

THE LACK OF A PROFIT MOTIVE FOR RANCHING: IMPLICATIONS FOR POLICY ANALYSIS

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ABSTRACT

The economic impact of changing land-use policies has traditionally been estimated using the standard economic model of profit maximization. Ranchers are assumed to maximize profit and to adjust production strategies so as to continue maximizing profit with altered policies. Yet, nearly 30 years of research and observation have shown that family, tradition, and the desirable way of life are the most important factors in the ranch purchase decision—not profit. Ranch buyers want an investment they can touch, feel, and enjoy, and they historically have been willing to accept relatively low returns from livestock production. Profit maximization appears to be an inadequate model for explaining rancher behavior, describing grazing land use, and estimating the impacts of altered public land policies. In this paper, we investigate the relative importance of livestock production income and desirable lifestyle attributes in determining the market value of western ranches, and we explore what this means for economic models and policy analysis.

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INTRODUCTION

For many years, a disparity has existed between the market value of rural lands and the income-earning or productive value of these lands. William Martin and various coauthors (Martin 1966, Martin and Jeffries 1966, Smith and Martin 1972) studied Arizona ranches and noted that non-livestock ranch outputs, including tax shelters, land appreciation, and, especially, the ranching lifestyle were the most important reasons for ranch purchase and investment. People desire to own rural properties for a place to recreate, relax, and raise their families. They desire to live in rural environments, maintain the lifestyles of farmers or ranchers, and have investments they can touch, feel, experience, and enjoy (Pope 1987). In many cases, beef production and profit are of only secondary importance to the ranch purchase decision.

Martin portrayed the market influence of the rural lifestyle in a negative way. He suggested the amenity value arose because of conspicuous consumption, farm fundamentalism, and the consumptive/speculative beliefs and attitudes of ranch buyers. Similarly, Pope (1987, 1988) referred to the additional quality of life (QOL) values as "romance values" as he discussed the role of agrarian values in policy decisions and the public land-use debate. Yet, whether one views these QOL values in a negative or positive way is not important. The important observation is that, even 30 years ago, a market disparity existed between the income-earning potential and market value of western ranches. This disparity continues to exist because ranch buyers value the way of life and romanticize the carefree, independent image of the cowboy.

In various publications, Pope and Martin noted the significant policy and rural development implications of associating QOL values with rural land ownership. They noted that, based on livestock production value, most range improvements show a negative benefit/cost ratio, and that rates of return from livestock operations are low by any standard investment criteria. They argued that economic models that attempt to explain rancher behavior based only on the profit motive are inadequate and will lead to ill-conceived land-use policies and policy assessments (Smith and Martin 1972, Pope 1988). They further noted that land-use policy analysis requires a great deal more than is offered by traditional cost-and-return studies related only to the most obvious livestock product. Yet, policy assessments continue to measure altered livestock production and livestock returns. Non-livestock production reasons for ranch ownership are largely ignored.

In this paper, we revisit the question about the relative importance that livestock returns and QOL values have in determining the market value of western ranches. We review historic and current evidence that profit is not the only underlying motive of ranchers, and then discuss the inappropriate public land policy conclusions that can and have been reached by ignoring the QOL reasons for ranch purchases. Finally, we evaluate what QOL values imply about policy analysis and impact assessment models.

DOCUMENTING QUALITY OF LIFE VALUES

Future earning potential is the traditional explanation for why rural lands have economic value. The land purchase decision is treated as an investment made today with the expectation that the asset will produce income in the future. The amount a buyer is willing to pay for land is ultimately tied to the future income stream the property is expected to produce. However, this traditional income approach to valuation has not adequately explained observed market values for many rural properties, and an extensive body of literature has arisen to explain the discrepancy.

Some authors, especially those studying farmland values, have found that real growth in farm earnings and expected capital gains caused a large part of the rapid growth in farmland values during the 1970s and early 1980s (Melichar 1979, Phipps 1984, Alston 1986). The importance of capital gains to movements in western ranch values also has been noted. Workman (1986, p. 13) stated that, while the rate of return from livestock has historically been about 2%, a much more competitive 10 to 15% rate was realized from land appreciation during the 1970s and early 1980s. Other factors also have been identified that explain the disparity, including land speculation, favorable tax laws, tax write-offs, financial leverage, government income and price support programs, government subsidized inputs, and expectations of real increases in commodity prices (Smith and Martin 1972, Harris 1977, Boehlje and Griffin 1979, Tegene and Kuchler 1990, Lamb and Henderson 2000).

All of the above factors, from speculation to tax write-offs, directly or indirectly rely on the capitalization of expected future earnings to define land value, and the hypothesis remains that farmers and ranchers are profit- and wealth-motivated. However, there is strong evidence that profit and earning potential are not the most important factors involved in purchase decisions for western ranches. At least three interrelated observations are important. First, ranch returns are low by any standard measure of investment performance. Second, a relatively small portion of land value is explained by livestock production value, and trends in land value seem to be impervious to the price of beef and net livestock returns. Third, when asked about their purchase motivation, farmers and ranchers list the quality of life as the primary reason for land purchase. Numerous studies have documented the importance of quality of life reasons for ranch purchases and the apparent willingness of western ranchers to accept below-market rates of return on their ranch investments.

