation in order to substantiate their claims that “dressed beef” was unwholesome, and to reduce the market power enjoyed by the large Chicago packers. The rise of a centralized meatpacking industry and the effects of large packinghouses on the competitive playing field therefore also contributed to the emergence of federal meat inspection and federal antitrust regulation.

Early federal antitrust enforcement was haphazard at best. Until the early 1900s, there were relatively few antitrust prosecutions against large corporations. In fact, during the 1890s, labor unions were the most common target of antitrust enforcement under the Sherman Act. Enforcement of the Sherman Act against the “trusts” began under Theodore Roosevelt and continued under William Taft, whose administrations successfully challenged several mergers and forced the break of large companies including Standard Oil and the American Tobacco Company. The scope of antitrust regulation increased with the passage of the Clayton Act and Federal Trade Commission Act, both adopted in 1914. Under the Clayton Act, price discrimination and exclusive dealing were added as potential abuses of dominant position that may substantially reduce competition. The Federal Trade Commission Act created another antitrust enforcement agency (the Federal Trade Commission or FTC), and gave the commission authority to regulate unfair business practices. While the intent of the

FTC Act was to create a strong and independent antitrust enforcement body, in practice, the vigilance of antitrust enforcement by the FTC has dependent on the attitudes of the commissioners, as well as those of the executive office.

Food and drugs regulation

The last few decades of the nineteenth century also witnessed the emergence of food and drugs regulation. As with antitrust and meat inspection laws, food and drugs regulation began at the state level. State “pure food” laws formed the foundation for subsequent federal regulation of the food and drugs industries. What explains the rise of food and drugs regulation at this time?

Once again, specialization and technological change were important forces driving the adoption of regulation. Specialization and urbanization made households increasingly dependent on impersonal markets for their foods. Technological advances in food processing and manufacturing gave rise to new and unfamiliar food products (e.g. oleomargarine, alum-based baking powders) or food additives (e.g. chemical preservatives) that challenged the dominant position enjoyed by traditional food manufacturers and also made it possible for producers to adulterate (i.e. cheapen through the addition of impurities) food products in ways that consumers could not easily detect. At the same time, these technological changes made it possible for experts to detect food adulteration systematically.

In such an environment, a demand for regulation arose for two reasons. Technological changes that tilt the competitive playing field inevitably generate a desire on the part of incumbent producers for regulation that disadvantages the

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producers of newer and cheaper substitutes. However, these same technological changes created an asymmetric information problem about the quality of food ingredients. Because food adulteration was not easy for consumers to detect, there was a potentially productive role for regulation of product labels by experts in order to reduce informational asymmetries about food quality (Wood 1986; Young 1989; Goodwin 1999).

The regulations that emerged during this time were a patchwork quilt of state and federal laws that served both objectives. On the one hand, state and federal oleomargarine regulations were clearly producer protection laws that were aimed at protecting dairy interests from the growing popularity of oleomargarine, a cheap and viable substitute for butter in the market for spreadable oils. Laws that taxed oleomargarine sales or oleomargarine producers, or required that oleomargarine be colored pink were introduced at the behest of dairy interests who sought legislative relief from the expanding oleomargarine trade (Dupré 1999). On the other hand, state-level “pure food laws” that required the proper disclosure of product ingredients were introduced to reduce uncertainty about food quality. Evidence presented by Law (2003) suggests that general pure food laws were desired by a coalition of producers of higher quality products and politically-motivated consumers (women’s groups and members of the growing home-economics movement) who wanted regulation to solve an asymmetric information problem about product ingredients.

