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Razorbacks, Ticky Cows, and the Closing of the Georgia Open Range: The Dynamics of Institutional Change Uncovered

SHAWN EVERETT KANTOR

This article attempts to explain why the adoption of potentially productive institutions is delayed and why inefficient ones persist by exploring the dynamics of institutional change in a particular historical case—the closing of the Georgia open range in the late nineteenth century. A closed range policy would have generated net benefits for specific regions of Georgia, but distributional conflicts, coupled with high transaction costs, made a voluntary agreement to do that unattainable. The article describes the Georgia legislature's important role in facilitating the adoption of a policy that led to more rapid agricultural development in the postbellum period.

New institutional economists have emphasized the significant role that institutional change plays in determining economic prosperity. They have, however, paid little attention to the nuances that surround this transformation. As recent theoretical and empirical work has shown, the dynamics of institutional change are not as fluid as early research on the subject has suggested.¹ Distributional conflicts, transaction costs, and political intervention are crucial determinants of the path of institutional change and development.

The goal of this article is to provide a detailed, micro-level empirical investigation of the process of institutional change in one particular case—namely, the closing of the Georgia open range from 1872 through

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¹ Research that predicts institutions will adjust in order to capture untapped efficiency gains includes Coase, "The Problem"; Demsetz, "Toward a Theory"; Davis and North, *Institutional Change*; and North, *Structure and Change*. For theoretical papers suggesting that this view is overly sanguine, see Mailath and Postlewaite, "Asymmetric Information"; Robb, "Pollution Claim Settlements"; Farrell, "Information and the Coase Theorem"; Samuelson, "A Comment on the Coase Theorem"; Crawford, "A Theory of Disagreement"; and Arrow, "The Property Rights Doctrine." Historical analyses of the same include Rosenthal, "The Development of Irrigation"; Binger and Hoffman, "Institutional Persistence"; Hoffman, "Institutions and Agriculture"; Libecap, "Distributional Issues"; Libecap and Wiggins, "The Influence of Private Contractual Failure"; and McCloskey, "The Economics of Enclosure."

1890. The traditional agricultural practice in Georgia was to allow animals to roam the countryside freely and to force farmers to erect fences around their crops. All unfenced land was considered common pasture that could be used by anyone. After the Civil War, however, there was a concerted effort to eradicate the open range policy and to enforce strict property rights to all land—fenced or unfenced, improved or unimproved.

According to estimates presented here, closing the range would have generated net benefits for many counties in the state, especially in areas with high shares of improved acreage. Most of these counties, however, maintained the status quo. While the aggregate net benefits were positive, I argue that the transaction costs of voluntarily resolving some related distributional conflicts were prohibitive. Empirical evidence shows that the Georgia legislature's role in facilitating the institutional change was crucial. The legislature allowed county and, later, sub-county referenda on the fence question which significantly reduced the bargaining power of those opposed to dispensing with the open range. Most importantly, the legislature promised to enforce sidepayments between expected winners and losers if the new law were adopted at the local level. When compensation for a subset of the expected losers was guaranteed by the legislature, these voters responded as might be expected—they voted in favor of the new institution. For many Georgia counties that would have profited from closing the range, the government-endorsed sidepayment scheme proved necessary for the adoption of the institutional change that led to more rapid agricultural development in postbellum Georgia.

An important conclusion of the article is that traditional theories of institutional change tend to be overly optimistic. A close study of the Georgia fence problem reveals that net expected benefits are neither a necessary nor sufficient condition for the adoption of an alternative property rights arrangement. Distributional conflicts, coupled with high transaction costs, make voluntary change difficult. When the government is called in, almost any outcome is feasible. Although the focus here is narrow, it offers insights into the process of institutional change in a world in which trades are not effected costlessly. A study of the Georgia fence problem helps to unravel the mystery as to why some inefficient institutions persist, while others are pushed aside to make room for economic growth and development.

THE GEORGIA OPEN RANGE AND THE CALL FOR REFORM

Since colonial times Georgia planters were required to keep fences around their growing crops or else any “trespass or damage so ever he shall receive or sustain by hogs, cattle, or horses shall be his own

loss”² In fact, a 1759 law provided detailed specifications of what constituted a “lawful” fence.³ Instead of forcing livestock owners to control their animals, the fence law permitted citizens to allow their animals to roam the countryside freely. It should be noted that farmers were not legally compelled to put a fence around their fields. In order to sue for damages caused by a marauding animal, however, a legal fence had to be erected. If an animal happened to get into a farmer’s enclosed field and destroyed a portion of the crop, the farmer’s fence had to meet the specifications of the code; otherwise, he had no basis to sue the animal’s owner for compensation. Moreover, if the farmer killed or maimed an animal straying onto his ill-fenced land, then the animal’s owner could claim treble damages. In essence, the fence law created an open range, or a commons, whereby every citizen had the “right” to graze his animals on any land that was left unfenced.

In most areas of the colonial and antebellum South, farms were far apart, the land was heavily wooded, and population density was low. Whereas the open range seemed to have been an economical response to the demography and geography of colonial America, the late antebellum and postbellum eras brought a new attitude toward the profitability of fencing out animals and fencing in crops. “Excessive Fencing is peculiarly an American abuse, which urgently cries for reform,” clamored Horace Greeley, who was certainly not alone in blasting the fence law as “needless and indefensible.”⁴ Farmers, particularly those from the South, were told to ask themselves: “Are we an agricultural or stockraising people . . . ?”⁵ As the editor of the Jackson County (Georgia) newspaper succinctly noted, “it is sad evidence of old fogyism, general ignorance and backwardness of agriculture in the South that such a law as that now in force can exist.”⁶ Given the destruction caused by the Civil War, agricultural “progressives” argued that it was time for innovation. With confidence, reformers claimed that a “stock law,” or the fencing in of animals instead of crops, would be the first step toward bringing southern farmers out of relative poverty and toward agricultural prosperity.⁷

² Quoted in King, “The Closing of the Southern Range,” p. 53. For a discussion of the development of the “fence law,” or open range, policy in America, see Washburn and Moen, *The Fence Question*, pp. 10–14. For a discussion pertaining to New England in particular, see Cronon, *Changes in the Land*, chap. 7.

³ Hahn, in *The Roots of Southern Populism*, pp. 60–61, provided a description of a late nineteenth-century lawful fence.

⁴ Greeley, *What I Know of Farming*, p. 219.

⁵ “Fructus” in *Southern Cultivator*, 35 (Aug. 1877), p. 299.

⁶ *Jefferson Forest News*, Apr. 23, 1880.

⁷ The debate between fence law and stock law advocates is quite interesting and covers the gamut of economic, political, religious, and social issues. Since the debate has been covered in depth in previous works, I will not dwell on it here. See Kantor and Kousser, “Common Sense or Commonwealth?”; Hahn, *The Roots of Southern Populism*, pp. 239–54; Flynn, *White Land*, pp. 130–45; and Bonner, *Georgia’s Last Frontier*, pp. 139–43.

What would cause people to seek a change in the open range policy that had been accepted practice for well over a century? Harold Demsetz, for example, has argued that “property rights develop to internalize externalities when the gains of internalization become larger than the cost of internalization.”⁸ Similarly, Lance Davis and Douglass North have theorized that institutional change tends to come about when the net present value of a new regime of property rights exceeds that of the traditional set of rights.⁹ As an economy progresses through time, the costs and benefits of each feasible institutional arrangement continuously change, causing individuals and groups to constantly update their decisions concerning the appropriate arrangement for society. As late nineteenth-century farmers in the South witnessed the tangible and increasing loss of land, labor, and capital caused by the fence requirement, many began to argue that the traditional practice of allowing animals to forage freely was no longer compatible with maximum agricultural efficiency. When “the subject [was] . . . reduced to dollars and cents,” fence reformers were convinced that agricultural prosperity—in fact, overall economic growth—depended on their innovation.¹⁰

The open range, reformers argued, was an anachronism. They acknowledged that allowing animals to roam at will was a tenable policy when farms were isolated and population density was low. But as economic and demographic changes were developing in the postbellum period, many believed that the traditional fence law had outlived its purpose. As population density rose, the probability that one person’s roving animals would destroy another’s crops increased. Certainly, a farmer could sue if an animal destroyed his crops, but he had to have evidence of the trespass and it was impossible for him to constantly watch his fields. Therefore, holding everything else constant, increased population density led to an increase in the relative costs of maintaining the open range policy and made fencing animals a more attractive option.