Livestock Returns

Livestock production returns have historically been, and continue to be, less than possible returns from alternative investments of comparable risk. As noted over 30 years ago by Martin and Jeffries (1966, p. 233), "research on costs and returns in the western range cattle industry shows returns to capital and management ranging from very low to negative in

all areas studied.” Similarly, reviewing data prepared by several researchers from 1926 to 1968, Agee (1972) reported real rates of return for western cattle ranches ranged from negative values to 6.5%. Workman (1986, p. 13) noted that only during a short period in the 1880s were livestock production returns exceptionally high, 25 to 40%.

Relatively low livestock returns have continued in more recent times. Using the Standardized Production Analysis (SPA) computer program and analysis procedure (McGrann 2000), a comparison of 306 herds in Texas, Oklahoma, and New Mexico found that, over the 1991–1998 period, the average livestock production rate of return on the current market value of assets was 0.91%. The SPA financial comparison evaluates ranch-specific records versus survey and panel data common in other studies and provides a statistical comparison between different ranch operations. From this comparison of ranches in the Southwest, ranches in the lowest net income quartile were found to average –6.02% as a rate of return on investment, while those in the top quartile made an average return of 7.46%.

A similar range of net returns has been reported in Cooperative Extension Service and Agricultural Experiment Station reports throughout the West. Livestock cost-and-return series prepared annually in New Mexico (Torell et al. 2000) and Idaho (Smathers et al. 1999), for example, report net ranch returns and rates of return similar to those reported by McGrann (2000). Depending on ranch size, nominal rates of return from livestock production are typically reported to be from negative amounts to about 3%, averaging no more than 2%. Over the 1986–1997 period in New Mexico, land appreciation added another 2% per year to nominal ranch returns (Torell and Bailey 2000).

Net returns for western livestock ranches are lower than comparable rates reported by the Economic Research Service for all U.S. agriculture, including both farms and ranches. As summarized by the American Agricultural Economics Association report (AAEA 1998) on commodity cost-and-return (CAR) estimation, the average rate of return on current assets in U.S. agriculture was 3.29% for the 1964–1996 period. The AAEA CAR Task Force also estimated the opportunity rate that agricultural investors could have made by investing in other non-agricultural investments with similar risk. They estimated a reasonable low-risk rate for U.S. investments was 2 to 3.5% (p. 2-35). They further concluded that an appropriate risk premium for agricultural investments was 3 to 6%. Adding these two rates, the long-term, risky real opportunity rate of investment was estimated to be 5 to 9%, which was considerably higher than the average agricultural rate of return, and especially higher than rates of return historically earned by western livestock ranches.

Land Values Vs Agricultural Returns

Historic and continued low rates of investment return imply that farms and ranches are overpriced relative to their agricultural production earning potential. The degree of this

overpricing is variable yet consistent with the observation that market values are inflated because of the desirable lifestyle.

Overvaluation of land relative to agricultural earning potential may be less common for farms versus ranches, and there appear to be regional differences as well. Previous studies of Midwest and eastern farmland values show a strong relationship between land values and agricultural returns to land (Dobbins et al. 1981, Melichar 1979, Robison et al. 1985). Using USDA data from the northeast, south, and midwest states, Robison et al. (1985) found cash rents and inflation in cash rents were important factors explaining differences and trends in farmland values. Factors that influenced the land market varied considerably among the states, however. Nonagricultural demand for land played an important role in determining land values, but the nonagricultural demand studied was different from what we discuss here. Robison et al. (1985) considered development and other nonagricultural uses, not the value attached to agricultural land as a way of life.

Adkins and Graeber (1978) found that the productive value of ranches in the Hill Country of Texas accounted for about 10% of ranch market value, but in the High Plains, the productive value accounted for nearly 50% of market value. Texas land brokers generally agreed that outside the High and Rolling Plains regions more people buy land as a speculative investment, a home site, or outdoor recreation area than for agricultural purposes (Pope and Goodwin 1984).

Pope (1985) found that population density, aesthetic differences, quality of deer hunting, and proximity to major metropolitan centers explained most of the land value differences found earlier by Adkins and Graeber (1978). He found net returns to be a statistically significant and important determinant of rural land values, but earning potential explained only 22% of the market value of agricultural lands in Texas.

Using hedonic regression models and ranch sales data provided by Farm Credit Services, Torell and Bailey (2000) could find no relationship between variation in net annual livestock returns or variation in beef prices and the recent trend in New Mexico ranch values. The general trend of New Mexico ranch values over the 1987–1999 study period was increasing while the trend in ranch returns over the same period was decreasing, especially from 1995 to 1998 when drought conditions forced partial liquidation of herds statewide.

Torell and Bailey (2000) further recognized that ranch buyers likely consider only a long-term expectation of income from the ranch purchase and do not adjust their willingness to pay based on short-term market fluctuations. They used average net returns reported by the New Mexico cost-and-return series for the years 1986 through 1997 (See, for example, Torell et al. 2000), and a 7% discount rate to estimate average investment levels justified by livestock returns. About 27% of the market value of larger New

Mexico ranches (>100 animal units yearlong) was justified from livestock production in the grasslands of northeastern New Mexico. About 16% of the market value was explained for small ranches in that area. Little, if any, of the market value of New Mexico ranches was explained by livestock production for other areas of the state. Important determinants of value in all areas included the percentage of livestock carrying capacity from deeded versus public lands, distance to a trade center or large town, and proximity of the ranch to scenic mountain areas.