While food regulation began at the state level, it eventually became a federal concern. Several factors contributed to the adoption of federal regulation. First, many food products crossed state borders. Products manufactured in one state are not easily regulated at the state level if sold in another state. Second, within the federal

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government, bureaucratic entrepreneurs sought to expand the reach of federal authority. In particular, Harvey S. Wiley, the chief of the US Department of Agriculture's Bureau of Chemistry, pushed for an expansion of regulation of food products to the national level (Young 1989; Coppin and High 1999; Carpenter 2001). Finally, certain "crisis" events—specifically the publication of Upton Sinclair's *The Jungle*, with its grisly depictions of the hygienic conditions of slaughterhouses, as well as muckraking journalism about the dangers of patent medicines and proprietary nostrums—played a key role in helping to forge an effective political coalition on favor of federal regulation (Carpenter 2001; Law and Libecap 2006). The culmination of these forces gave rise to the Pure Food and Drugs Act of 1906, which outlawed the adulteration and misbranding of food and drugs products for interstate sale and eventually spawned the creation of the Food and Drugs Administration (FDA), the federal agency that continues to regulate the food and drugs industries.

Early enforcement of the Pure Food and Drugs Act was fraught with difficulties. There is some evidence that enforcement of this law under Wiley may have been used to advantage industries that Wiley himself favored—specifically, straight whiskey manufacturers and food manufacturers that did not use preservatives (Coppin and High 1999). Additionally, because the early FDA was a small agency with relatively weak enforcement powers, its ability to effectively sanction food and drug manufacturers for misbranding and alteration were limited. Facing such constraints, the FDA gradually changed its enforcement strategy. Instead of inducing compliance with the law by threatening to punish violators, the FDA offered benefits to firms in the way of quality certification and technical assistance in improving food quality. The agency was able to offer these benefits because it had considerable expertise in food science and food manufacturing. Accordingly, the early FDA played

an important role in improving food quality and in reducing informational asymmetries notwithstanding the fact that it was a relatively small agency with limited enforcement power (Law 2006).

The impact of the early FDA on the drug industry was far more limited, however. During the late nineteenth and early twentieth centuries, the dominant segment of the drug trade was in so-called patent medicines and proprietary nostrums (Young 1967). The FDA's enforcement work against this industry was devoted to regulating the therapeutic claims printed on the product labels of these products. These efforts were largely unsuccessful because the courts were often inconsistent about whether the FDA had the authority to regulate therapeutic claims, and because the patent medicine industry was large and politically influential. Additionally, because pharmacology was a relatively new science, the FDA did not have much in the way of technical expertise to offer this industry in exchange for regulatory compliance (Law 2006). It was not until the passage of the Food, Drugs, and Cosmetics Act of 1938 that the agency obtained significant regulatory authority over the pharmaceutical industry. The 1938 law required testing of all pharmaceutical products for safety prior to market release. This marked the beginning of modern pharmaceutical regulation.

Occupational licensing regulation

Contemporaneous with the diffusion of pure food regulation was the adoption of state-level occupational licensing laws. During the late nineteenth and early twentieth centuries, state governments began to adopt laws that regulated occupations

ranging from physicians and lawyers to plumbers and beauticians. By the middle of the twentieth century, over 1,200 licensing laws were in place, averaging 25 per state, and covering over 75 different occupations. What explains the adoption and diffusion of occupational licensing regulation?

It is commonly argued that occupational licensing represents the canonical case of industry capture of the regulatory apparatus (Friedman and Kuznets 1945; Stigler 1971). Licensing allows incumbent practitioners to establish entry barriers that reduce competition and increase the rents enjoyed by established practitioners, often at the expense of economic efficiency. However, there is an alternative explanation for licensing that yields similar qualitative predictions. Licensing laws often apply to professions—like medicine, for instance—where the quality of professional service is difficult to ascertain *ex ante*. Asymmetric information about professional quality can give rise to a lemons problem, where low quality practitioners dominate the market (Akerlof 1970). In such an environment, licensing laws that establish minimum standards may indeed reduce entry and raise the income of practitioners, but also improve efficiency by reducing informational asymmetries (Arrow 1963; Leland 1979).

In order to understand the adoption and diffusion of occupational licensing laws in the United States, it is necessary to consider how specialization, technological change, and the growth of knowledge affected the market for professional services. During the nineteenth and twentieth centuries, the scale and scope of scientific knowledge expanded tremendously. Not only did the total stock of knowledge increase, but also scientific knowledge became increasingly specialized. Over time

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this specialized knowledge found application in occupations like engineering, medicine, dentistry, and architecture.