The doubling of the railroad network in postbellum Georgia also increased the relative benefits associated with fence reform. Since railroad right of ways were not required to be fenced under Georgia law, trains often hit animals that wandered onto the tracks. The Georgia Supreme Court decided that as long as the railroad could show that it

⁸ Demsetz, “Toward a Theory,” p. 350. See also Demsetz, “Some Aspects of Property Rights.”

⁹ Davis and North, *Institutional Change*, especially chaps. 1–4.

¹⁰ *Jackson Herald*, July 20, 1883. Georgia farmers understood well the importance of healthy agricultural development. Petitioning the state legislature for the establishment of more experimental farms, the Georgia State Agricultural Society conceded that “other pursuits may have more brilliant rewards, and other industries may claim more flattering recognition, but this truth underlies all our hopes of material prosperity, that with a languishing agriculture all other business enterprise and investment must suffer.” Georgia General Assembly, “Report,” pp. 1–2.

exercised “ordinary and reasonable diligence” in its attempt to avoid killing a wandering animal, then it could escape liability.¹¹ Yet railroad companies did not escape the payment of damages completely. Samples from the annual reports of three companies suggest that railroads were forced to pay approximately \$19.90 (in 1880 dollars) per track-mile for livestock killed because of the railroads’ negligence.¹² According to these data, if the closed range policy had been instituted throughout Georgia in 1880, the railroad industry would have saved approximately one million dollars in damage payments.¹³ This figure does not consider the dollar amount spent on repairing damage to trains that hit livestock, the monetary value of medical attention given to injured passengers, and lawyers’ fees. In addition, it does not include the value of livestock killed in situations when the railroad was not deemed negligent.

The expansion of the railroad in the postbellum period increased the opportunity cost of maintaining the status quo in another way as well. When railroads arrived in areas previously without a connection, farmers were able to import relatively inexpensive fertilizers that raised cotton yields per acre. In addition, the railroad provided an efficient means for farmers to export their cotton surplus to major marketing centers.¹⁴ In many areas of Georgia, the simultaneous expansion of the population and the railroad network created a new problem for farmers—how to use the available productive land more efficiently. With animals fenced in, advocates of reform predicted that improved acreage could be expanded.

Supporters of the closed range saw two sources of unimproved land that could be brought into cultivation—the wasted land used as fence rows and the patches of fertile ground too small to justify expenditure on a lawful fence. Nineteenth-century southern farmers, for the most part, enclosed their crops with “worm” fences which were constructed by laying the ends of the rails on top of one another in a zigzag fashion;

¹¹ See, for example, *The Georgia Railroad Company and Banking Company v. Neely*; *The Central Railroad v. Hamilton*; *The Georgia Railroad Company and Banking Company v. Walker*; and *The Central Railroad v. Summerford*.

¹² The amount of “stock damage—paid for cattle, horses, mules, hogs, etc., killed and injured” was obtained from the South-Western Railroad Company, the Georgia Railroad and Banking Company, and the Atlanta and West-Point Railroad Company. From each report I determined the value of livestock killed per mile of track operated. The figures were converted to 1880 dollars using the Warren and Pearson Wholesale Price Index, Series E-12, U.S. Bureau of the Census, *Historical Statistics*. The constant 1880 dollar values per mile were \$29.55 in 1861, \$13.82 in 1866, \$11.79 in 1869, \$29.21 in 1877, \$23.76 in 1880, and \$11.28 in 1884. The average of \$19.90 per track-mile was used in my computations.

¹³ The \$1,000,000 figure is the discounted net present value of the stream of estimated payments that Georgia railroads would have made to livestock owners after 1879. For the calculation, I assume that railroad track mileage remained constant after 1889. This, of course, biases the estimate downward. The discount rate used is 7 percent, following Ransom and Sutch, *One Kind of Freedom*, p. 208.

¹⁴ For a discussion of the railroads’ influence on the Upcountry economy, see Hahn, *The Roots of Southern Populism*, pp. 145–52; and Weiman, “The Economic Emancipation.”

thus, wasting a width of seven to eight feet of productive land as a fence row.¹⁵ Since the average tilled acreage per farm in Georgia counties was 55.3 (with a standard deviation of 24.2), and assuming that worm fences spanned seven feet, we can calculate that at a minimum between 1.5 and 2.4 percent, or 115,354 to 184,567 acres, of the productive land in Georgia was wasted in the form of fence rows.¹⁶ Of course, this estimate does not represent all of the productive land that could be brought into cultivation if the closed range policy were enacted. The calculation ignores the small fertile patches of land not profitable enough to justify a costly fence. In addition, farmers expected to save resources and time when expensive annual fence repairs could be eradicated.¹⁷ Certainly there were benefits associated with enclosing animals, but the important question from a social income maximization point of view was: would the benefits of fence reform have exceeded the costs of changing to a closed range policy?

THE PROFITABILITY OF REFORM

Using the data in the 1880 Agricultural Census, it is possible to provide an approximation of the expected profit or loss that each county in Georgia would have realized had the stock law been instantaneously implemented in 1880.¹⁸ If it had and if farmers had immediately adjusted to the incentives created by the new law, then all animals would have been enclosed and farmers could have removed the fences surrounding their crops of cotton and grains and planted the land previously wasted as fence rows. The net profit from growing crops on the old fence rows would have been the total value of the produce minus the cost of feeding the previously nonpastured animals minus the cost of producing the crops. In order to make the calculations, I have assumed that the wasted acreage equaled the lower-bound estimate of 1.5 percent of the improved acreage and that farmers grew two types of crops on their

¹⁵ In a letter to the *Southern Cultivator*, 36 (Jan. 1878), p. 7, a "Subscriber" maintained that the fence occupied a total distance of seven feet across. It should be noted that "Subscriber" was a pro-fence advocate. Washburn and Moen, *The Fence Question*, p. 16, whose ultimate goal was to advertise the benefits of using barbed wire, claimed that eight feet of land was wasted by the worm fence.

¹⁶ If worm fences spanned seven feet and crops were grown in perfectly square plots of land, with sides of length x feet, then the ratio of productive land wasted can be expressed as a function $l(x) = (28x - 196)/x^2$. I use feet, instead of acres or hectares, for simplicity. Assuming square plots of land, it is easy to convert acres into the length in feet. One acre of land equals 43,560 square feet. Therefore, given the acreage of a piece of land, the length of the sides (in feet) equals the square root of 43,560 times the number of acres. Data on tilled acreage per farm were obtained from aggregate county level data in U.S. Census Office, *Report*, pp. 109–11.

¹⁷ Contemporaries believed that fences depreciated at an annual rate of 10 percent. See *Jefferson Forest News*, Apr. 23, 1880. Also, see the "Extract from a lecture by Donald J. Mitchell, before Connecticut Board of Agriculture," *Southern Cultivator*, 34 (Dec. 1876), p. 465, for annual depreciation estimates of between 11.1 and 18.2 percent.

¹⁸ For a detailed description of the net profitability calculation, see Kantor, "Property Rights," appendix A.

newfound land: cotton on the old fence rows of the cotton acreage and corn, peas, and fodder on the wasted land from the corn, wheat, rye, and oat fields.¹⁹ Estimation of the costs of fencing the animals is a problem because some were already kept in pastures, while others were roaming the open range. I arbitrarily assigned livestock to available pasturage that existed before the hypothetical institutional change and estimated a feed allowance for animals that were previously unenclosed and were now behind fences. Since some animal owners probably overinvested in livestock under the open range policy, and because my calculation considers all of the animals reported by the Census, too much grain will be allocated to feeding the previously nonpastured animals. This assumption biases the profitability estimate downward, strengthening the final result.

In many parts of the state, farmers could have maintained fewer fences under a closed range policy. After the stock law was enacted, farmers are assumed to have put their animals into pastures and to have supplemented their diets with other grains. To approximate the savings from maintaining fewer fences, I estimated the value of the difference in the depreciation of crop fences before the stock law and of the fences needed to enclose the previously nonpastured animals after the stock law. Farmers would have borne an additional one-time cost of building fences around the newly created pasture. They might have moved the wood from old fences to enclose their new pasture; however, I assumed that farmers paid the maximum cost of building a new fence, \$1.90 per acre, which again biases the net benefits downward. Thus, the final profitability measure equals the net profit from growing crops on old fence rows plus the depreciation saved by maintaining fewer fences minus the one-time cost of building fences for animals previously unenclosed.

