

COMPETING FOR THE RENTAL VALUE  
OF FEDERAL LAND:  
The Assignment of Use Rights and  
Their Regulation

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Growth of the governmental regulation of economic activities since the depression is normally associated with industrial production.<sup>1</sup> Indeed, pollution controls, work-safety requirements, and antitrust actions have recently been cited as contributing to declining productivity and sluggish business investment. Of central concern is the nature of bureaucratic decision making in the regulatory process: Bureaucrats do not bear the full costs and benefits of their actions and, therefore, can be insensitive to the negative economic effects of their actions.

The belief that government policies mainly affect manufacturing and industrial centers is mistaken, however. In the eleven western states the federal government owns or controls resources on a scale unprecedented elsewhere in the country. Fifty-three percent of the land in those states, over 400 million acres, is either owned or administered by the federal government. In Nevada, Arizona, Utah, Idaho, and Oregon, federal lands exceed 50 percent of each state's area, and in New Mexico, Wyoming, and California, they exceed 40

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<sup>1</sup>The figures include both federal and Indian land. Department of the Interior, Bureau of Land Management (BLM), *Public Land Statistics* (Washington, D.C.: Government Printing Office, 1976).

percent.<sup>2</sup> Congress delegates administration of federal land to bureaucratic agencies such as the Forest Service, the Bureau of Land Management (BLM), and the Bureau of Indian Affairs (BIA). They, in turn, assign and regulate private use of federal resources. Hence, bureaucratic decisions regarding the assignments and regulations profoundly affect investment, production, and income distribution in the western states.

The prediction can be safely made that under competitive market conditions and well-defined property rights, voluntary trading will occur, and resources such as land will be channeled to highly valued uses. The level of production and wealth increases, and the net present value of productive resources rises. These predictions cannot be made under bureaucratic conditions because bureaucracies must respond to changing political pressures. Private use permits to federal land, for instance, are likely to be short-term and unstable. Further, the regulatory role of the bureaucracy must be maintained and expanded to justify budget increases, leading to policies that generally impede market forces. Under such conditions pervasive federal ownership of land and bureaucratic control of its use result in lower levels of production and income.

Under the Taylor Grazing Act of 1934 the BLM administers 174 million acres of rangeland. Prior to 1934 vast tracts of arid land were open range, unreserved and unclaimed under the land laws. Formal application for fee title was impossible because of strict acreage limitations imposed by the Homestead Act and similar laws that restricted individual claims to 160 acres, too few for a region where 25 acres were commonly needed to support one cow or five sheep a month.<sup>3</sup> During the late nineteenth and early twentieth centuries, the land was used by ranchers under informal property rights arrangements.

The Taylor Grazing Act substituted formal use permits for informal arrangements. The permits were assigned and regulated under the jurisdiction of the secretary of the interior. To assist the secretary in implementing the provisions of the act, the Grazing Service was created and then later reorganized as the BLM. Grazing districts were organized as administrative units throughout the West, and 15,000 grazing permits were assigned. Since 1934 the privileges conveyed by the permits and the regulatory roles of the BLM have

<sup>2</sup>Grazing capacity is discussed in Department of Agriculture, *The Western Range*, Senate Document 99, 74th Cong., 2d sess., 1936, pp. 81-107.

<sup>3</sup>The creation of the Grazing Service is described in Gary D. Libecap, "Bureaucratic Behavior and the Assignment of Grazing Rights to Federal Lands," mimeographed (College Station: Department of Economics, Texas A&M University, 1980).

changed substantially, increasing the authority of the BLM and reducing that of permit holders.

The BIA similarly received legislative mandate for intensive management of reservation lands in 1934. The Wheeler-Howard Act officially terminated the policy of dismantling Indian reservations and assimilating tribal members into the surrounding community. Instead it called for the maintenance of separate Indian cultures and the central management of Indian resources by the BIA and tribal councils. As with BLM lands this legislation brought formal grazing permits, replacing informal claims on most of the nineteen reservations examined for this paper.<sup>4</sup> Regulatory actions and the BIA experience on the Navajo reservation had an important effect on the extent and nature of bureaucratic land use controls on other reservations. Grazing permits or other limits on stocking were later established on seven reservations or parts of reservations in the Southwest: Jicarilla Apache, Mescalero Apache, Isleta Pueblo, Acoma Pueblo, Laguna Pueblo, Zia Pueblo, and Jemez Pueblo. No formal permits were assigned on the eleven remaining reservations: the Pueblo tribes of Zuni, Cochiti, Santo Domingo, San Felipe, Sandia, Santa Ana, Taos, Santa Clara, Tesuque, Nambe, and San Juan.