Motives of Ranchers

Various authors have studied the motives of farmers and ranchers (Smith and Martin 1972, Harper and Eastman 1980, Biswas et al. 1984, Sullivan and Libbin 1987, Bartlett et al. 1989, Young and Shumway 1991, Gentner 1999, Liffman et al. 2000, Rowe et al., In Press). These studies have shown that, for many agricultural producers, the desirable QOL attributes associated with rural living rank much higher up the goal hierarchy than profit maximization. The relative importance of profit has varied from study to study.

Similar to the findings of Smith and Martin (1972), a strong desire to own ranches for consumptive or QOL reasons was found to be prevalent in Colorado. More than half of the survey respondents in Bartlett et al. (1989) stated that rate of return on investment was of little or no importance to the ranch ownership decision. Instead, Colorado ranchers assigned high importance to land ethics and family life on the ranch. The profit motive was important in classifying ranchers as to their willingness to sell the ranch, but other job opportunities and beliefs about the difficulties of selling the ranch in the current market better differentiated ranchers into groups using cluster analysis. A more recent Colorado survey by Rowe et al. (In Press) confirmed that tradition, family, and the way of life continue as the primary stated motivation of ranch ownership in Colorado.

Harper and Eastman (1980) developed a goal hierarchy for a randomly selected sample of small farm and ranch operators in north-central New Mexico. Both family goals and agricultural goals were considered. In the goal ranking, maintenance and improvement of the quality of life through agricultural involvement was found to be the primary motivation for owning the farm or ranch business. The motive to increase net worth and profit were the third and fourth goal rankings, respectively. Harper and Eastman (1980) concluded that, because desirable family life benefits derived from agricultural activities were ranked above profits, this means the farm family is the relevant unit of analysis, rather than the farm business.

To help define social and economic characteristics of western public land ranchers, Gentner (1999) conducted a mail survey of a sample of Bureau of Land Management (BLM) and U.S. Forest Service (USFS) permittees (1,052 valid responses out of an estimated population of 21,018). Using cluster analysis, western public land ranchers were

grouped as either hobbyists or professional ranchers. By definition, professional ranchers derived more than half of income from on-ranch sources (Tanaka and Gentner 2001). Eight additional subgroups emerged with various socioeconomic factors used as clustering variables (Fig. 1). The goals and objectives of public land ranchers varied from a high ranking for QOL factors, especially for identified hobby ranchers (50.5% of survey respondents), to a strong emphasis on profit maximization for professional ranchers more dependent on ranch income (49.5% of survey respondents). Gentner (1999) found all types of public land ranchers ranked QOL factors above profit maximization. This suggests, "all ranchers are economic satisfiers with varying degrees of importance placed on earning potential from the ranch" (Gentner 1999, p. 49). All ranch groups listed the complementary relationship between land ownership and family tradition, culture, and values as a primary reason for owning the ranch. Profit maximization was ranked in the middle of all possible objectives for ranch ownership.

Others have found the profit motive to be a more important motivation for farming and ranching. Young and Shumway (1991) found a high proportion of Texas cow-calf producers perceived that they had profit maximization as a primary goal. Similarly, Harman et al. (1972) found profit was the primary motive for farming in Oklahoma and Texas, followed by the desire to increase net worth.

Biswas et al. (1984) used producer rationality tests common in studies of less-developed countries to evaluate whether "the behavior of livestock ranchers in southeastern Montana conformed to the standard producer rules and, in particular, whether profit maximization is a reasonable postulate for their production behavior" (p. 187). They concluded that profit maximization is a reasonably good assumption for the behavior of ranchers in the western United States, but noted that the rationality test also could gauge a variety of other behaviors, because goals like staying in business, increasing net worth, and expanding farm or ranch size are all consistent with profit maximization.

The literature does not provide a clear and consistent picture for what motivates farmers and ranchers to continue in agriculture; many multiple and interrelated goals are involved. Yet, the literature and general observation clearly indicate agricultural producers are willing to continue in business despite the relatively low economic returns they make. Some ranch families are much more dependent on ranch income than others. As noted by Gentner (1999), about half of western public land ranchers depend heavily on income from the ranch for their livelihood (Fig. 1).