Table 1 shows the net present value, over an infinite time horizon, of the social profitability or unprofitability of the stock law using 1880 data and a discount rate of 7 percent. The results show the weighted average and per capita value of benefits (or costs) for the six conventional regions of Georgia. The profit measure is also shown as a percentage of the total value of farm produce grown within the region in 1879. The results are robust to changes in key assumptions and should be viewed as minimum values.²⁰ The net present value calculation does not allow farmers to adjust their improved acreage, their crop mix, or the size of their livestock herds over time. Regions expecting a loss from the stock law could have adjusted to the law and avoided the full loss reported in

¹⁹ It seems reasonable to assume that corn, peas, and fodder were all planted together. See "Consolidated Reports of Crops, &c., Circular No. 21," in Georgia Dept. of Agriculture, *Publications*.

²⁰ Kantor, "Property Rights," table 3.A1, contains sensitivity tests.

TABLE I
DISCOUNTED NET PRESENT VALUE OF EXPECTED PROFITABILITY
OF THE STOCK LAW, BY REGION IN 1880

Region	N	Weighted Mean ^a	Per Capita	As Percent of Value of Produce	Improved Acreage Share ^a
Mountain	17	\$ -12,895 ^b	\$ -2.00 ^b	-7.1%	23.4%
Upcountry	26	108,769	6.97	16.1	36.9
Plantation Belt	63	167,439	10.31	21.2	42.3
Pine Barrens	9	-101,365	-14.96	-35.1	13.0
Wiregrass	16	-81,708	-14.75	-39.2	12.0
Coast	6	-82,203	-6.34	-29.6	12.6
Counties with Law by 1882 ^c	14	191,195	11.91	21.7	46.8
State	137	69,474	5.19	11.9	31.4
Carroll County ^d	1	119,116	7.05	14.8	36.2
Jackson County	1	209,755	12.87	26.7	35.5

^a Weighted by total acres in each county.

^b 1880 dollar values.

^c These counties are Butts (1882), Campbell (1881), Clayton (1881), Coweta (1881), Henry (1882), Lincoln (1882), Meriweather (1881), Monroe (1881), Morgan (1882), Pike (1882), Putnam (1881), Rockdale (1882), Spaulding (1882), and Troup (1882). The year of adoption is in parentheses. A stock law was imposed by legislation in Monroe and Putnam counties, elsewhere it was adopted by popular vote.

^d Since I have a 100 percent sample of the manuscript census data from Carroll and Jackson counties, I was able to check the aggregate sums presented in the agricultural census against the sums from my individual level data. For the most part, the two are consistent. The figures were very different, however, for the amount of pasture in Carroll, an important variable in my calculation. The aggregate number reported by the census was about double that calculated using the micro-data. In the calculation, I use the smaller estimate. If the census number were used, the expected benefit would rise to \$237,667.

Sources: Aggregate county-level agricultural and population data were obtained from U.S. Census Office, *Report*, pp. 109–11, 183–84, 218–19, and the *Compendium*, pp. 341–43, 846–51. The procedure used to estimate expected profitability of the stock law is detailed in Kantor, "Property Rights," appendix A.

the table. Similarly, those areas with a positive expected value would actually have had larger "real" savings.

Regions with large tracts of unimproved land used as natural pasture would have been hurt by the imposition of the stock law. The average loss for a Pine Barrens, Wiregrass, or Coastal county would have been between \$82,000 and \$101,000, or approximately 30 to 40 percent of the value of produce grown in the county in 1879. The average Mountain county expected a loss from the closed range of nearly \$13,000 or 7 percent of the value of its agricultural production. The greatest benefits would have accrued to the most improved counties which made up the Plantation Belt and Upcountry regions. The average county in the Upcountry could have captured about \$109,000 in net benefits from the closed range, while Plantation Belt counties expected average net benefits of \$167,000. For Upcountry and Plantation Belt counties, the expected net benefits were 16 and 21 percent, respectively, of the value of 1879 agricultural production. The net sum of the profits across all

TABLE 2
DISTRIBUTION OF ESTIMATED BENEFITS AND LOSSES
FROM STOCK LAW, BY REGION IN 1880

Range of Benefits or Losses (in thousands)	Mountain	Upcountry	Plantation Belt	Pine Barrens	Wiregrass	Coast	State
Losses							
200 to 250	0	0	0	1	0	0	1
150 to 200	1	0	0	1	3	0	5
100 to 150	2	0	2	4	5	2	15
50 to 100	5	3	0	1	3	3	15
0 to 50	2	1	4	1	4	1	13
Benefits							
0 to 50	2	3*	5*	1	0	0	11
50 to 100	2	3*	13*	0	1	0	19
100 to 150	1	10*	11**	0	0	0	22
150 to 200	2	4	13**†	0	0	0	19
200 to 250	0	1	8*†	0	0	0	9
250 to 300	0	1	3*	0	0	0	4
300 to 350	0	0	2*	0	0	0	2
350 to 400	0	0	0	0	0	0	0
400 to 450	0	0	1	0	0	0	1
450 to 500	0	0	1	0	0	0	1

Notes: Each asterisk represents a county that had adopted the stock law by 1882. A dagger indicates a county that had the stock law imposed by the state legislature.

Sources: See Table 1.

counties in the state would have amounted to \$8,007,500, or \$69,474 per county. If we include the expected savings from negligence payments in the railroad industry, the total savings would have risen to more than nine million dollars.

It is important to note that the average expected savings for those counties that passed the stock law by 1882 was about \$122,000 more than the state mean. This observation lends credence to the Davis and North hypothesis that institutional change tends to come about when the net present value of a new institutional arrangement exceeds that of the status quo. Net profitability, however, was not a sufficient condition for the adoption of the stock law. Table 2 shows the frequency distributions of expected net profits by region and identifies the counties that had adopted the law by 1882. In the Plantation Belt, only nine of 39 counties with an expected gain greater than \$100,000 had implemented the stock law by 1882. In the Upcountry, 15 counties with a profit estimate greater than \$100,000 did not adopt the stock law, while two others had adopted the law with an expected gain of less than \$100,000. Why did these 15 counties, and those in the same position in the Mountain region, not adopt the relatively profitable law? Attributing the failure to transaction costs alone is much too simple, for there is no

reason to believe that transaction costs were lower in the counties that adopted the stock law than in those that did not.

The remainder of this article takes a microscopic look at the dynamics of institutional change. Since the Georgia legislature reduced the fence question to smaller and smaller geographic regions, it is necessary to concentrate on very specific politico-geographic areas in order to understand the closing of the Georgia range. Because the data requirements are extensive, I focus on the two Upcountry counties that receive the most attention in the historical literature—Carroll and Jackson counties. Carroll's expected savings of \$119,116 were near the top of the distribution for the Upcountry, while Jackson's expected savings of \$209,755 were clearly greater than almost all counties in the Upcountry. Relative to the state as a whole, Carroll's profitability ranked in the seventh decile, while Jackson's ranked in the top of the ninth.

Analyzing why Carroll and Jackson counties failed to adopt the stock law by the early 1880s offers a rigorous test of the theory that institutional change tends to come about as the relative benefits become positive. Although the expected gains were high for these counties, they did not adopt the new institution right away because of distributional conflicts and transaction costs. These difficulties were overcome in these two Upcountry Georgia counties only when the political process facilitated the institutional change.

THE DYNAMICS OF FENCE REFORM

When animals were free to roam the open range and there was no legal way to force owners to enclose their livestock, what prevented citizens from voluntarily internalizing the externality, as Ronald Coase has suggested?²¹ Since animal owners had a legal right to allow their animals to roam the countryside, advocates of the stock law might have bribed their neighbors to fence in their stock. Negotiating and enforcing such a settlement, however, probably would have proven to be quite difficult. It would have required that all animal owners, each of whom was a monopolist with some incentive to hold out until he captured the entire net expected social gain for himself, agree to forgo their common right to the open range. Even if a small group of farmers were able to negotiate a contract restricting each other from using the open range, enforcing the provisions of the agreement may have been prohibitively expensive.