This paper analyzes bureaucratic land use regulations by the BLM and the BIA. Bureaucrats are viewed as acting in their self-interest along the lines developed by Niskanen and others.<sup>5</sup> This approach differs from the conventional analyses that view bureaucrats either as acting in the public interest or as passively responding to the industry they regulate. The analysis reveals that decisions by self-interested bureaucrats lead to inherently unstable private use rights to the range. The associated insecurity of tenure results in nonoptimal land use and lower long-term levels of production and wealth.

### The Model

Both ranchers and bureaucrats seek control of federal rangeland. Ranchers holding use permits to federal land are assumed to maximize the discounted present value of the net income from productive land use subject to budget constraints and bureaucratic regulation. Regulatory policies consistent with wealth maximization for ranch-

<sup>4</sup>For a more detailed discussion of grazing rights on southwestern reservations, see Ronald N. Johnson and Gary D. Libecap, "Agency Costs and the Assignment of Property Rights," *Southern Economic Journal* 47 (1980): 332-47.

<sup>5</sup>William A. Niskanen, *Bureaucracy and Representative Government* (Chicago: Aldine-Atherton, 1971).

ers include strict controls on access by non-permit holders, unrestricted transfer of permits, and automatic renewal and minimal regulation of land use decisions. Such conditions make grazing permits close to a private property right. They also constrain the jurisdiction of bureaucrats and their ability to justify budget increases.

For Department of the Interior officials the returns from controlling federal land equal the discounted sum of budget appropriations for regulation. Appropriations, rather than bureaucratic incomes, are important to bureaucrats because they make possible a number of utility-enhancing items: incomes, political and patronage power, and ability to enact personally desired programs. The appropriations an agency receives depend on the extent of its regulatory role, its share of federal land, and the lobbying efforts of sympathetic groups. To convince Congress of the need for larger appropriations, bureaucrats must expand the regulation of land use; doing so reduces returns to ranchers. Accordingly, the two compete for control of the range.

Major regulatory changes occur through new legislation, and minor changes occur through discretionary actions by bureaucratic managers. Niskanen, Lindsay, and others have argued that bureaucrats have considerable discretionary decision-making authority because legislation is vague and congressional monitoring is incomplete.<sup>6</sup> Managers have an incentive to avoid controversial actions that might bring voter pressure on Congress for a more intensive review of their discretionary authority. Since federal land is allocated through bureaucratic decisions rather than through market transactions, political power determines how far bureaucrats and ranchers can advance their relative positions through legislation.

The agency's political power depends on broad-based voter acceptance of its mission and the support of lobbying groups. Its position, however, is weakened by the presence of agencies with similar missions, competitors whose welfare is enhanced by having control of additional federal land. Those privileges, though, are costly because they reduce bureaucratic control and invite charges of favoritism and other unfavorable publicity.

The political power of ranchers is enhanced through equal representation in the Senate for sparsely populated western states. The authority of ranchers, then, depends on their influence over locally

<sup>6</sup>Bureaucratic models are outlined in *ibid.*; *idem*, "Bureaucrats and Politicians," *Journal of Law and Economics* 18:3 (1975): 617-43; Cotton M. Lindsay, "A Theory of Government Enterprise," *Journal of Political Economy* 84:5 (1976): 1061-77; Thomas Borcherding, ed., *Budgets and Bureaucrats: The Sources of Government Growth* (Durham, N.C.: Duke University Press, 1977).

elected officials, which in turn is a function of their number, probability of voting, and resources available for lobbying. To achieve a united position in the western states where federal ownership of lands predominates, ranchers rely on national livestock associations, though there are costs for organizing and securing uniform positions on issues.