It is apparent to us that both ranch income and desirable quality of life attributes are important considerations in rural land purchase decisions. Yet, this observation is not universally recognized or supported. As noted by Pope and Goodwin (1984, p. 750), "the consumptive component of rural land values (or what we have called the quality of life component) is often ignored or given only brief mention in many land

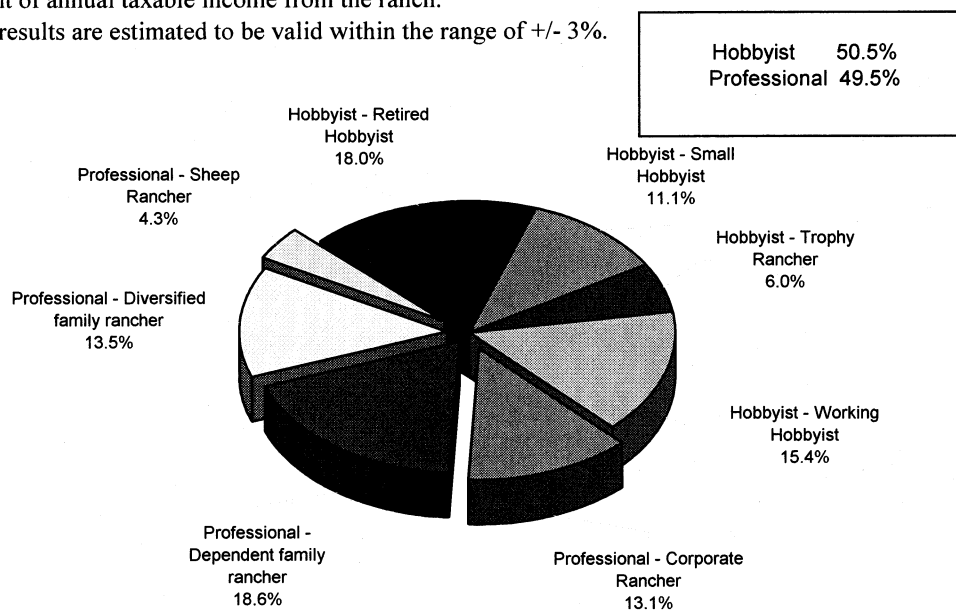
Figure 1. Cluster analysis grouping of public land ranchers as reported by Gentner (1999).

Cluster Group	Description	Annual Taxable Income (\$) ^a	Percent Ranch Income ^b
Professional - Diversified Family Rancher	Diversified ranch producing various agricultural commodities, motivated by profit.	42,970	75
Professional - Dependent Family Rancher	Highest dependence on ranch income, feel strongly about ranching as a way of life, perceived low job mobility.	46,926	85
Professional - Corporate Rancher	Business structured as a corporation, dependent on hired labor, profit motivated.	50,116	72
Professional - Sheep Rancher	Produce primarily sheep with large herds, highly dependent on ranch income and on hired labor. Highly dependent on public lands.	53,000	81
Hobbyist - Small Hobbyist	Most income from off-ranch jobs, not motivated by profit. Many with college degrees. More diversified income with more retirement and investment income than working hobbyists.	65,857	13
Hobbyist - Retired Hobbyist	Primarily retired ranchers, high dependency on ranching and agriculture for income when compared to other hobbyists.	44,602	22
Hobbyist - Working Hobbyist	Most income from off-ranch jobs. Highly educated with smallest herd size and deeded acreage.	53,491	18
Hobbyist - Trophy Rancher	Large ranches, use hired labor, highly educated, wealth made elsewhere.	94,245	21

^a/Annual taxable income from on and off the ranch.

^b/Percent of annual taxable income from the ranch.

Survey results are estimated to be valid within the range of +/- 3%.



valuation studies. To some researchers, this value may be so obvious that it deserves only passing mention. Others, who do not feel or understand the 'draw of the land,' often do not believe that it could play an important role in determining land prices. Still others recognize that consumptive demand for rural land is real and plays a significant role in its valuation, but find this component of value so complex and elusive as to restrict useful or serious research."

POLICY ANALYSIS IMPLICATIONS

Grazing Fees and Land-Use Policy

The controversy about grazing fees provides a good example of the bewildering answers that can be obtained when QOL values and non-production reasons for ranching are ignored. Consider the 1992 Incentive-Based Grazing Fee Study as an example (USDI/USDA 1993). In this grazing fee study, the federal land agencies contracted with economists from four western land-grant universities and assigned their own appraisers to determine the fair market value of public land forage. It was anticipated that this value would be high enough that BLM and USFS could devise incentives to compensate ranchers who were managing and improving public lands to the agencies' satisfaction. In this study, the Grazing Fee Task Group (GFTG) started with the perception that an appropriate valuation of public land forage could follow the same procedure used to set the \$1.23/AUM base fee of the current Public Rangelands Improvement Act (PRIA) fee formula. Fee and non-fee grazing cost data were gathered from ranchers leasing both public and private land. The conclusion was that, for total grazing costs to be equal on private and public lands, the public land grazing fee would have to be reduced from the 1992 level of \$1.92/AUM to \$0.13/AUM (Torell et al. 1994, Van Tassell et al. 1997).

Cost differences were found between USFS and BLM permits and between cattle and sheep producers. When permit types were separated, cattle producers paid \$3.63/AUM less for BLM land versus private land, but \$2.86/AUM more for USFS land (USDI/USDA 1993, p. 41). Sheep producers paid \$2.77/AUM more for BLM land and \$12.22/AUM more for USFS land than on private land. These values suggest, even without a grazing fee, sheep producers on both BLM and USFS lands, and cattle producers on USFS lands were paying more on average than those with private leases, because of higher non-fee grazing costs¹.