The Georgia Supreme Court recognized these Coase-type agreements between neighbors in *Winters v. Jacobs*: "If adjacent owners agree to dispense with the partition fence and to inclose their land in common, it

²¹ Ellickson, in "Of Coase and Cattle," described how Shasta County, California, ranchers (circa 1980) were able to use informal norms to internalize some of the externality problems associated with an open range situation.

is the same as if they are jointly bound to maintain a division fence. The agreement is the fence, and each of the parties is bound at his peril to keep his cattle on his own land.”²² These gentlemanly accords, however, could easily sour if one party became lax in his commitment to abide by the contract’s terms. Consider the bitter dispute between neighbors George H. Tumlin and Charles C. Parrott of Bartow County, who “had made an agreement not to have any dividing fence as they were scarce of timber, and that neither one of them was to pasture their lands adjoining each other.”²³ The problem arose when Parrott’s cattle strayed onto Tumlin’s land, eating the latter’s crops. After a period of time, Tumlin, having tried unsuccessfully to keep Parrott’s livestock off his property, shot and killed \$240 worth of livestock and maimed another \$30 worth. Because Tumlin did not recompense his neighbor, Parrott sued for treble damages, arguing that Tumlin did not try to drive the cattle back home and that Tumlin’s land was not enclosed by a legal fence.²⁴ The case eventually reached the Georgia Supreme Court, which decided against Tumlin—in order to kill animals without responsibility, an actual legal fence had to be broken, not merely the agreement to dispense with it.²⁵ Although voluntary agreements to reduce some fencing expenses were conceivable, monitoring and enforcing the agreement was a more difficult matter.

In 1872 the Georgia General Assembly eased the burden of fence law reformers by allowing individual counties to decide whether to fence crops or livestock. Whereas before 1872 a single animal owner could have forced many farmers to erect fences, after 1872 it took a majority vote in a county election to do so. To bring about a fence election, 50 freeholders were required to file a petition with the county’s ordinary (chief executive), who advertised their desire for an election. The election could be called off, however, if 50 additional freeholders presented a counterpetition. If, after the filing of the counterpetition, 25 more landowners added their names to the original petition, the ordinary held the election on the first Monday in July. The 1872 act decreed that a county could not have more than one fence election per two-year period.²⁶ While only freeholders could call for or call off an election, all eligible voters were permitted to vote in the referendum.²⁷

The 1872 legislation was a major victory for stock law supporters in Georgia. Since the expected net benefits of the stock law were unevenly distributed across the state, fence reformers realized that a statewide

²² *Winters v. Jacobs*.

²³ Georgia Supreme Court, “Case File of George H. Tumlin v. Charles C. Parrott.”

²⁴ *Ibid.*

²⁵ *Tumlin v. Parrott*.

²⁶ Georgia, *Session Laws*, 1872, No. 329, pp. 34–36.

²⁷ This arrangement was upheld by the Georgia Supreme Court in *Tharpe v. Hardison*. In addition, the court declared that only freeholders could contest an election after it was held.

law, such as the one assumed in the preceding calculations, would be difficult to push through the General Assembly. As Commissioner of Agriculture J. T. Henderson confirmed in his 1881 report: “The interests and industries of different sections of the State are too varied to admit of a general [stock] law applicable to all sections.”²⁸ In Georgia, at least, the legislature maintained that the fence’s fate would be determined by direct local democracy.²⁹

Ten years after the legislature allowed county voting on the fence issue, only 14 of 88 counties that expected a net benefit had adopted the stock law. What prevented the other counties whose adoption would have been profitable from following the same course of action? A close examination of the data from Carroll and Jackson counties, which are both about 40 miles upcountry of Atlanta, reveals that while the stock law may have been income-enhancing from a social point of view, the median voter was against fence reform. Unresolved distributional conflicts caused the stock law’s defeat at the county level.

To see why the 1872 law was, generally, an inadequate mechanism for promoting the adoption of the closed range, it is best to identify how various coalitions sided on the fence debate. In order to distinguish the bases of support for the stock law, I have divided the agricultural communities of Carroll and Jackson into six coalitions—landowners (expected winners and losers from the stock law), tenants (winners and losers), wage laborers, and townspeople. By using a 100 percent matched sample of the manuscript agricultural and population schedules of the 1880 census, I was able to determine precisely the sizes of the six coalitions. Further, I have calculated a profit/loss estimate for each owner-operated and tenant farm, assuming that the closed range was instituted in 1880.³⁰ Table 3 shows the sizes and the median expected benefits or losses for the various coalitions.

Steven Hahn and Charles L. Flynn, Jr., argued that laborers and tenants of both races, along with “very small farmers,” formed a coalition against reform, while richer white landowners pushed for

²⁸ Georgia Dept. of Agriculture, *Report of the Commissioner*, p. 209.

²⁹ See Kantor, “Property Rights,” chap. 4, for a more detailed analysis of the incremental political changes relating to the fence question in the postbellum period.

³⁰ In Jackson County, 76 farmers classified as tenants reported no land, but positive levels of cotton and/or corn output and positive livestock holdings. In addition, 11 farmers enumerated as tenants reported no land, no cotton or grain production, and no livestock. The nonreporting of such data may be evidence supporting the argument in Virts, “Estimating the Importance,” that the plantation system persisted into the postbellum period. Large plantation-type farms may have hired “tenants,” but all of the decision making was conducted by the landowner. It might be conjectured that Jackson County tenants not reporting pertinent data may have been part of such a plantation system. In any case, I have reclassified the 11 tenants who reported no data as farm laborers. Given that I have the total agricultural output of the former 76 tenants, I have estimated their tilled acreage in each of the various crops based upon the average yields per acre of the other tenant farmers in Jackson County. Moreover, I have set their pasture allocations to zero, which will tend to bias my results against finding net benefits for these farmers. I found none of the problems discussed above in the Carroll County data.

TABLE 3
PREDICTED SIZES OF VOTING COALITIONS—CARROLL AND JACKSON COUNTIES

	Owners		Tenants		Laborer	Town Resident
	$P \geq 0$	$P < 0$	$P \geq 0$	$P < 0$		
CARROLL COUNTY						
Number	438	983	431	479	524	381
Median net benefit (\$)	80.18	-108.62	75.44	-77.71		
Percent of population	13.5	30.4	13.3	14.8	16.2	11.8
JACKSON COUNTY						
Number	378	751	93	240	1511	206
Median net benefit (\$)	116.38	-120.31	80.20	-87.18		
Percent of population	11.9	23.6	2.9	7.6	47.5	6.5

Notes and Sources: “P” represents the expected profitability of the stock law to individual farmers. The data were collected from the agricultural and population manuscript schedules of the 1880 census, Carroll and Jackson counties.

fence reform.³¹ On the surface, it seems likely that small, relatively poor landowners who relied on the open range to feed their animals would have been solidly against the stock law. Conversely, wealthier landowners who could afford to provide pasturage (a strong determinant of a farmer’s net expected gain from the stock law) for their animals were probably the champions of reform.³² The data underlying Table 3, however, suggest that this point is somewhat misleading. Farm size alone did not determine how a farmer would fare if the laws governing unfenced land were changed. Of Carroll’s 438 landowners who hypothetically expected a net gain from the closed range policy, 178 had less than 35 acres under till. Similarly, of the 378 winning landowners in Jackson, 23 percent had less than 35 acres in production. Moreover, there were relatively large farms that stood to lose if the closed range were imposed. Of the 983 losing landowners in Carroll, 35 had more than 100 tilled acres. Of the 751 losing landowners in Jackson, 86 had more than 100 acres in production. The forces that determined a farmer’s financial interest in the matter were more complicated than a simple “haves” versus “have nots” model would suggest.

Tenants as a class cannot be so easily placed in the fence law camp. Better tenants presumably received a higher remuneration for their services. The landowner rewarded the good tenant not only for his productivity, but also for his careful attention to the owner’s land and/or livestock. One way to compensate a high-quality tenant may have been to provide him with pasture on the landowner’s farm. Enclosing animals not only saved valuable time spent searching for animals in the forest,

³¹ Flynn, *White Land*, p. 145; and Hahn, *The Roots of Southern Populism*, pp. 248, 262.