Because of their sharply conflicting goals, there is little ground for contracting between ranchers and agency officials. Ranchers want broad use privileges, and there are few regulations that the agency can offer as beneficial beyond mere enforcement of grazing privileges. Moreover, in most cases existing use permits are formal recognition of past, informal claims. Increased regulation thus only attenuates existing privileges. By contrast, organized competitors for land use have incentives to back the bureaucracy's efforts to constrain ranchers in exchange for new access privileges.<sup>7</sup>

In the competition for control of the land, bureaucratic managers and ranchers lobby to advance their positions as long as the expected gains exceed costs.<sup>8</sup> For given levels of political power, an equilibrium results where rental shares are stable. But political influence is unlikely to be static, and relative shifts lead to new lobbying activity.

The following predictions regarding the behavior of the BLM and the BIA are consistent with the model and are examined in the empirical analysis:

First, the desire of bureaucrats to maximize regulation while minimizing political costs implies that Indians will be given more restricted grazing privileges than non-Indians. While non-Indian ranchers using federal lands have been well-organized and influential, Indians have not.<sup>9</sup> They did not receive the right to vote until 1924, and the three largest tribes examined – the Navajo, the Mescalero Apache, and the Jicarilla Apache – had no permanent tribal councils until the 1930s. Hence, their political power is likely to have been weak relative to the BIA and depended more on support from sympathetic non-Indian groups.

Second, the existence of agencies competing for jurisdiction over federal land will lead to the granting of broader grazing privileges

<sup>7</sup>George Stigler, *The Citizen and the State* (Chicago: University of Chicago Press, 1975), outlines various components of political power.

<sup>8</sup>Sam Peltzman, "Toward a More General Theory of Regulation," *Journal of Law and Economics* 19 (1976): 211-400, discusses the likely trade-offs made by bureaucrats in reducing political opposition.

<sup>9</sup>The political power of ranchers is discussed by Marion Clawson in *The Western Range Livestock Industry* (New York: McGraw-Hill, 1950), p. 13.

to ranchers, *ceteris paribus*. Competing agencies place the control of the BLM and BIA in question, increasing the value of the ranchers' political support. This leads to assigning greater authority over land use to ranchers to obtain their endorsement in jurisdictional struggles. The past success of a bureau in securing rents from the administration of federal holdings encourages jurisdictional competition.

Third, the emergence of groups competing with ranchers for federal land will lead to greater bureaucratic regulation, *ceteris paribus*. Such groups provide an alternative constituency for the agency and lessen its dependence on the political support of ranchers. Because the new client groups do not face the political costs of attenuating the rights held by ranchers, they will push for more rapid and extensive regulation and land reallocation than the agency would.

Fourth, increased bureaucratic regulation beyond the definition and enforcement of grazing rights reduces ranch values and increases budget appropriations for the agency. Bureaucratic managers do not directly depend on returns from productive land use for income and hence are less likely than ranchers to make decisions that maximize the net value of the land. Indeed, they are more likely to enforce biological criteria, such as maximum sustained yield for forage production, in placing livestock on the range. To the extent that biological and economic stocking criteria differ, enforcing the former maximizes the regulatory role of the bureaucracy. With secure use rights, ranchers must automatically adjust stocking levels and harvest rates to meet changing market conditions if they are to maximize returns. Bureaucratic management to meet economic criteria is thus superfluous.

## Grazing Rights and Bureaucratic Regulation

### *The Development of Bureaucratic Control*

Ranchers obtained broad grazing privileges to federal land after the Taylor Grazing Act was passed in 1934. Secretary of the Interior Harold L. Ickes granted these privileges in exchange for rancher support for passage of the act. The Department of Agriculture and the Department of the Interior had competed for jurisdictional control over the remaining unappropriated federal land since 1920.<sup>10</sup> This competition continued after 1934 as the Forest Service continued to lobby for additional land transfers to the national forests.

<sup>10</sup>The growth in appropriations for the Forest Service and its impact on the Department of the Interior is analyzed in Gary D. Libecap, "Bureaucratic Opposition to the Assignment of Property Rights: Overgrazing on the Western Range," *Journal of Economic History* 41, no. 1 (March 1981), pp. 151-58.

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Under section 13 of the Taylor Grazing Act, assignment of territory to the Forest Service was allowed when it "could best be administered in connection with existing National Forest administrative units." This jurisdictional dispute strengthened the bargaining position of ranchers in securing decision-making authority over the range.

