

WHAT DOES THE QUALITY OF PUBLIC LAND IMPLY FOR FEDERAL LAND TRANSFERS?

By Paul M. Jakus

INTRODUCTION

Ownership of the public domain has long been a contentious issue between Western U.S. states and the federal government. The recent armed confrontations at Nevada's Bundy Ranch and Oregon's Malheur Wildlife Refuge are simply one manifestation of western frustration. Within the last five years the legislatures of seven Mountain West states (Arizona, Colorado, Idaho, Montana, Nevada, Utah, and Wyoming) have all passed or debated legislative actions aimed at transferring control of federally-administered public lands to the states.

A key portion of the argument by advocates of state control is that states can manage public land more effectively than the federal government. Transferred public land will remain subject to overarching protections offered by the Clean Air Act, the Clean Water Act, and the Endangered Species Act, among others. However, state ownership will exempt many land use decisions from the time-consuming regulatory requirements and legal hurdles presented by the National Environmental Policy Act. Thus, states argue, they can manage land to increase production of agricultural goods, timber, and energy, generating more jobs and income in rural regions, while also maintaining environmental quality and the flow of non-market goods such as ecosystem services and outdoor recreation. The fees and royalties generated by increased market activities would be sufficient to cover the additional land management costs incurred by the state.

POLICY BACKGROUND

This portion of the land transfer argument assumes that the lands to which states would gain title can generate adequate revenue. But is this a valid assumption? We first provide some historical context for the current distribution of land. While the Preemption Act (1841) and the initial Homestead Act (1862) successfully encouraged settlement of the Midwest, disposal of federal land slowed at the 100th meridian, beyond which lay both high elevation mountains and expansive deserts. Emigrants simply skipped over one-third of the country to settle the less harsh environs of the Pacific coast.

Subsequent legislative activity was designed to encourage settlement of arid and mountainous regions: amendments to the Homestead Act, the Desert Lands Entry Act (1877), and the Stock Raising Homestead Act (1916) all increased the acreage available to potential landowners. The Reclamation Act (1902) provided federal aid for large-scale irrigation projects. Each Act, especially the Reclamation Act, initiated a rush of claims by would-be landowners, after which disposal of the federal domain slowed once again.¹ Thus, despite strenuous efforts to dispose of its western lands through about 1940—97% of all transfers to private parties occurred before this date—the federal government was left with a massive Western estate. Federal agencies administer some 47.3% of land located in the eleven states of the Mountain and Pacific regions, an area greater than the combined areas of Texas, California, New York, and Florida.

Historians have asserted that land disposal laws and the profit motive led settlers (and land speculators) to focus on

parcels that were arable and potentially irrigable. Other key resources for settlers and railroads were coal and oil. The shifting laws governing energy resources in the late 19th and early 20th century led to a race between the federal government, which sought to reserve subsurface mineral rights for itself, and private agents seeking to file land claims under disposal laws that permitted transfer of mineral rights. The Mineral Leasing Act of 1920 ended this race, with the federal government retaining rights to subsurface energy deposits on all land to be disposed in the future, resulting in about 46 million acres of “split estate” in the Mountain West, only a portion of which is home to energy resources.² Other than reserved energy and timber resources, historians argue that the federal government was left with the land that no one wanted. If this argument is true, we should observe these differences today, finding the most economically productive land under private control, leaving the least economically productive land under federal control.

ANALYSIS OF LAND OWNERSHIP PATTERNS IN THE MOUNTAIN WEST

We use GIS information available for 276 counties in eight Mountain West states (Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming) to test this hypothesis. Our measures of land characteristics capture the ability of the land to generate market revenue. The soil quality index is based on each 8100 m² pixel’s non-irrigated soil capability class. Net Primary Production measures the microclimate of land (water availability and growing season) and is highly correlated with the innate ability of land to produce plant material. The percentage of county land overlaying an oil, natural gas, or coal basin is a natural index of energy potential, independent of current or past energy output. The

¹Concurrent with legislation encouraging land disposal, other executive and congressional actions of the early 20th century reserved land for forests, national parks, and wildlife refuges. This reduced the amount arable land available for disposal.

²Another form of split estates has federal surface ownership and private subsurface ownership, but this comprises only a small percentage of federal estate.

average of all pixels in a county measured the overall quality of land in the county. The average Soil Quality, Microclimate, and Energy Potential of a county was compared to other counties by converting each index to a z-score: positive values for a county represent higher than average land quality whereas negative values represent land of below average quality.