³² In Carroll and Jackson counties, landowners expecting a net gain had an average of eight to nine acres of pasture, while expected losers had virtually none. Likewise, winning tenants in Carroll had a little more than an acre of pasture, while losers had about none. Winning tenants in Jackson were able to negotiate for about five acres of pasture space.

but it also corresponded to higher-quality meat and dairy products because the animals' food intake could be controlled. According to the manuscript schedules of the agricultural census, 40 tenants were able to secure pasture land in Carroll and 46 were able to do so in Jackson. Although these tenants had pasture, they still had the option to let some of their animals roam the countryside. According to contemporary evidence and the manuscript data, however, the tenants who received pasture were given enough to enclose all of their livestock.³³

Pasture was an item that the tenant had to negotiate with the landowner. In the rental contract between James Willbanks and C. M. Wood, a landlord from Harmony Grove in Jackson County, the subject of pasturage was made quite explicit. Not only was Willbanks "to take care of said farm as it was his own," but it was also stated that "there is to be no pastureing on the land of said place that are in cultivation [sic]."³⁴ If the rental contract forbade pasturing on cultivated acreage, and provided no formal pasture or unimproved land for animals to forage, a tenant then had four options: he could keep no animals, as 6.1 percent of Carroll and Jackson tenants decided; he could pen his animals and feed them purchased grain or fodder grown on his small farm; he could rent a plot of pasture; or he could send his livestock out into the forest to find food for themselves.³⁵ Presumably, most poor tenants chose the latter. Would they all have been hurt by the stock law? Table 3 suggests that not all tenants would have been hurt by the stock law, and many benefited even though they had no pasture. Because so many tenants had few animals, especially in Carroll County, the benefits associated with expanding acreage and eliminating large-scale fence maintenance would have exceeded the costs of enclosing and feeding them. In total, about 47 percent of the tenants in Carroll and 30 percent in Jackson stood to gain from fencing animals in, instead of fencing them out.

For those tenants expecting a loss from the stock law, the financial injury would have been somewhat tempered by the competitive market for labor.³⁶ Since tenants could always migrate, if a county decided to close its range while nearby counties retained open range, landowners would have had to compensate their tenants for the losses associated with inaccessibility to the commons. Contemporaries certainly understood the power of the competitive market for labor. A "Tenant" in Jackson County believed that the stock law was in "the interest of the

³³ For evidence on pasture requirements, see the *Jackson Herald*, Aug. 31, 1883, and Mar. 30, 1885.

³⁴ A.D. O'Rear Collection.

³⁵ In Carroll County, 714 of 910 (78.5 percent) tenant farmers reported no pasture or unimproved land and in Jackson County, 144 of 344 (41.9 percent) tenants were in the same situation.

³⁶ The competitiveness of the postbellum southern labor market is discussed by Higgs, *Competition and Coercion*; DeCanio, *Agriculture in the Postbellum South*; and Reid, "Sharecropping."

tenant fully as much or more than the land-holder, from the fact that whoever furnishes the best pastures will certainly get the best tenants, as it is all bosh about the land-holder being more independent than the tenant, for what is his land worth to him without labor?" In Rockdale County, which was one of the first to pass the stock law, the editor of the county newspaper observed that "landlords see who can arrange the best pastures to secure the best tenants."³⁷ Thus, not only do the expected benefit estimates mar Steven Hahn's and Charles Flynn's suggestion that tenants were unanimously in favor of the status quo, so do the predictions of economic theory and the statements of contemporaries about the competitive market.

The assumption that wage laborers were solidly against reform is difficult to justify as well. If laborers kept animals on the open range, they would have experienced a decrease in real income when the stock law was imposed because they would either have had to rent pasture and purchase feed or sell the animals. Alternatively, laborers who owned no animals were probably indifferent between the two laws, at least in the short run. If these individuals expected to own a cow or pig one day, then their interests might have leaned toward the status quo. On the other hand, the short-term demand for wage labor might have increased with the improved acreage and the need to fence pastures under the stock law, which could have caused upward pressure on wages. Regardless of whether we predict that laborers' incomes would have increased or decreased, the competitive market for labor should have equalized the wage with that of surrounding open range areas, minus moving costs. While a theoretical prediction as to how the farm laborers in the two counties sided on the fence question would be tenuous, the empirical analysis of the voting returns presented in the next section indicates how this pivotal coalition aligned.

Finally, townspeople who kept small gardens and very few animals had incentives to keep animals, usually swine, from roaming through their relatively densely populated hamlets. Throughout the postbellum period the General Assembly gave the mayors and aldermen of many incorporated towns the right to pass local ordinances forbidding animals from running at large.³⁸ The town of Carrollton, the county seat of Carroll, passed its own local ordinance in March 1886, making it unlawful for animals allowed "willfully and negligently" to run at large within the corporate limits of the town.³⁹ As town populations grew, the costs of maintaining the open range (health costs, for example) increased rapidly, creating an incentive to rectify the problem through

³⁷ *Jackson Herald*, Sept. 1885. See also *Jefferson Forest News*, June 24, 1881, and June 10, 1881; *Jackson Herald*, July 20, 1883, and Aug. 24, 1883; and *Newnan Herald*, June 30, 1881.

³⁸ See, for example, Georgia, *Session Laws*, 1871, No. 209, p. 109, and No. 190, p. 128.

³⁹ *Carroll Free Press*, Mar. 26, 1886.

legislation. The town coalition, however, was quite small, amounting to only 381 in Carroll and 206 in Jackson.

The data in Table 3 suggest that the coalition of expected losers outnumbered the expected winners. In Carroll the expected beneficiaries included 438 landowners, 431 tenants, and 381 townspeople, totalling 1250. The expected losers numbered 983 landowners and 479 tenants. In Jackson 991 expected losers dominated the 677 expected net winners. It is doubtful that laborers in either county would have voted for the stock law with sufficient intensity to produce a victory. Indeed, throughout the 1880s, each time Carroll and Jackson voters went to the polls, stock law supporters were never able to garner more than 27 to 38 percent of the total votes cast.⁴⁰ The median voter was clearly in favor of the status quo. The only chance that the minority coalition had was to compensate a subset of those individuals who expected a loss from the proposed law.

Because landowners and laborers were periodically bargaining with one another to determine the rent or wage, contracts could have included a contingency clause providing the tenant or laborer with an appropriately sized sidepayment to compensate for any expected loss. It is unlikely, however, that this type of negotiated settlement would have been implemented. First, it is doubtful that many laborers would have believed that their employers would have actually compensated them once the ballots were cast and the election was over. Second, there would have been a problem of free riding if there were no mechanism forcing landowners to pay their share of the sidepayments. It is not surprising then that many counties that could have profited from the stock law failed to achieve the change. As long as the median voter was against change and sidepayments could not be effected, the status quo, no matter how socially inefficient, would persevere.

There were two obvious solutions to this problem—either voters who had the most to lose by the institutional change could have been disfranchised, thereby shifting the median voter toward being a net winner, or a formal mechanism could have been created that would have eliminated free riding and put the force of the law behind a compensation scheme. Although stock law supporters called for the explicit disfranchising of voters they thought were blocking reform—landless tenants and laborers—the legislature never imposed eligibility requirements on fence elections.⁴¹ Instead, maintaining its commitment to direct local democracy, the Georgia General Assembly created an advantage for the reform movement by manipulating the rules governing fence elections. In 1881 the legislature removed the restriction limiting counties to only biennial votes on the fence issue. Under the new law,

⁴⁰ Table 4 contains the sources for the election data.

⁴¹ Calls for fence election disfranchisement can be found in *Carroll County Times*, May 3, 1878, and June 7, 1878; and Georgia Dept. of Agriculture, *Annual Report*, p. 66.

the ordinary could call for an election at any time: setting the election date during harvest season, for example, when most small farmers, tenants, and laborers were busy with their work.⁴² In addition, a county could now hold elections again and again, inevitably dampening turnout, which reduced the number of votes that stock law advocates had to win. This advantage only lasted for two years though, when in 1883 the legislature restricted a county's vote to once per year, the first Wednesday in July.⁴³

The most significant legislative change in 1881 permitted referenda on the fence issue at the subcounty militia district level. Although similar in spirit to the 1872 law, the wording of the ballots was changed for the district elections. Instead of voting for "no fence" (stock law) or "fence" (status quo) as it was in a countywide referendum, the district election required the ballots to read either "stock law" or "for fence." Although this may appear to be a subtle nuance, it was not. The significance of this rewording will be discussed below. Once passed, the stock law went into effect six months after the election, and the district had to erect "good and substantial" fences around its circumference in order to prevent strays from other places from entering the closed range area. This requirement initially made the cost of adopting the stock law quite high, but it was struck down by the Georgia Supreme Court in 1885.⁴⁴

The remarkable feature of the 1881 legislature was that it required the owners or proprietors of land in militia districts that adopted the stock law to provide pasturage for at least one cow and calf for the family of each tenant who did his proportionate share of the fencing of the pasture. This pasture requirement, which did not pertain to countywide elections, acted as a contingency contract, promising to at least partially compensate tenants for their losses after the stock law was adopted. According to contemporary estimates, a cow and a calf could have been pastured on one acre of land. I recomputed the profitability estimates to take account of this clause. If a tenant already had pasture before the institutional change, his estimate would remain the same. For tenants who reported no pasture in the 1880 census, I added one acre of pasture to their data and reran the calculation, leaving everything else constant. For Carroll County, whereas 47.4 percent of the tenants expected a non-negative net benefit from the stock law with no pasture allowance,

⁴² Georgia, *Session Laws*, 1881, No. 110, pp. 60–61.