Local advisory boards of ranchers were established to outline the criteria for allocating rangeland, to get stocking levels, and to suggest other regulations. The criteria selected recognized established range use patterns. Though they did not have title, ranchers had used the land since the 1880s under informal arrangements.<sup>11</sup> In assigning formal grazing permits under the Taylor Grazing Act, the local advisory boards gave highest priority to those ranchers who occupied the range during the period 1929-34 and who owned land or held water rights. Second priority was given to applicants who satisfied the ownership criteria but who had not grazed their stock during the base period. Third priority went to those who had prior use but who did not own the required land or water. The procedure, then, gave preference to established ranchers with a history of range use. These ranchers were most likely to have had informal claims, since such claims were enforced by continued occupancy and use.<sup>12</sup> Lower priority was given to new entrants and non-landowners whose political power was apt to have been limited.

Data concerning reaction to the assignment of grazing privileges are limited, but available evidence suggests that conflict was minor. The number of disputes processed by the Solicitor's Office grew from 6 in 1935 to 40 in 1938, while the total number of successful permittees was 15,000.<sup>13</sup> This indicates that formal and informal arrangements meshed without a significant redistribution of the range. Tenure under the grazing permits was secure, and the permits were generally transferable to approved purchasers.

Besides delegating authority over the assignment of permits, Secretary Ickes named Farrington Carpenter, a rancher, as head of the Grazing Division (later the BLM). No grazing fee was charged the first year, and Ickes agreed that subsequent fees would be calculated on a cost of administration basis rather than on forage value, which resulted in increased rates on Forest Service lands. When

<sup>11</sup>Taylor Dennen discusses informal arrangements used by ranchers to control range use in "Cattlemen's Associations and Property Rights in Land in the American West," *Explorations in Economic History* 13 (1976): 423-36.

<sup>12</sup>Paul Gates, *A History of Public Land Law Development* (Washington, D.C.: Public Land Law Review Commission, 1968), p. 617.

<sup>13</sup>Solicitor's memo to Secretary Ickes, June 17, 1938 (U.S. Archives).

grazing fees were first levied in 1936 they were 5 cents per cow per month, while the Forest Service rates were 13 cents.<sup>14</sup> Ickes promised to keep administration costs low, offering in testimony before Congress to administer the lands for \$150,000 in 1935 compared to the Forest Service estimate of from \$1.5 to \$2 million.<sup>15</sup>

Ranchers expanded the authority Ickes had granted them in 1934. The advisory boards, temporarily authorized to set up range administration, were made permanent by a 1939 amendment to the Taylor Grazing Act. Studies of grazing district operations in Oregon and Wyoming in the 1950s show that the boards' recommendations were almost always followed.<sup>16</sup> Moreover, ranchers were able to force the Department of the Interior to hire personnel sympathetic to the industry. A 1936 amendment to the Taylor Grazing Act required that all administrative officers be residents of public lands states for one year prior to their appointment. In addition the Civil Service was to give preference to "practical range experience" in filling filed positions.<sup>17</sup> Finally, grazing fees were kept low despite attempts by the secretary of the interior to increase them after 1941, when the jurisdictional dispute with the Department of Agriculture was settled. Grazing fees remained relatively constant in real terms through 1962, averaging 5 cents per animal per unit month from 1936 to 1962. Forest Service fees during the same period averaged 98 cents.<sup>18</sup>

In contrast, the BIA (then the Indian Service) dealt with a much less influential group, and the initial regulations were more severe. Moreover, no bureau competed with the BIA for jurisdiction over reservation land. The differing experiences of the BIA and BLM were probably due to differences in expected returns from the administration of federal land. The BIA had been declining through the 1920s as Indian lands were allotted to tribal members. Under the allotment policy, reservations were to be dismantled and the BIA's role terminated, a situation unlikely to have attracted the interest of other agencies. Non-Indian lands were much more promising. Since 1905 the Forest Service had shown that perma-

<sup>14</sup>Department of Agriculture and Department of the Interior, *Study of Fees for Grazing Livestock on Federal Land* (Washington, D.C.: Government Printing Office, 1977), pp. 2-4, 2-5.

<sup>15</sup>Gates, *History of Public Land Law Development*, p. 611.

<sup>16</sup>Wesley Calef, *Private Grazing and Public Lands* (Chicago: University of Chicago Press, 1960); Phillip O. Foss, *Politics and Grass: The Administration of Grazing on the Public Domain* (Seattle: University of Washington Press, 1960).

<sup>17</sup>See Libecap, "Bureaucratic Behavior," for a discussion of hiring policies.