This result is not consistent with the profit-maximizing model. Profit-maximizing behavior suggests livestock producers would not pay more to graze public lands than private land alternatives (ignoring the fact that alternative, comparable forages may not be available in many cases). Further, only if total grazing costs on public lands were less than for private land would public land grazing permits have value². Yet, the general observation is that public land grazing permits do have market value (Torell and Doll 1991, Rowan

and Workman 1992, Sunderman and Spahr 1994, Spahr and Sunderman 1995, Torell and Kincaid 1996). The GFTG study results imply that this value occurs without a cost advantage for grazing public lands. Cost-and-return studies also do not report higher rates of investment return for public land versus private land ranches as would be expected with a significant cost advantage (Rimbey et al. 1999, Smathers et al. 1999, Torell and Bailey 2000, Rostvold and Dudley 1993).

Based on the observed value of public land grazing permits, the GFTG concluded that public land forage was worth \$3 to 5/AUM. Further, because permit values exist, the grazing fee study did not suggest that fees should be reduced. As would be expected, public land ranchers and their supporters wanted to concentrate on the average \$0.13/AUM grazing cost difference between public and private grazing, and to tell the uninformed public that they were already paying enough in total to graze public lands. Yet, an obvious question remained: "Why would a profit-maximizing livestock producer be willing to pay the same total amount for grazing public versus private lands and then pay an additional premium to buy the public land grazing permit?"

Recognizing QOL values and non-profit motives for ranch ownership, the answer to this question is not nearly so puzzling. Based on livestock returns and inflated grazing permit investments, public land ranchers can justifiably argue that they are already paying too much to graze public lands. Livestock production value does not justify even the current grazing fee when non-fee grazing cost differences and permit investments are recognized. Yet, inflated permit values demonstrate a willingness to pay even higher amounts to graze and have access to public lands. This apparently occurs because of the QOL and desirable lifestyle reasons for ranch ownership.

The traditional economic model explaining permit value may have held reasonably well in the 1960s when major grazing fee studies were done to establish the PRIA grazing fee formula. Nielson and Wennergren (1970, p. 311) found that capitalizing the average difference between total public and private grazing costs, using an approximate 4% capitalization rate, equaled the average permit value. They concluded that competition and a free market existed for public land grazing. This was in contrast to the conclusion of Gardner

¹This variability in grazing costs was also found in the 1966 Western Livestock Grazing Cost Survey used to establish the PRIA fee formula when grazing costs were separated by grazing district (Arthur D. Little, Inc. 1967, 1968).

²Traditional economic theory suggests that grazing permits have value because a capitalized cost advantage exists from owning the permits. Theory maintains that public land grazing permits became a marketable item based on livestock production value and profit, with below-market grazing fees and increasing economies of scale from owning the permit reducing production costs for public land ranchers. This cost advantage is capitalized into a permit value (Nielson and Wennergren 1970, Nielson 1972, Torell et al. 1994).

(1962) that suggested permit values were less than what one would project based on the capitalized cost differential.

Neither of these situations appears to exist today. A capitalization rate of less than 0.3% would be required to equate the average \$0.13/AUM grazing cost differential found in the 1992 Incentive-Based Grazing Fee Study (USDI/USDA 1993) to the average 1992 permit value of approximately \$40/AUM reported in the fee study for the seasonal grazing states of Idaho and Wyoming. Permit values of over \$75/AUM in New Mexico, where yearlong grazing is common, would suggest an even lower capitalization rate. This implies that permit values now exceed the value justified by livestock earnings potential. And, we wonder if that was not also the case during the 1960s when Gardner (1962) reported the opposite situation (permit values less than the capitalized value of livestock production returns) and proposed a procedure to rectify the misallocation of grazing permits (Gardner 1963).

The work of Martin and Jeffries (1966) documented the inflated value of BLM and USFS permits at the time, and cost-and-return studies showed relatively low livestock returns for western ranches, including public land ranches (Agee 1972). Further, the trend in average permit values follows the general trend in deeded land values, suggesting the market forces that drive deeded ranch values also determine public land grazing permit values. To see this, consider the average value of BLM, USFS, and New Mexico State Trust Land grazing permits in New Mexico from 1966 to 2000 (Fig. 2). These permit value estimates originate from several sources, but primarily from various hedonic ranch value regression models developed using New Mexico ranch sales data supplied by Farm Credit Services. Additional detail is provided in the appendix about how historical New Mexico permit values were estimated.

With equal, if not higher, total grazing costs for public versus private lands (USDI/USDA 1993), grazing permits become valuable because of QOL reasons for ranch ownership. As shown in Figure 2, the trend in nominal permit values follows the general trend of deeded land values, but with deeded land value 2 to 3 times that of permit values. This decreased value for permits is expected given the difference in tenure and ownership rights. New Mexico ranch values accelerated quickly in the late 1970s and early 1980s, and decreased sharply from 1982 to 1986 (Fig. 2). Since 1987, deeded ranch values on a nominal basis have increased by about the rate of inflation. With the exception of the late 1970s and early 1980s, permit values have steadily declined in real terms. This value decline is expected given the continuing uncertainty about public land grazing.