The implications of this explosion of specialized knowledge were manifold. For one thing, within particular fields, practitioners became more specialized. Second, the benefits of longer, more formal training increased as many occupations became increasingly technical and as universities, colleges and other institutions emerged to educate individuals who wanted to work in these increasingly technical fields. Finally, occupational specialization and the expansion of scientific knowledge made it harder for consumers to judge the quality of professional services. In fields like medicine, for instance, scientific advances made it more difficult for consumers to know if they were receiving the correct treatment. The heterogeneity of professional quality increased as newly trained technical experts competed with long standing practitioners. Uncertainty about professional quality therefore increased.

Given this environment, there was a demand for regulation, in part to tilt the competitive playing field, but also to reduce informational asymmetries about professional quality. On the anti-competitive front, there is some evidence that entry into certain occupations was reduced by the licensing regulations. For instance, the adoption and expansion of licensing laws may have reduced entry into medicine, dentistry, architecture, and engineering. However, it is also revealing that the occupations where entry was most restricted were also fields where advances in science and the growth of specialized knowledge were likely to create the most significant informational asymmetries and where the costs of low quality service were most severe. The evidence also indicates that licensing of these occupations was most likely to be adopted in urban states. During this time, as specialization and the

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expansion of scientific knowledge were accompanied by urbanization, individuals became less knowledgeable about the goods and services they were purchasing. Additionally, because scientific advances were more likely to occur in cities, informational asymmetries were most likely to be acute in urban areas. Accordingly, it seems plausible that the introduction and diffusion of occupational licensing was also motivated by concerns about asymmetric information (Law and Kim 2005).

While it is difficult to cleanly distinguish these two hypotheses for occupational licensing regulation, three pieces of evidence suggest that the adoption of licensing, at least during the Progressive Era, may have had mostly benign consequences. The first is that, for most occupations, Progressive Era licensing laws did not reduce entry. Accordingly, competition was not significantly hampered by the introduction of occupational licensing. Second, there is evidence that medical licensing may have increased physician quality. In a detailed examination of effects of physician licensing regulation during the early decades of the 1900s, Law and Kim (2005) find that mortality rates for conditions where physician quality may have mattered during this time were lower in places where medical licensing laws were stricter. In particular, they find that maternal and appendicitis mortality rates were lower in places where medical licensing laws were stricter. This suggests that medical licensing may have played a role in improving physician quality. Finally, in an analysis of the effects of the introduction of licensing laws on the representation of minority (female and black) workers in regulated occupations, Law and Marks (2009) find that licensing laws seldom reduced minority representation and sometimes increased it. Specifically, their analysis indicates that the representation of minority workers was enhanced by the introduction of physician, nursing, engineering and teacher licensing laws. In these increasingly technical fields, licensing may have

helped minorities by reducing statistical discrimination against females or blacks. By providing minorities with an observable signal of quality, licensing may have therefore allowed talented women and black workers to enter occupations that would normally have been closed to them. Much of the evidence from the Progressive Era is therefore more consistent with the view that licensing reduced informational asymmetries and helped markets function more efficiently.

Of course, the fact that licensing may have initially improved markets need not suggest that its impact has always been positive. Any regulation that creates entry barriers and yields control over entry to incumbents has the potential to enrich established practitioners at the expense of economic efficiency. Studies of licensing that use more contemporary data suggest that licensing laws generally reduce competition and increase the incomes of incumbent practitioners, often with no offsetting improvement in the quality of professional services (Kleiner 2006). Additionally, the extension of licensing regimes to occupations where there are no obvious informational asymmetries that cannot be addressed adequately through market mechanisms (for instance, funeral directors, manicurists) suggests that the desire to control entry remains an important motivation for licensing.