<sup>18</sup>For a historical summary of fees, see Department of Agriculture and Department of the Interior, *Study of Fees*, pp. 2-13, 2-17, 2-23.

ment bureaucratic management of land was a source of growth in budget appropriations, staffing, and individual advancement. That experience stimulated the competition between the Department of the Interior and the Department of Agriculture.

In 1934 the BIA implemented a major range management program on the Navajo reservation, involving sharp stock reductions of over 50 percent and an uncompensated, forced redistribution of sheep and land from large to small herders. In 1941 formal grazing permits were issued, continuing the cutbacks in livestock numbers. Unlike non-Indian ranchers, the Navajo were not involved in range management decisions. They resisted the BIA's efforts, and the controversy brought the BIA unfavorable publicity.<sup>19</sup> Moreover, the imposed stock reduction, designed to rehabilitate grass stands, brought slower results than anticipated, and regulations were continued longer than initially planned. The BIA's control of the range was challenged only after deteriorating economic conditions led Indian rights groups to pressure Congress to intervene.<sup>20</sup> The resulting controversy on the reservation and elsewhere threatened the BIA's appropriations and led to the firing of John Collier as its head.<sup>21</sup>

The model implies that under such circumstances the BIA would reduce land use regulation to quiet political criticism. The cost is a smaller role for bureaucratic managers. The prediction is supported. Since 1948 the BIA has worked with other southwestern tribes in granting formal grazing privileges, which have been assigned in areas where large herders are absent to avoid conflicts over redistribution. The BIA continues to promote equality of holdings where it assigns rights, emphasizing that equality is central to the communal tribal economy. The ownership of a few animals and the use of reservation land tie Indians to their tribes and strengthen the notion of separate cultures. This arrangement is necessary to guarantee a long-term role for the BIA. Large herders are therefore tolerated but not formally recognized by the BIA, which lacks the

<sup>19</sup>A more detailed discussion of the Navajo is in Gary D. Libecap and Ronald N. Johnson, "Legislating Commons: The Navajo Tribal Council and the Navajo Range," *Economic Inquiry* 18:1 (1980): 69-86.

<sup>20</sup>See Phelps Stokes Fund, *The Navajo Indian Problem: An Inquiry* (New York: Phelps Stokes Fund, 1939).

<sup>21</sup>Collier was unpopular not only for his actions on the Navajo reservation but for his controversial Indian policies in general. See Donald L. Parman, *The Navajo and the New Deal* (New Haven: Yale University Press, 1976), p. 289. For criticism of the BIA policies, see Lee Muck, "Survey of the Range Resources and Livestock Economy of the Navajo Indian Reservation," Report to the Secretary, Department of the Interior, Washington, D.C., 1948.

political power to redistribute land. This offers an explanation for the pattern of formal rights granted by the BIA on the other eighteen reservations. Definite permits or other controls were implemented on the Jicarilla Apache, Mescalero Apache, and Isleta Pueblo. No redistribution was attempted, but large herders were generally absent, particularly on Mescalero and Isleta lands, which were leased to non-Indians until 1934. On Acoma, Laguna, Jemez, and Zia lands, the BIA has assigned permits on recently purchased lands where no large herders exist and has allowed past practices to continue on the original reservations where large herders dominated. On the remaining reservations—Cochiti, San Juan, Santo Domingo, Santa Clara, Taos, Zuni, Sandia, Santa Ana, San Felipe, Nambe, and Tesuque—land holdings are highly skewed, and the BIA has not attempted to install formal grazing permits and other range management programs.<sup>22</sup>

*Bureaucratic Regulation of Non-Indian Rangeland since 1960*

For nearly thirty years ranchers holding grazing permits to federal land had near proprietary rights. Permits were routinely renewed, grazing fees were low, and BLM regulation was minimal. Despite efforts to increase its authority, the BLM was constrained by the political power of the western range livestock industry. In the 1960s recreation and conservation groups began demanding access to federal land and restrictions on livestock use. As zealous, cohesive groups, they lobbied for voter and congressional backing. Because they weakened the political power of ranchers, conservationists supplemented the attempts of bureaucrats within the Department of the Interior to expand the BLM's role. The BLM began advertising to discredit rancher control of range policy in 1959. In that year it published controversial figures showing deterioration of public rangeland due to overgrazing.<sup>23</sup> Further, the BLM argued that grazing fees were low relative to those charged on Forest Service and private lands, implying that ranchers were being subsidized to overgraze. Finally, the BLM asserted that dedication of rangeland to livestock precluded other legitimate users.

