

# **The Battles against Animal Diseases: Science, Policy, and the Origins of Economic Regulation in the United States**

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The recent outbreaks of Avian Influenza, SARS, Mad Cow Disease, Foot-and-Mouth Disease, and other communicable diseases in human and animal populations remind us of how vulnerable human health and the economy are to threats from an inherently unstable and fragile biological environment. Americans care passionately about food safety. Today, in their struggles against contagious diseases, nation-states and international agencies draw on research, monitoring networks, and legal structures that were developed during past crises. In the United States, the basic institutional structure, the legal precedents, and even many of the scientific foundations that guide current animal disease control programs were forged in the late nineteenth century and perfected in the first decades of the twentieth century. By 1940, when many have presumed that the biological revolution in American agriculture was in its infancy, the institutional and legal structures were largely in place and many successes had already been achieved. These achievements were largely the result of public policies that transmitted a stream of biological innovations from laboratories and experimental facilities to American farms.

Technological and institutional changes are the primary engines of modern economic growth. A few General Purpose Technologies such as the steam engine, electricity, and the computer are especially important because they created paradigm shifts, opening the way for myriad spin-off technologies. The discovery and gradual acceptance of the Germ Theory of Disease was one of these fundamental technological advances revolutionizing the understanding of human and animal health and giving rise to the sciences of bacteriology, microbiology, virology, and others. At the very time that scientists, physicians, and veterinarians were gaining a better understanding of diseases in the late nineteenth century, a number of animal diseases were spreading in the United States and Western Europe, some at alarming rates. The growing trade in animals, the increasing concentration of animals in dairies and stockyards, and the increased attention to herd improvement that saw the movement of a large number of prized breeding stock

all contributed to the worsening of the disease environment. Thus the very actions needed to improve herd quality were contributing to the rapid spread of diseases.

Enlightened local and state animal health officials often enacted measures to control and stamp out diseases, but these policies were hampered by many problems. Externalities, imperfect information, and economies of scale in enforcement doomed many efforts. Contagious diseases paid no heed to political boundaries and local and state initiatives were often overwhelmed as diseases re-infected recently cleansed areas. In addition, animal owners frequently moved suspect animals out of control areas spreading the contagion. Aggressive jurisdictions were penalized by the inattention of others. Costly legal disputes and beggar-thy-neighbor policies were predictable outcomes in the absence of national standards. The push for federal intervention was further enhanced when foreign governments banned or restricted the entry of American products due to the threat of contagious bovine pleuropneumonia, foot-and-mouth disease, trichinosis, and hog cholera (swine fever), and other diseases.

A growing number of Americans became convinced that only the federal government enabled with new and except in wartime unprecedented powers could enforce the collective action need for success. Not everyone agreed. Special interests, most notably Texas ranchers, opposed any legislation that might threaten their right to ship cattle north. In addition there were major states rights civil rights issues that galvanized the opposition of many politicians. The stakes were enormous and farmers, railroads, meat packers, middlemen of all sorts, public health advocates in the medical community, veterinarians, and consumer groups chose sides. Fierce battles to give state and federal animal health officers the power to inspect, regulated the movement of animals, and condemn animals were fought in the press, state capitals, and in the halls of Congress. On many occasions vigilantes took the law into their own hands interrupting trade, destroying property, and murdering government agents.

Gradually scientific advances provided a better understanding of some of the more serious diseases emboldening animal health advocates and their political allies. At the same time these diseases became more threatening as they spread into new animal populations. After nearly a decade of failed attempts, disease control advocates in Congress succeeded in creating the Bureau of Animal Industry in 1884. This was a

historic achievement. Political scientists, Gary W. Cox and Mathew D. McCubbins, have spent decades making sense of the federal legislative process. Their analysis in *Setting the Agenda* concludes that the Speaker of the House of Representatives will not allow significant bills that are expected to gain approval of the Senate and President to come to a floor vote unless a majority of the majority party in the House supports the bill.<sup>1</sup> Out of the thousands of bills that Cox and McCubbins analyzed, the 1884 legislation to establish the BAI stands apart. H. R. 3967 was the *only* significant bill passed in the century between the Civil War and 1970 in which a majority of party of the party in power (in this case the Democrats) opposed the bill! At the time, the participants in the debate recognized that something unusual was going on. Our analyses of the decade-long debate over the establishment of the BAI will add significantly to the understanding of the origins of modern economic regulation in the United States, because many of the issues and important players were the same as those associated with the formation of the Interstate Commerce Commission in 1887.

The BAI became the central player in fight against animal diseases in the United States. The Bureau's history represents one of the most neglected aspects of U.S. agricultural development. By the 1940s the BAI had led efforts that eradicated seven major animal diseases from the United States: contagious bovine pleuropneumonia (1892), fowl plague (1929), foot-and-mouth disease (1929), glanders (1934), dourine fever (1942), and cattle tick fever (1943). In addition BAI scientists spearheaded the quest to understand and control scores of other diseases endemic in the United States including tuberculosis in cattle; scabies in sheep (related to Mad Cow Disease); and hog cholera, and the agency's quarantine network repeatedly blocked the entry of other diseases before they could spread in the United States.