QOL values explain much of the controversy and contradiction about grazing on public lands. As noted above, public land ranchers contend they are already paying too much to graze public lands, and these claims are valid based on relatively high non-fee grazing costs, the existence of grazing permit values, and relatively low livestock production val-

ues. Similarly, those that would eliminate grazing on public lands point to relatively low livestock returns as one of the reasons why public land grazing should end (Donahue 1999). Yet, neither side has recognized that, while ranchers have demonstrated their willingness to pay more than the current grazing fee, this willingness exists not because of the livestock that will be produced, but rather because of the desirable lifestyle that will be attained by purchasing the ranch and associated grazing permits.

Permit value represents the only available direct valuation of public land forage, except for a few scattered instances where public land forage is competitively leased (Fowler et al. 1994). Using an appropriate capitalization rate, annualized estimates of forage value can be determined from the observed permit value (Torell et al. 1994). The downward trend in permit values suggests a declining real value and willingness to pay for public land forage.

With QOL factors influencing ranch values and permit values, setting grazing fees based on the value of the permit and high enough to eliminate permit value (transfer the value to the land agency) would change the rationale of the grazing fee from collecting the value of forage for livestock production to collecting the value of the lease for quality of life reasons. Further, basing fees on the good feelings people get from the ranching experience, open space, scenic views, and recreational opportunities is an idea that applies equally well to all public land users. It suggests that some type of non-market valuation procedure would be needed to elicit a willingness to pay. Yet, non-market valuation procedures will likely prove inadequate. Hof et al. (1989) used contingent valuation techniques, commonly used to study aesthetic, recreational, and environmental values, to evaluate the willingness of ranchers to pay for federal forage. Ranchers tended to respond with the current federal fee when asked how much they would be willing to pay, and with the current private forage lease rate when asked for a willingness to lease or sell forage.

Hof et al. (1989) concluded that the contingent valuation procedure is not useful when quasi-markets influence price responses and that the procedure may be of limited usefulness in estimating the willingness of ranchers to pay for public land forage. This seems especially true if the survey respondent suspects the stated amount might become the grazing fee paid in the future (Hof et al. 1989). Similarly, the stated willingness of recreation and day users to pay for access and use of public lands would likely be much less once they discover this is to be the new user fee.

A competitive bid system also could be used to develop a market for leased public forage. Yet, the option of moving to a competitive bid system has been repeatedly rejected by the federal land agencies. They believe it would be disruptive to the stability of permittees and rural communities dependent upon public land forage, and would not be manageable given the isolated and scattered nature of many public land grazing permits, especially with the current permit structure, regula-