Aligned with conservation groups, the Department of the Interior successfully lobbied for legislative changes that strengthened bureaucratic regulation. Major legislation included the Classification

<sup>22</sup>The Zuni Pueblo began implementing a permit system in 1979.

<sup>23</sup>Department of the Interior, *Annual Report of the Secretary of the Interior* (Washington, D.C.: Government Printing Office, 1959). The basis for those figures was not detailed. The late 1950s was a period of severe drought in the West, and that would have had an important effect on range conditions.

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and Multiple Use Act of 1964 (PL 88-607), the National Environmental Policy Act of 1969 (PL 91-190), and, most important, the Federal Land Policy and Management Act of 1976 (PL 94-579) and the Public Rangeland Improvement Act of 1978 (PL 95-514).

The Classification and Multiple Use Act called for restrictions on livestock to allow for other activities, adding that consideration be "given to the relative values of the various resources and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit of output." That mandate sharply conflicted with the Taylor Grazing Act, which was specifically designed to allocate the range for livestock use.

The Federal Land Policy and Management Act also amended the Taylor Grazing Act and for the first time formally outlined the functions of the BLM. It called for a systematic inventory of range use for potential reallocation to recreation, wildlife, and wilderness. It also called for regulation to rehabilitate the land and accomplish multiple use goals. Regulation was to center on allotment management plans drawn up for individual permit holders. Grazing fees were to be increased, the influential grazing advisory boards were made optional, and multiple use advisory boards were required. Department of the Interior officials and conservation groups strongly supported the legislation and gave testimony critical of privileges held by ranchers. Of the 335 witnesses questioned during the hearings, 215 (nearly 65 percent) represented recreation or conservation groups.<sup>24</sup>

The allotment management plans emphasized by the law constrain the use privileges of ranchers. They impose long-term stocking cuts of as much as 30 percent on permit holders and place restrictions on land use as pastures are withdrawn for rehabilitation. As forage growth responds, more land will be allocated to other uses under the multiple use concept.

It was predicted that since conservation groups do not face the same political costs as the BLM, they would push for more rapid and greater restrictions on ranchers. The range livestock industry has remained influential in western states and in Congress, and hence the BLM would attempt to minimize rancher opposition while expanding its range control. Those efforts, however, would strain its relationship with conservation groups.

Although the evidence is limited, it supports the hypothesis. The National Environmental Policy Act required that federal agencies

<sup>24</sup>U.S. Congress, *Hearings Before the Subcommittee on Public Lands on HR 5441 and HR 5622*, 95th Cong., 1st sess., 1974.

assess the environmental impacts of their actions. In compliance the BLM prepared a single environmental impact statement (EIS) prior to the general adoption of its allotment management plans. In 1973 the Natural Resources Defense Council (NRDC) filed suit in federal court arguing that a single plan was insufficient and demanding site-specific impact statements for each area covered in the plans (*NRDC v. Morton*). The court concurred and ordered 212 (later reduced to 144) EISs. The order specifically required that the statements consider alternatives to livestock grazing. Further, since field hearings were required for each EIS, allotment management plans were written to provide a forum for competing claimants. The new procedure, while more satisfactory for conservationists, has resulted in costly resistance from ranchers. In court cases such as *Valdez v. Applegate* (U.S. District Court, New Mexico, CU-78-944C), ranchers have challenged the proposed allotment management plans.