⁴³ Georgia, *Session Laws*, 1883, No. 134, pp. 49–51.

⁴⁴ The law allowing militia district option is in Georgia, *Session Laws*, 1881, No. 401, pp. 79–81. In *Jones v. Sligh* the court declared that it was unconstitutional for the county ordinary to levy and to collect a tax upon the property of a militia district in order to build and to maintain a fence around a district that voted for the stock law. This virtually meant that the fence requirement was invalidated. Then in *Dover v. The State of Georgia* the court was more direct. It ruled that the stock law would still go into effect in a militia district that voted for the law even though it did not have a fence surrounding its borders. See also *Holleman v. Kingery*.

80.0 percent would have benefited if the landowner were required to provide an acre of pasture. For Jackson County, the results show the same steep trend, rising from 27.6 percent if no pasture were provided to 71.4 percent with a pasture allotment.⁴⁵ The 1881 law allowing district referenda on the fence problem, in effect, made compensation of tenants by landowners a reality, and eliminated the free-rider problem by requiring all landowners to make the transfer payment. Carroll and Jackson counties were able to overcome the distributional conflicts that impeded fence reform through the district referenda process. By 1890 all but a small area of Carroll County had closed its range and in Jackson County six of thirteen militia districts chose the stock law.

AN EMPIRICAL LOOK

The hypothesis advanced in the previous section is that Georgia counties that expected a positive benefit from the stock law were unable to adopt it because the rules governing choice made the cooperative solution, which depended on transfer payments, virtually impossible to achieve. In other words, there was no mechanism to reduce the transactions costs associated with voluntarily bargaining to adopt the more profitable institution. In most cases, the 1872 law did not lead to the implementation of the closed range where it was profitable. The 1881 legislation, by allowing for militia district referenda, changed the rules of the game and created an opportunity for a coalition among landowners, tenants, and townspeople to adopt the new institution. This section tests empirically whether the legislature's manipulation of the voting mechanism influenced the outcome.

After three frustrating defeats at the countywide level in Carroll and two in Jackson, stock law supporters began to concentrate their attention on adopting the law at the militia district level. By 1890, 14 of the 16 districts in Carroll had adopted the stock law in district referenda. In five of these 14 districts, however, the fence law had originally been declared the victor, but after being contested on the ground of ballot fraud, the county ordinary overturned the results and declared the districts stock-law areas. The precise wording of the law, no doubt, created confusion among voters as the county election ballots were required to read either "fence" or "no fence," the latter meaning the stock law. As stated previously, however, the district election ballots had to be either "for fence" or for the "stock law." The election in Carroll's Bowdon district was particularly muddled as the precinct

⁴⁵ An alternative way to interpret the pasture law is to suppose that the landowner would give the tenant an acre of pasture, but, at the same time, would reduce the tenant's tilled acreage by an acre. Calculating the estimates according to this assumption does not change the results in any dramatic fashion. In Carroll, 76.1 percent (instead of 80.0) of the tenants would have favored the stock law and the sidepayment. In Jackson, 70.5 percent (instead of 71.4) would have been in favor of the closed range.

managers certified the result in favor of the fence law 102 to 73. The actual vote cast was 73 for “stock law,” 68 “for fence,” 30 for “fence,” 2 for “a fence,” and 2 for “the fence.” The county ordinary, after hearing arguments from both sides, threw out the 34 votes not cast “for fence,” thus leaving a majority of 73 to 68 for the “stock law.”⁴⁶ In the remaining nine districts that adopted the stock law through legal balloting, the law won with very slight majorities. Therefore, by taking advantage of legal ambiguities and by concentrating their attention on the much smaller districts, stock law supporters were able to close the open range of Carroll and Jackson counties little by little.

While voter confusion may explain some of the transition to the stock law, to what extent did the pasture requirement of the 1881 law offer significant compensation to convert would-be losers into stock law voters? To answer this question, I analyzed the aggregate voting behavior of individual districts within Carroll and Jackson counties. From 1881 to 1890, Carroll County held five countywide fence elections—in January 1882, September 1882, July 1885, July 1887, and July 1890. Jackson County held two countywide elections, one in July 1881 and another in September 1883. In addition, many of the militia districts held local-option elections, which were sporadically and incompletely reported in the newspapers. I was, however, able to collect the election returns from 14 of these district elections. Where the county ordinary overturned the results of a district election, I used the figures that were reported by the precinct managers and not the results that emerged from litigation. The vote reported out of the district represents the “true” sentiment of the voters; the final judgment of the ordinary misrepresents the actual intention of the voters.

The first hypothesis to be tested in the empirical analysis is whether coalitions voted for the option (stock law or status quo) that promised to maximize their net returns. More specifically, did landowners and tenants who, if my assumptions were accurate, would have expected a non-negative profit from the stock law translate this belief into votes for the new institution? Alternatively, did those farmers who anticipated a loss vote to keep the range open? Did town dwellers vote for the closed range as might be predicted? Finally, which alternative did wage laborers support? The second hypothesis tested is that the 1881 rule changes governing district elections offered enough incentive to “buy” the votes of tenants who previously had no pasture and would have, under the pre-1881 structure, expected a net loss from the closed range policy.

The dependent variable in the minimum logit chi-squared estimation is voting behavior.⁴⁷ The independent variables are the percentages of

⁴⁶ *Carroll Free Press*, Mar. 18, 1887, and Mar. 25, 1887.

⁴⁷ For a discussion of the econometric model, see Maddala, *Limited-Dependent*, pp. 29–30.

the population (of household heads) that fall into one of six coalitions—winning landowners, losing landowners, winning tenants, losing tenants, townspeople, and rural laborers—and the percentage of the eligible electorate not voting. With the matched population and agricultural data, I am able to determine precisely the values of the independent population variables for each militia district in Carroll and Jackson counties. The final independent variable, the percentage of the eligible electorate not voting, was used to hold turnout constant. When an individual district adopted the stock law, this did not prohibit it from voting in forthcoming countywide elections. As J. Morgan Kousser and I have shown in “Common Sense or Commonwealth,” once a district adopted the stock law, its voters subsequently abstained in great numbers.⁴⁸

Column 1 of Table 4 reports how a change of one standard deviation from the mean of the particular variable (holding all else constant) affected the probability of voting for the stock law in countywide elections. The data for this estimation include only the countywide elections (no compensation scheme) and none of the local-option district elections. The estimated probability of voting for the stock law when all variables are set at their sample means is 0.255. The hypothesis that voters clashed according to material self-interest is very much supported by the data. As the results in column 1 indicate, an increase of one standard deviation in the percentage of landowners who expected a loss from the stock law meant that it would lose 3.6 percentage points. The proposed law’s support was bolstered by 3.4 points as relatively more landowners expected to profit from the stock law—profits of 6.4 points when there were relatively more tenants who expected a net gain, and of 8.5 percentage points when there was a higher proportion of voters living in towns. These results are statistically significant at better than the 10 percent significance level. Only the coefficient for losing tenants was not significantly different from zero in the regression. Moreover, the data confirm that laborers were solidly against the stock law in countywide referenda. Increasing the share of laborers in a district by one standard deviation decreased the stock law’s vote by 11 percentage points. Finally, higher voter abstention corresponded to greater relative support for the institutional change. Once districts adopted the stock law, voters began to abstain. When the closed range was voted in, the decision was final, and there really was no reason to vote in a countywide election. Kousser and I have shown that instead of imposing their views on districts that retained the open range, fence law and stock law partisans left the fence question to those who had a direct interest in the matter. The regression results indicate that this decreased political activity was stronger among fence law partisans. An increase in

⁴⁸ Kantor and Kousser, “Common Sense or Commonwealth?” pp. 18–19.