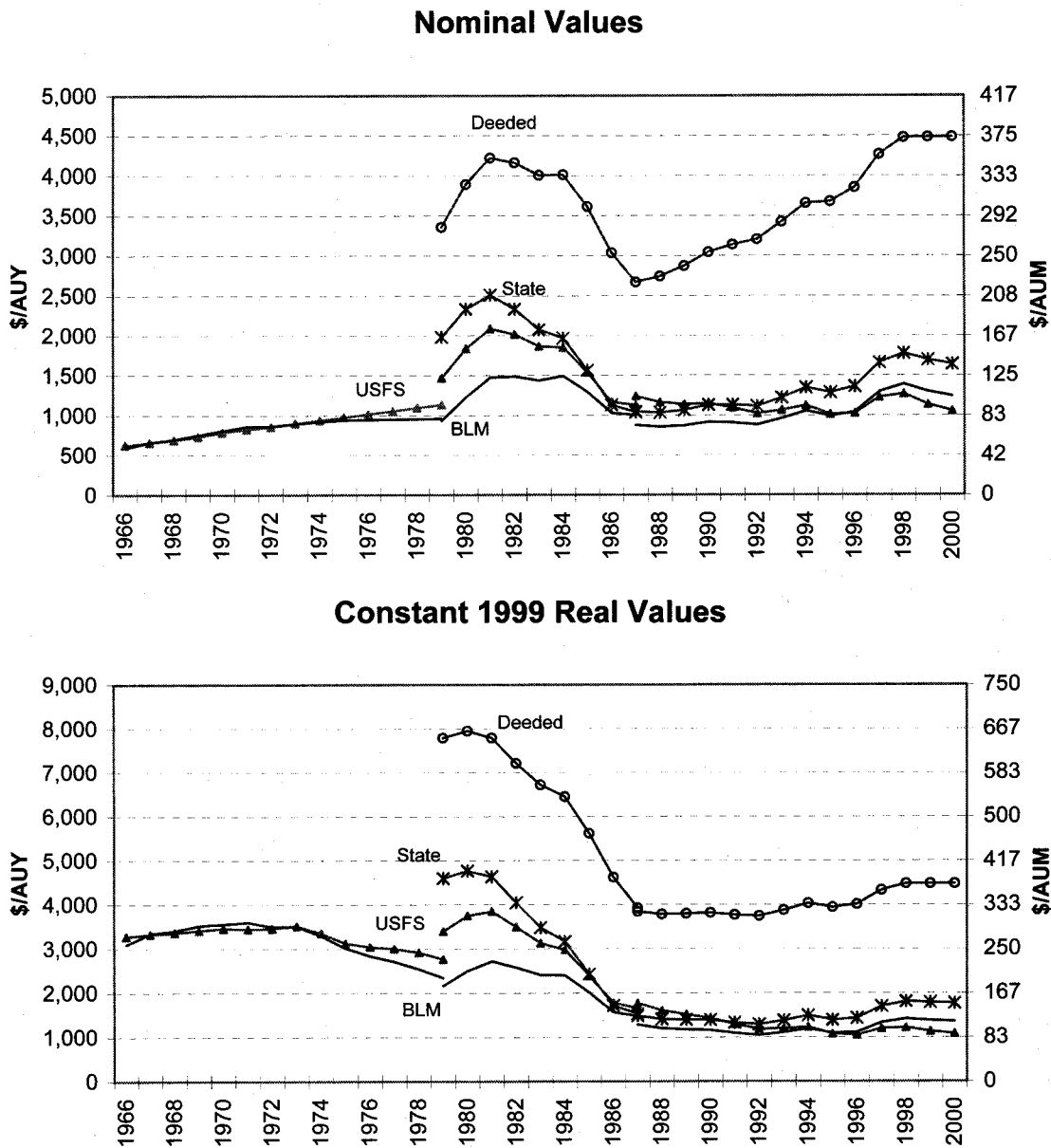


Figure 2. Average nominal and real grazing permit values, and deeded land ranch values in New Mexico, 1966–2000.

tion, and staffing (USDI/USDA 1977, p. 7-7, USDA/USDI 1992, p. 40, USDI/USDA 1993, p. 15).

It is uncertain how grazing fees will be set in the future. It is certain, however, that the controversy will continue. Future claims by public land ranchers that they are already paying too much to graze public lands will be valid based on relatively high non-fee grazing costs, permit values, and the economic value of livestock produced. Claims that ranchers have demonstrated their willingness to pay more will also be valid with ranch values inflated above that justified for livestock production. QOL factors inflating ranch values will

continue to be important considerations in the grazing fee controversy.

Ranch Economics and Rural Communities

QOL market influences will affect the type of people who buy and live on ranches in the future. As noted here and widely recognized, western ranches will not “pencil out.” The cows will not buy and pay for a western ranch, especially with debt equity. This means the 50% of ranchers identified by Tanaka and Gentner (2001) that depend almost exclusively on the ranch for income can be expected to become a

decreasing part of the ranching community (Fig. 1). The majority of current ranch buyers have been called the “Wall Street moneyed” and the “computer-industry rich” (Sands 1998). We appear to be moving to a situation where those who work the land will not own it. This suggests a different set of social values and attitudes for ranching communities in the future (Harp 1999).

Those that would eliminate grazing on public lands note the low economic returns from western ranches and use this as one of the reasons why livestock grazing should end (Donahue 1999). They note the special status and treatment agriculture receives in our society and contend this is why grazing of public lands continues despite what economic statistics reveal about agriculture’s role in the economy (Donahue 1999, p. 283). As noted by Pope (1987), just as it is a public goal to save the grizzly bear and other endangered species, it historically has been a goal for our society to save the western rancher. Yet, the numerous and varied types of ranchers provide an unclear view of how land-use policies might affect western ranchers, and, more importantly, how policy and agricultural programs should affect western ranchers.

Few would argue that the 6% of public land ranchers identified by Gentner (1999) as “trophy ranchers” deserve special treatment, tax breaks, or subsidies. Most would argue that society does not owe anyone a “way of life.” But, society benefits from ranching in ways many do not recognize. At a recent conference about western ranching, Peter Decker noted, “Urban Coloradoans value Colorado ranchers, not for the beef they produce, but rather for the open spaces they provide” (Decker 2000). Obviously, the open spaces farms and ranches provide are becoming increasingly important as a positive public output. Other recognized public values of farms and ranches include a diversity of ownership, cropping systems, landscapes, cultures and traditions; environmental and stewardship benefits with responsible management of natural resources by small farm operators; more equitable economic opportunities for people in rural communities; and a nurturing place for children to grow and acquire the values of responsibility and hard work (USDA 1998).

Perhaps society would prefer to only save or protect certain types of ranchers in the Gentner (1999) chart (Fig. 1), and to provide a break with low grazing fees or direct subsidies to only those individuals. Further, it may be advantageous to decouple those subsidies from livestock production and grazing if food and fiber are not the outputs we are trying to protect. Either way, the implications of trying to target special entitlements would be immense and strategies to be in the “receiving category” would be certain.

Policy Impact Models and Analysis

A common policy question is, “How many people will be forced out of business if a certain land-use policy is implemented?” The standard way to answer this question has been to set a minimum rate of return or return level, and, using budgeting and economic modeling techniques, estimate if

returns will likely fall below this critical level after policy implementation. The obvious limitation for studies about the western ranching industry is that using any reasonable assumption of minimum acceptable investment returns, most ranchers should not be in business even before any policy changes. Again, QOL values inflating the ranch value are key to understanding the disparity. One cannot estimate how many ranchers will quit, go bankrupt, retire, or sell unless you know the financial position of each impacted rancher and how committed each individual is to maintaining the desirable lifestyle.