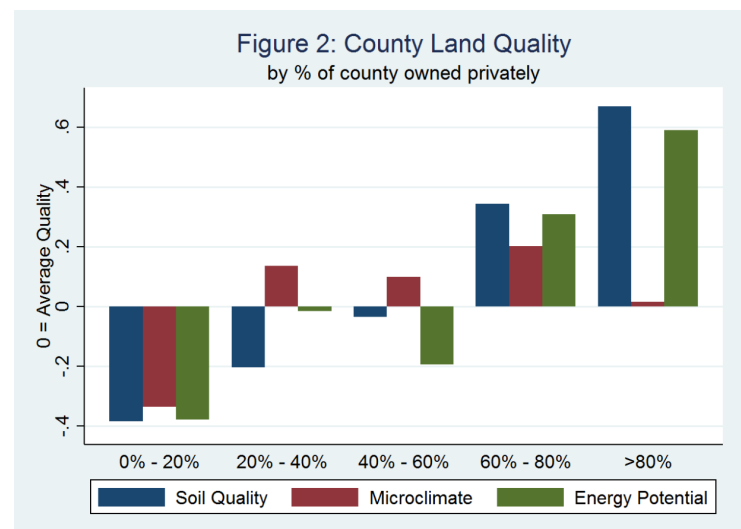
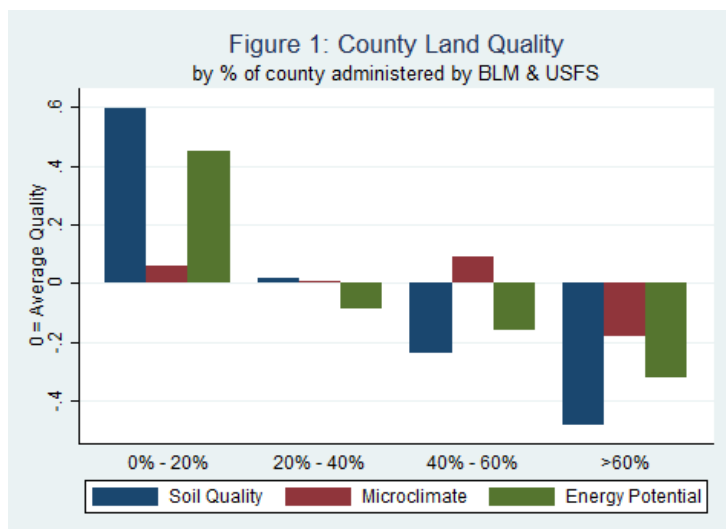
Figure 1 shows county land characteristics as they vary according to the percentage of a county's land owned by the two major federal land agencies (Bureau of Land Management and US Forest Service). We see that counties with relatively small proportions of BLM and USFS land (<20% of county land area) have above average Soil Quality, Microclimate, and Energy Potential. In contrast, counties with the highest concentrations of BLM and USFS land ($\geq 60\%$ of county land area) have below average Soil Quality, Microclimate, and Energy Potential.

Figure 2 shows a similar graph relating land characteristics to private land ownership. One observes the mirror image of Figure 1: counties that have less than 20%

of their land in private ownership fare relatively poorly with regard to land quality, whereas counties with large portions of private ownership (> 60% or so) have, on average, better Soil Quality, Microclimate, and Energy Potential.

POLICY IMPLICATIONS

We conclude that private lands are concentrated in counties that are more amenable to agricultural, timber, and energy production whereas federal lands are concentrated in counties that have less arable land and have less energy potential. Admittedly, our analysis has not accounted for split estates—federal subsurface rights held on privately owned surface land—but the pattern is clear. We also find, but do not show in either figure, that federal land is concentrated in more topographically rugged counties; private land is concentrated in counties with relatively flat topography, a characteristic that makes land more amenable to irrigation. Thus, the distribution of Western land amongst its potential owners was not random: the most economically productive land passed from the public domain and into private ownership



and, with the exception of mineral and timber rights it managed to reserve for itself, the federal government was left with land of lesser economic potential.

Returning to the issue of the very large transfers of federal land as envisioned by the legislation considered by many Mountain West states, a significant portion of the transferred estate would be limited in its ability to generate revenue. That said, the vast federal landholdings remain home to valuable deposits of energy and timber. Relatively large revenue streams are possible for states, but only if a sufficient quantity of such “market quality” lands are included within a larger federal transfer. For example, although recent timber harvests in USFS Region 1 (Idaho and Montana) have fallen to about 225,000 million board-feet (mbf) annually, the region regularly generated about 1 million mbf of harvested timber as recently as the late 1980s. Similarly, almost 51 million federal acres in the Mountain West overlay an oil, gas, or coal basin, with the bulk of these holdings concentrated in Colorado, Montana, New Mexico, Utah, and Wyoming. In times of high energy prices states that are home to conventional and unconventional energy deposits may generate revenues needed to cover additional land management costs. However, states relying upon timber or energy production to fund management expenses must also plan for volatility in commodity prices when constructing state budgets (most states have balanced

budget requirements in every fiscal cycle). Secondly, energy-producing states will also face the additional risk of tightening environmental regulations and global economic forces that may reduce demand for high-carbon fuels.

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