TABLE 4
MARGINAL EFFECTS ON THE PROBABILITY OF VOTING FOR THE STOCK LAW

Variable	(1) ^a	(2) ^a
Constant (Laborers) ^b	-0.111 ^d	-0.087 ^d
Winning Landowner	0.034 ^f	0.001
Losing Landowner	-0.036 ^f	-0.042 ^c
Winning Tenant	0.064 ^d	0.074 ^d
Losing Tenant	0.000	-0.035
Townspiece	0.085 ^d	0.063 ^d
Percent Electorate Abstaining	0.048 ^d	0.042 ^d
Winning Tenant * District Election		-0.032
Losing Tenant * District Election		0.131
Laborers * District Election		0.124 ^c
Estimated Probability of Voting for Stock Law in a county election ^c	0.255	0.306
Estimated Probability of Voting for Stock Law in a district election		0.532
<i>N</i>	92	57
<i>R</i> ²	0.323	0.484
Adjusted <i>R</i> ²	0.275	0.385

^a The marginal effects reported are the result of increasing each independent variable by one standard deviation from its mean (holding all else constant) and then determining how it changed the baseline probability (all variables set at their means).

^b To determine the marginal effects that laborers had on the vote, I reran an equation using laborers instead of townspiece and determined the laborers' marginal effect from that equation. In other words, when running the equations, one of the independent variables had to be excluded because they all sum to 100.

^c This is the estimated probability of voting for the stock law in a countywide election, setting all of the independent variables at their means. The next row reports the predicted probability assuming a district election, governed by the 1881 rules.

^d Significant at the less than or equal to 0.01 level, two-tailed test.

^e Significant at the less than or equal to 0.05 but greater than 0.01 level, two-tailed test.

^f Significant at the less than or equal to 0.10 but greater than 0.05 level, two-tailed test.

Variables with asterisks indicate interaction between the individual terms.

Sources: Countywide voting returns were collected from the *Carroll County Times*, Jan. 13, 1882, and Sept. 15, 1882; *Carroll Free Press*, July 3, 1885, July 8, 1887, and July 4, 1890; and *Jackson Herald*, July 8, 1881, and Sept. 14, 1883. District referenda returns were collected from the *Carroll Free Press*, Sept. 18, 1885, Mar. 11, 1887, Mar. 18, 1887, Apr. 1, 1887, June 24, 1887, July 8, 1887, Sept. 9, 1887, Dec. 16, 1887, and Feb. 22, 1889; and *Jackson Herald*, Oct. 23, 1885, Apr. 23, 1886, Sept. 2, 1887, and Nov. 11, 1887. Independent variables were computed using a 100 percent matched sample of the agricultural and population manuscript schedules of Carroll and Jackson counties.

the percentage of the electorate abstaining corresponded to a statistically significant increase (4.8) in the percent voting for the stock law. Thus, the analysis refutes the view that poor landowners, tenants, and laborers were uniformly against the stock law policy. There was a group of tenants who united with their landowners and their town neighbors in an attempt to capture the efficiency gains associated with a closed range.

How did the changes in the fence election rules affect voting behavior? The theory above predicts that many tenants expecting a loss should have voted for the stock law in district elections, as they would have received about an acre of pasture if the law were passed. In order

to capture the effects of the rule change, I pool the countywide and districtwide voting returns. Since the goal is to distinguish the voting behavior of specific coalitions under both voting regimes, the only way to obtain unbiased estimates of the behavioral change is to analyze militia districts for which countywide and districtwide election data exist. Because not all districts held elections and some districts' election returns were not recorded in the county newspapers, the number of observations in the analysis drops substantially. Since only 13 of 29 districts in Carroll and Jackson are represented in the study, it is very difficult to say confidently that the results offer a precise picture of the voting behavior in every district of the two counties. The results offer information only about the districts that held local elections which were reported in the newspapers.

Since the 1881 law's pasture requirement was directed at tenants and at laborers who were working their way toward becoming tenants, three new independent variables are created to test whether tenants (expected winners and losers) and laborers voted any differently in district referenda. The additional variables are interaction terms between each of the tenant coalitions and the laborer coalition and a dummy variable that takes the value of one if the observation is a district election (1881 rules) and zero if it is a countywide election (1872 rules).

Column 2 of the table reports the results when including the interaction terms in the estimation. By setting the interaction terms equal to zero and the other independent variables at their sample means, I have computed the predicted vote for the stock law in a countywide referendum to test the representativeness of the subsample of districts. The estimate of 0.306 of the votes in favor of closing the range is 20 percent higher than the 0.255 predicted by the full sample of districts. Therefore, those in the subsample represented in column 2 were somewhat more inclined toward voting for the stock law than all of the districts in the two counties.

The increased support for the stock law at the district level is difficult to precisely pin down. Surprisingly, winning tenants decreased their support for the closed range policy in district elections, lowering the stock law's probability of success by 0.032 (relative to a countywide election). This result is not statistically significant at conventional levels, however. The coalition of losing tenants increased the probability of adopting the stock law in a district election by 13.1 percentage points (again, relative to a countywide election). Yet, this estimate is not statistically significant either. The most statistically significant finding is the increase in support by laborers voting in district elections. They boosted the stock law's share of the ballots by an additional 12.4 percentage points over the countywide probability. One explanation for this result might be that many laborers anticipated a relatively quick

move into tenancy, where they would be guaranteed pasture by law.⁴⁹ An alternative hypothesis might be that the laborers' strong support was the result of vigorous canvassing by stock law supporters. Since the district election involved many fewer people and a smaller geographic region, it is possible that the transaction costs associated with compensating laborers were reduced enough to enable stock law supporters to create a winning coalition that included labor acquiescence as well (compensated, of course).

It is clear that the changed election rules enabled stock law supporters to enhance the size of their coalition just enough to carry the fence election at the district level. If a district in fact held an election, the estimation predicts that the stock law garnered 53.2 percent of the ballots cast—enough for victory. The 1881 district option law was truly successful in building a minimum winning coalition.

CONCLUDING REMARKS

Before the Georgia General Assembly began to legislate on the fence question, transaction costs made a voluntary, large-scale closing of the range virtually impossible. A voluntary solution required the unanimous consent of all animal owners to enclose their livestock. A single person could hold up reform. Under the 1872 law allowing majority rule at the county level, however, it took more than half of the votes cast in an election to maintain the status quo. With the median voter against reform, sidepayments were necessary to compensate losers (at least a coalition of them) for their expected losses if access to the open range were cut off. But again, transaction costs associated with overcoming free riding among the beneficiaries and the actual process of paying bribes most likely made the 1872 law ineffective. Finally, the legislature redesigned the rules of fence elections in 1881. The 1881 pasture requirement apparently was designed to compensate at least some of the expected losers. More importantly, the law forced all landlords to pay the bribe—free riding was no longer a feasible strategy.

The 1881 law did more than provide a mechanism to overcome the compensation and free rider problems; it created an opportunity for fence reformers to use chicanery in their attempt to close the range. In five instances the Carroll County ordinary threw out invalid votes for the fence law, leaving a majority for the new institution. It is interesting to note that three of the five districts expected net social losses if the stock law were imposed. Net benefits, therefore, are neither a sufficient nor necessary condition for institutional change to take place. The mechanism that governs choice can be manipulated in such a way that

⁴⁹ Unfortunately, because the manuscripts from the 1890 census have burned, it is not feasible to test the hypothesis that laborers quickly moved up to tenancy after the stock law was implemented. The aggregate county data prevent such an analysis as well.

allows a subset of the population to profit at the expense of society as a whole.

While Carroll and Jackson counties expected to gain much from the stock law, their relative delay in adopting the law illustrates the sometimes difficult process of institutional change. The potential for efficiency gains did not guarantee the replacement of an old institutional arrangement by a new one. When distributional conflicts and transaction costs hinder the adoption of a relatively profitable institutional arrangement, what type of mechanisms are likely to emerge in order to resolve the impasse? More attention needs to be paid to the precise arrangements that govern choice, for they will dictate whether “the more efficient institution . . . will survive and the inefficient ones perish.”⁵⁰

⁵⁰ North, *Structure and Change*, p. 7.