Nevertheless, the legacy of occupational licensing has been an enduring one. Estimates suggest that over 20 percent of the labor force is currently subject to some kind of state-level licensing regulation (Kleiner 2006). Perhaps the popularity of licensing stems precisely from the fact that it serves twin objectives: on the one hand it reduces informational asymmetries, while on the other it helps incumbent practitioners by reducing competition. By offering potential benefits to both consumers and producers, licensing regimes ensure their own survival.

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Finally, it is worth noting that occupational licensing, unlike the other regulatory domains analyzed in this paper, remains at the state level. Unlike meat inspection, antitrust, railroad regulation, and food and drugs regulation, there are no federal occupational licensing statutes. This is for the reason that concerns about the effects of state-level regulation on interstate commerce are less pertinent for occupational licensing regulation than for the other regulatory areas. When goods produced in one state are purchased and consumed in other states (food and drugs), or when an industry itself literally crosses state boundaries (railroads), it is efficient for regulation to be established and enforced at a federal level. In contrast, when goods and services are produced and consumed within a smaller geographic unit (for instance, the services purchased from professionals like doctors and lawyers tend to be consumed in a given state), and when different jurisdictions have different tastes for regulatory stringency, the state may be the more appropriate regulatory unit. Occupational licensing laws, in fact, are often justified on grounds of setting standards for local safety, and the federal nature of the American political system allows and even encourages different jurisdictions to pursue different policies. While the absence of uniform licensing standards across states may have impeded the geographic mobility of licensed professionals (Pashigian 1979), the federal nature of the American system, combined with the fact that most professional services are produced and consumed locally, have ensured that licensing remains a state-level concern.

Conclusions

Until the late nineteenth century, regulation in America was largely local and enforced by the courts. Urbanization, industrialization, and, most importantly, the Civil War provoked a shift in the form of American government that shifted the balance of power towards centralized state and federal governments. In this paper we argue that an understanding of the rise of the modern American regulatory state first requires an appreciation of how centralized state and federal governments became the nexus of regulatory activity.

Specialization, by creating new and unfamiliar products, gives rise to informational problems. Consumers and producers may desire regulation in order to reduce informational asymmetries and improve efficiency. On the other hand, specialization, by tilting the competitive playing field, creates new sets of winners and losers in the marketplace. The losers in this competitive battle may seek shelter by lobbying for regulation that disadvantages competitors. Our overview of the rise of regulation during the Progressive Era—a period of rapid technological and organizational change in the US economy—illustrates how regulation emerges in response to the forces of specialization. In each of the regulatory domains discussed, specialization and technological advance played a key role in creating a demand for regulation. Accordingly, we believe that specialization and its ripple effects must also play a key role in any account of the emergence and rise of the US regulatory state.

We also argue that regulation, once enacted, tends to stick. Indeed, regulation may ultimately end up serving interests and objectives that played little or no role in its creation. The enduring effects of regulation are often unanticipated by its original sponsors. Our analysis of how specific regulations are shaped over time by competing

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interests suggests that path-dependence is a key aspect of regulatory evolution. Finally, we believe that the federal nature of the American political union has also shaped the rise of regulation in America. In each of the cases analyzed, regulation began at the state level and then diffused across states. While in most instances federal regulation ultimately emerges, in some cases it does not. Whether or not federal regulation arises depends critically on the importance of interstate commerce, as well as the potential for vested interests to use federal regulation to forestall more stringent state laws.

Clearly, our survey of the rise of regulation in America is not exhaustive. Because our focus is the Progressive Era, we have avoided discussing regulatory domains whose genesis lies in other episodes of US economic history (for instance, we do not discuss securities regulation, insurance regulation, banking regulation, or airline regulation). Additionally, there are other hypotheses for the adoption and evolution of regulation (for instance, explanations in which “crises” and other contingent events play a leading role—see Higgs 1987, for instance) that we have deliberately sidestepped. Nevertheless, in focusing on how state and federal governments became the loci of regulatory activity in the late nineteenth century, and in examining how a handful of Progressive Era regulations emerged as a response to specialization and technological change and how these regulations evolved through space and time, we believe that we have identified a few key forces behind the rise of the modern American regulatory state.

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