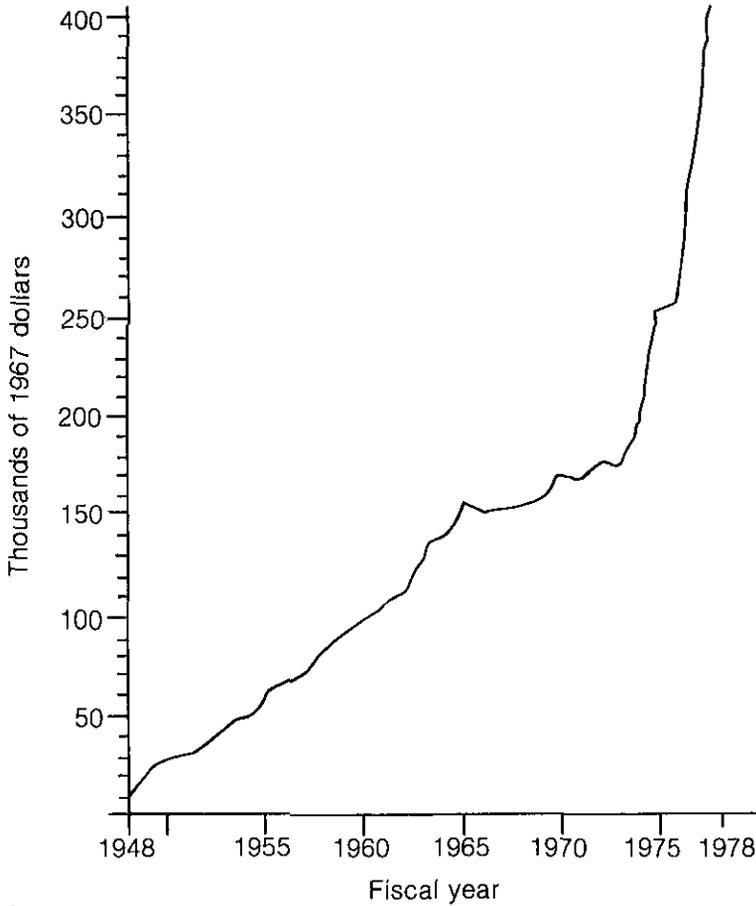
If BLM regulations seriously attenuate the ability of ranchers to maximize returns from the range, one would predict that sales prices would fall for ranches affected by the allotment plans. To test that hypothesis, sales figures were collected for 145 ranches in New Mexico that used BLM land and that were sold from 1970 to 1978.<sup>25</sup> The values were converted to 1967 dollars. To adjust for land quality differences, prices were divided by the number of cattle each ranch could carry, giving price per animal unit. The average price for the nine-year period was \$1,137. The price per animal unit was regressed against the percentage of total ranch acreage, which was deeded under the assumption that the greater the deeded proportion, the less vulnerable the ranch was to BLM regulations. The statistical tests reveal that price increased by \$11 per animal unit for each percentage increase in the proportion of deeded land.<sup>26</sup> This is consistent with the notion that prospective buyers would search for ranches where property rights were secure and offer less for ranches subject to BLM regulations. Appraisal values per animal unit for grazing permits from 1965 to 1979 reveal a decline in the value of BLM permits relative to Forest Service permits and private land after 1973. Fowler and Gray, in a study of BLM grazing permit values, attribute that trend to BLM regulatory policies.<sup>27</sup>

<sup>25</sup>Ranch sales data gathered from the Federal Land Bank and Western Farm Management, Albuquerque, New Mexico.

<sup>26</sup>The statistical tests are described in Libecap, "Bureaucratic Behavior."

<sup>27</sup>John M. Fowler and James R. Gray, "Market Values of Federal Grazing Permits in

FIGURE 1  
BUREAU OF LAND MANAGEMENT BUDGET



SOURCE: U.S. Budget.

While ranch values have fallen because of increased regulation, the BLM has benefited from its greater regulatory role. Figure 1 outlines total authorizations for the BLM from 1948 to 1978 in 1967 dollars. The series follows a time trend through 1972. The federal budget grew during the same period, and the BLM's share increased slowly. After 1972 the BLM budget rose sharply following legislative mandates for more control of range use. After 1972 the BLM's share of the federal budget increased significantly.

New Mexico," Report no. 2 (Cooperative Extension Service, Range Improvement Task Force, New Mexico State University, Las Cruces, March 1980).

## Conclusion

BLM and BIA behavior regarding the assignment and regulation of grazing permits on federal land is consistent with the general implications of the model. When ranchers were well-organized and when there was jurisdictional competition among federal agencies, broad grazing permits were granted. The emergence of conservation groups as claimants for non-Indian land led to more regulations. These regulations reduced returns to ranchers and made budget appropriations more available to bureaucratic managers. Political power has a crucial effect on bureaucratically assigned use rights to land. Since political power is variable, use rights and bureaucratic rules fluctuate. There will, however, always be tension between ranchers and the two agencies, and the uncertainty will shorten time horizons and reduce investment and wealth from the range resources.