REFERENCES

- Arrow, Kenneth J., “The Property Rights Doctrine and Demand Revelation Under Incomplete Information,” in Michael J. Boskin, ed., *Economics and Welfare: Essays in Honor of Tibor Scitovsky* (New York, 1979).
- Atlanta and West-Point Railroad Company, “Reports of the President and Superintendent of the Atlanta and West-Point Railroad Company, to the Stockholders in Convention” (1880 and 1884).
- Binger, Brian R., and Elizabeth Hoffman, “Institutional Persistence and Change: The Question of Efficiency,” *Journal of Institutional and Theoretical Economics*, 145 (Mar. 1989), pp. 67–84.
- Bonner, James C., *Georgia’s Last Frontier: The Development of Carroll County* (Athens, GA, 1971).
- Carroll County Times* (Georgia, various issues).
- Carroll Free Press* (Georgia, various issues).
- The Central Railroad v. Hamilton*, 71 Georgia 461 (1883).
- The Central Railroad v. Summerford*, 87 Georgia 626 (1891).
- Coase, Ronald, “The Problem of Social Cost,” *Journal of Law and Economics*, 3 (Oct. 1990), pp. 1–44.
- Crawford, Vincent C., “A Theory of Disagreement in Bargaining,” *Econometrica*, 50 (May 1982), pp. 607–37.
- Cronon, William, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York, 1983).
- Davis, Lance E., and Douglass C. North, *Institutional Change and American Economic Growth* (Cambridge, 1971).
- DeCanio, Stephen J., *Agriculture in the Postbellum South: The Economics of Production and Supply* (Cambridge, MA, 1974).
- Demsetz, Harold, “Some Aspects of Property Rights,” *Journal of Law and Economics*, 9 (Oct. 1966), pp. 61–70.
- Demsetz, Harold, “Toward a Theory of Property Rights,” *American Economic Review*, 57 (May 1967), pp. 347–59.
- Dover v. The State of Georgia*, 80 Georgia 781 (1888).

- Ellickson, Robert C., "Of Coase and Cattle: Dispute Resolution Among Neighbors in Shasta County," *Stanford Law Review*, 38 (Feb. 1986), pp. 623–87.
- Farrell, Joseph, "Information and the Coase Theorem," *Economic Perspectives*, 1 (Fall 1987), pp. 113–29.
- Flynn, Charles L., Jr., *White Land, Black Labor: Caste and Class in Late Nineteenth-Century Georgia* (Baton Rouge, 1983).
- Georgia, *Session Laws* (Atlanta, various years).
- Georgia Department of Agriculture, *Annual Report of Thomas P. Janes, Commissioner of Agriculture of the State of Georgia for the Year 1875* (Atlanta, 1876).
- Georgia Department of Agriculture, *Publications of the Georgia State Department of Agriculture from September, 1874 to January, 1878* (Atlanta, 1878).
- Georgia Department of Agriculture, *Report of the Commissioner of Agriculture of the State of Georgia, Embracing the Years 1881 and 1882* (Atlanta, 1882).
- Georgia General Assembly, "Report of the Georgia State Agricultural Society to Establish More Experimental Farms in the State: 1884–5," Record Group 37, Subgroup 8, Series 4, Box 1, Georgia Dept. of Archives and History, Atlanta.
- Georgia Railroad and Banking Company, "Reports of the Directors, &c. of the Georgia Railroad and Banking Company to the Stockholders in Convention" (1877).
- The Georgia Railroad Company and Banking Company v. Neely*, 56 Georgia 540 (1876).
- The Georgia Railroad Company and Banking Company v. Walker*, 87 Georgia 204 (1891).
- Georgia Supreme Court, "Case File of George H. Tumlin v. Charles C. Parrott," A-15581, Box 246, Location No. 247–01, Georgia Dept. of Archives and History, Atlanta.
- Greeley, Horace, *What I Know of Farming: A Series of Brief and Plain Expositions of Practical Agriculture as an Art Based Upon Science* (New York, 1871).
- Hahn, Steven, *The Roots of Southern Populism: Yeoman Farmers and the Transformation of the Georgia Upcountry, 1850–1890* (New York, 1983).
- Higgs, Robert, *Competition and Coercion: Blacks in the American Economy, 1865–1914* (New York, 1977).
- Hoffman, Philip T., "Institutions and Agriculture in Old-Regime France," *Journal of Institutional and Theoretical Economics*, 145 (Mar. 1989), pp. 166–81.
- Holleman v. Kingery*, 81 Georgia 624 (1888).
- Jackson Herald* (Georgia, various issues).
- Jefferson Forest News* (Georgia, various issues).
- Jones v. Sligh*, 75 Georgia 7 (1885).
- Kantor, Shawn E., and J. Morgan Kousser, "Common Sense or Commonwealth? The Fence Law and Institutional Change in the Postbellum South" (Social Science Working Paper 703, California Institute of Technology, July 1989, revised October 1991).
- Kantor, Shawn Everett, "Property Rights and the Dynamics of Institutional Change: The Closing of the Georgia Open Range, 1870–1900" (Ph.D. diss., California Institute of Technology, June 1990).
- King, J. Crawford Jr., "The Closing of the Southern Range: An Exploratory Study," *Journal of Southern History*, 48 (Feb. 1982), pp. 53–70.
- Libecap, Gary D., "Distributional Issues in Contracting for Property Rights," *Journal of Institutional and Theoretical Economics*, 145 (Mar. 1989), pp. 6–31.
- Libecap, Gary D., and Steven N. Wiggins, "The Influence of Private Contractual Failure on Regulation: The Case of Oil Field Unitization," *Journal of Political Economy*, 93 (Aug. 1985), pp. 690–714.
- McCloskey, Donald N., "The Economics of Enclosure: A Market Analysis," in William N. Parker and Eric L. Jones, eds., *European Peasants and Their Markets* (Princeton, 1975).

- Maddala, G. S., *Limited-Dependent and Qualitative Variables in Econometrics* (New York, 1983).
- Mailath, George J., and Andrew Postlewaite, "Asymmetric Information Bargaining Problems with Many Agents," *Review of Economic Studies*, 57 (July 1990), pp. 351–67.
- Newnan Herald* (Georgia, various issues).
- North, Douglass C., *Structure and Change in Economic History* (New York, 1981).
- A. D. O'Rear Collection, Drawer 171, Roll 46, Georgia Dept. of Archives and History, Atlanta.
- Ransom, Roger L., and Richard Sutch, *One Kind of Freedom: The Economic Consequences of Emancipation* (New York, 1977).
- Reid, Joseph D., "Sharecropping as an Understandable Market Response: The Post-bellum South," this JOURNAL, 33 (Mar. 1973), pp. 106–30.
- Robb, Raphael, "Pollution Claim Settlements Under Private Information," *Journal of Economic Theory*, 47 (Apr. 1989), pp. 307–33.
- Rosenthal, Jean-Laurent, "The Development of Irrigation in Provence, 1700–1860: The French Revolution and Economic Growth," this JOURNAL, 50 (Sept. 1990), pp. 615–38.
- Samuelson, William J., "A Comment on the Coase Theorem," in Alvin E. Roth, ed., *Game-Theoretic Models of Bargaining* (Cambridge, 1985), pp. 321–39.
- South-Western Railroad Company, "Report of the Chief Engineers, President and Superintendents of the South-Western Railroad Company, of Georgia" (1861, 1866, and 1869).
- Tharpe v. Hardison*, 69 Georgia 280 (1882).
- Southern Cultivator* (various issues).
- Tumlin v. Parrott*, 82 Georgia 732 (1889).
- U.S. Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1957* (Washington, DC, 1960).
- U.S. Census Office, Tenth Census, 1880, *Compendium of the Tenth Census* (Washington, DC, 1883).
- U.S. Census Office, Tenth Census, 1880, *Report of the Productions of Agriculture* (Washington, DC, 1883).
- Virts, Nancy, "Estimating the Importance of the Plantation System to Southern Agriculture in 1880," this JOURNAL, 47 (Dec. 1987), pp. 984–88.
- Washburn and Moen Manufacturing Co., *The Fence Question in the Southern States as Related to General Husbandry and Sheep Raising, with the History of Fence Customs, and Laws Pertaining Thereto: And a View of the New Farm System of the South, as Shown in the Census of 1880* (Worcester, MA, 1881).
- Weiman, David F., "The Economic Emancipation of the Non-Slaveholding Class: Upcountry Farmers in the Georgia Cotton Economy," this JOURNAL, 45 (Mar. 1985), pp. 71–93.
- Winters v. Jacobs*, 29 Georgia 115 (1859).