The standard rangeland policy analysis uses ranch budgeting and economic modeling techniques to estimate how production strategies and net ranch returns would likely change when land-use policies change. In some cases, linear programming (LP) models have been used to estimate how optimal (profit-maximizing) production strategies would change under alternative policy prescriptions (Peryman and Olson 1975, Bartlett et al. 1979, Torell et al. 1981). In other cases, input from ranchers and the researcher’s judgment was used to define which production adjustments would be made, and the economic model calculated changes in net returns given the specific assumptions. As an example, in an assessment of the impacts of higher grazing fees, Knutson et al. (1991) assumed that ranchers would not adjust enterprises, management systems, or tenure arrangements over the planning horizon as grazing fees increased. A whole farm simulation model called FLIPSIM™ was then used to evaluate how key indicators of financial performance would change as grazing fee levels changed.

Given the stated and observed desire to remain in ranching, perhaps the most reasonable assumption for policy analysis is that western ranchers will continue in business until forced to leave. With this assumption, economic models become more complex because information must now be included about off-ranch income, wealth positions, and debt obligations. The ability to sustain annual cash flow of the ranching enterprise becomes of key importance. Further, the required added detail of the analysis may preclude a valid policy assessment. While ranchers are generally willing to discuss production costs and to assist in defining representative cost-and-return estimates, they generally are not willing to describe the details of their financial and wealth positions.

An appropriate impact assessment model must be dynamic in structure and consider long-term production across years. Equations must track how debt obligations, cash reserves, net worth, and debt load change as land-use policies change. FLIPSIM™ includes much of this structure, but, as described above, requires the researcher’s judgment to determine which production adjustments will be made or allowed in the policy analysis and simulation (Knutson et al. 1991).

Dynamic linear programming models might also be used in the policy analysis, even though the objective function of ranchers is not solely profit. The LP model could include reasonable production alternatives with a profit-maximizing

objective. Cash flow constraints must be included in the model, along with explicit recognition of borrowing capacity and sources of off-ranch income (see, for example, Torell and Drummond 1997). The LP model would evaluate profit-maximizing production strategies before and after policy implementation, but with explicit tracking of increased debt load, annual earnings, and net ranch returns. The ranch would be projected to go out of business when cash flow constraints could no longer be met or borrowing capacity was exceeded.

Estimating profit-maximizing production before and after a policy change provides an objective criterion in the policy assessment. But, given the wide range of wealth, debt load, and economic position of western ranches (Gentner and Tanaka 2001), it is likely that numerous models and economic scenarios will be required to adequately evaluate land-use policies. Further, the analysis cannot possibly capture the changing desire and commitment to remain in ranching as ranch income is decreased from higher fees or more restrictive land-use policies. Using the terminology of Pope (1988), the "romance of ranching" may quickly disappear when grazing on public lands becomes more expensive and restrictive. The personal and social reasons for the investment remain elusive.

Traditional economic models can provide only an estimate of how economic positions change as policies change. It remains to be seen whether specifying production strategies and adjustments that ranchers will make is better than specifying reasonable economic alternatives and allowing the economic model to choose the optimal adjustment strategy based on profit potential. Because we cannot measure utility and the non-economic reasons for the ranch investment, our economic models provide an incomplete assessment of land-use policies.

Our general conclusions about policy assessment are similar to those of both Martin and Pope. Consumptive factors and QOL values have influenced the ranch real estate market for years. There were, and continue to be, major policy implications when ranch values exceed the income potential from livestock production. Ranch investment and policy analysis require a great deal more thought than is offered by traditional cost-and-return studies about the economic value of livestock production. Answers to important policy questions are elusive when it is recognized that ranchers maximize utility not profit. We can measure costs, livestock prices, and net returns, and estimate how these economic variables might change under alternative policy scenarios. But, we can only guess about what motivates a person to pay a premium price for a western ranch, and to continue in business when alternative investments would yield higher economic returns.

APPENDIX

Estimating Permit Values

In Figure 2, permit value estimates for 1966 through 1979 are from a survey of New Mexico appraisers and brokers (Fowler and Gray 1980). This survey did not provide estimates of value for New Mexico state trust lands or for deeded lands.

Permit values from 1979 through 1987 were estimated using a hedonic regression model (RANVAL98) described by Torell and Kincaid (1996), except the model was re-estimated using the time adjustment procedure followed by Torell and Bailey (2000). Permit values from 1987 through January 2000 were estimated using RANVAL2000 (Torell and Bailey 2000). A spreadsheet version of RANVAL98 and RANVAL2000 are available at <http://ranval.nmsu.edu>.

USFS permit values were estimated using average ranch characteristics described for the mountainous areas of New Mexico (area designations 3, 4, and 5 in Torell and Bailey (2000, table 2)). BLM and state land permit values were estimated for the southern deserts (area designations 8 and 9 in Torell and Bailey (2000)). Deeded land values were estimated for comparison using the average ranch size and characteristics of the southern deserts. In each case, values were determined by defining the model as if grazing capacity was provided 100% from the particular land ownership type. Other assumptions included model definition without significant non-farm influences (i.e., NFI=0) and the large ranch size designation (>100 animal unit yearlong).

Constant 1999 real ranch values were estimated by adjusting the economic variables included in RANVAL2000 before model estimation, using the consumer price index (CPI). Both nominal and real price regression equations are used in RANVAL2000 to provide separate estimates of value. For earlier models, and for the Fowler and Gray (1980) survey, nominal estimates of value were adjusted to a real basis using the CPI.

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