There were several common elements in these varied efforts. The first was that both public policy and the public's support for control measures evolved rapidly as scientists advanced the understanding of diseases, improved diagnostic methods, and in some cases offered cures. The link between science and public policy ran in both directions because the BAI's leaders were actively directing fruitful research efforts.

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<sup>1</sup> Gary W. Cox and Mathew D. McCubbins, *Setting the Agenda: Responsible Party Government in the U. S. House of Representatives* (New York: Cambridge University Press, 2005). Cox and McCubbins distinguish between significant legislation and insignificant legislation, such as personal pension bills, ect.

Secondly, although the powers of state governments increased, with respect to animal diseases, in the later part of the nineteenth century, there was a far more rapid growth in the federal authority. Classic problems of asymmetric information and large negative spillovers across state lines generated a need for an agency with regional and national powers. The highly contagious nature of some diseases created the need to bypass time-honored checks and balances, and impose the “one man power principle.”

This book will provide significant value added. First, much of the literature on animal diseases focuses on one or another particular disease. Our analysis will show that the quest to understand and combat specific diseases was heavily dependent on the science and politics of other diseases. Understanding the development of an institutional structure capable of researching and fighting diseases requires an integrative approach. As one example, federal efforts to stamp out contagious bovine pleuropneumonia were delayed over a decade because southerners feared that the institutions empowered to accomplish this task would eventually shift their focus and regulate the shipment of animals infected with tick fever. In addition, breakthroughs in basic science often achieved in the study of one disease had spillover effects to other contagions. One success had a political dynamic leading to increased funding and popular support for future crusades.

Secondly, as noted above the book will add to the literature on the origins of regulation in the United States by explicitly contrasting the political economy of animal disease control with the subsequent efforts to control interstate commerce more generally—we say “more generally,” because draconian restrictions on the interstate commerce in animals was an essential element of the fight against diseases. Our analysis stands in sharp contrasts with the recent interpretations of the regulatory movement as serving the anticompetitive narrow self-interests of the industries’ regulated. Edward Glaeser and Andrei Shleifer succinctly summarize this view noting the “Progressive Era regulation was captured by industry, leaving consumer interests in the dustbin.”<sup>2</sup> Although this statement might conform nicely to the priors of the public choice literature,

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<sup>2</sup> Edward L. Glaeser and Andrei Shleifer, “The Rise of the Regulatory State,” *Journal of Economic Literature* 41, no. 2 (June 2003): 401-25. Also see Marc Law, “the Origins of State Pure Food Regulation,” *Journal of Economic History* 63, no. 4 (December 2003): 1103-30; and Gary D. Libecap, “The Rise of the Chicago Packers and the Origins of Meat Inspection and Antitrust,” *Economic Inquiry* 30 (April 1992): 242-62.

it appears dubious at best concerning the public and animal health movements.

Understanding and controlling animal diseases had enormous spillovers to other sectors including human health. To offer one example, the fight to stamp out bovine tuberculosis (along with controversial compulsory milk pasteurization laws) was saving at least 25,000 American lives a year by 1940. Most of those consumers saved were young children. Meat inspection, quarantines, disease tracking systems, and other food safety regulations were doubtlessly saving many more thousands from painful and untimely deaths. Countless others avoided illness and prolonged morbidity.

Thirdly, although the book will focus on the U.S. experience it will offer an important comparative perspective on developments in Western Europe and other areas. Neither the scientific advances nor institutional innovations occurred in a vacuum; ideas flowed freely around the globe. In fact, international conferences on disease control often received front page headlines in major newspapers in the United States and Europe. The United States became the world leader in animal disease eradication. This was especially true for bovine tuberculosis. We will explain why European who had access to the same scientific information and had full knowledge of the institutional innovations in the United States twiddled their thumbs while hundreds of thousands of their country folk died needlessly.

Finally, the book will offer a quantitative basis for evaluating government policies. We will offer a firmer sense of the costs and the benefits of disease control measures and of what the counterfactual world might have looked like in the absence of effective interventions. Our findings will also serve to raise estimates of the rate of agricultural productivity growth by emphasizing the impact of quality changes in the food delivered to consumers. In the case of milk, the usual measures look at milk output per cow, or in more modern times, milk output relative to inputs. The problem is that in 1900 milk was far from nature's perfect food—in fact it was the vehicle for diseases that killed thousands of children a year. By 1940 milk was an entirely different product. Quality mattered.

Our research will be based on a wide variety of sources including the archival records of the USDA's Bureau of Animal Industry and American Medical Association, the *Congressional Record*, publications of state and federal agricultural experiment

station and public health agencies, leading journals in the livestock sector such as *Hoard's Dairymen* and *Breeder's Gazette*, big city newspapers such as the *New York Times*, *Chicago Tribune*, *Washington Post*, and *Los Angeles Times*.