Boon or Bust: Wilderness Designation and Local Economies

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I. **Introduction**

In 2008, a supermajority of the Utah State Legislature passed House Joint Resolution 10, which encouraged the United States Congress to not designate any additional federal Wilderness Areas in Utah. The Resolution asserted that Utah relies on public lands for crucial economic activities including “oil and natural gas development, mining, outdoor recreation and other multiple uses, rights of way for transportation, waterlines, electric transmission, and telecommunication lines” (HJ 2008, 2). The Utah State Legislature claimed that limiting these multiple uses of public lands would result in substantial economic hardship for the state. By passing the Resolution, the Utah State Legislature echoed the belief of many local elected officials and residents that Wilderness is not good for local economies.¹

In direct contrast to this view, many (especially in the environmental community) have alleged that large federal land holdings and protected areas such as Wilderness generate economic growth. The Wilderness Society (2004, 1) notes “[d]esignated wilderness areas on public lands generate a range of economic benefits for individuals, communities, and the nation—among them, the attraction and retention of residents and businesses” (2004 1). The Sonoran Institute similarly finds “protected natural places are vital economic assets for those local economies in the West that are prospering the most” (Rasker et al. 2004, ii). The Sonoran Institute further notes, “Wilderness, National Parks, National Monuments, and other protected public lands, set aside for their wild land characteristics, can and do play an important role in stimulating economic growth—and the more protected, the better.” (1).

This paper seeks to investigate the conflicting beliefs regarding the economic impacts of federally designated Wilderness through empirical statistical analysis of the economic conditions

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¹ When we refer to “Wilderness” we mean areas designated under the Wilderness Act of 1964. We make this distinction to distinguish officially designated wilderness from other types of wild lands that may not have the same level of legal protection.
present in Wilderness and Non-Wilderness counties over time.\textsuperscript{2} Using U.S. Census Data for all counties across the United States, we study the impact of Wilderness by examining whether there is an identifiable difference within the economies of Wilderness and Non-Wilderness Counties. We define “Wilderness Counties” as counties that contain any portion of a federally designated Wilderness Area. Such federally designated Wilderness includes lands designated pursuant to the Wilderness Act of 1964 and managed by one of four federal agencies: the U.S. Forest Service, U.S. Fish and Wildlife Service (FWS), the National Park Service (NPS), and the Bureau of Land Management (BLM).

We do not examine Wilderness Study Areas (WSA) and other de facto wilderness such as designated Roadless Areas inside National Forests and property managed to maintain “wilderness characteristics” by the BLM. We also do not consider protected areas designated and managed by states as primitive areas. Our decision to include these areas was based on the variation in both borders of these areas, and the way that they are managed. Often the boundaries for WSA, de factor wilderness, and primitive areas are not defined making their use as a variable a liability.

When controlling for other federally held land and other factors impacting economic conditions, our statistical analysis shows that federally designated Wilderness does indeed significantly impact economic conditions in counties. This effect, however, does not occur in the direction typically argued by conservationists. We find a significant negative relationship between the presence of Wilderness and total payroll, tax receipts, and average household

\textsuperscript{2}While the scope of this paper is limited to the economic impacts of Wilderness designation, this effort represents the beginning phase of a more expansive study exploring how Wilderness and other federally protected lands impact the economies of rural counties and the quality of life of individuals who live therein. Through our research, we hope to shed light on a number of important questions identified in existing literature including whether there are long-term economic benefits from Wilderness designation, whether there are population impacts of Wilderness Designation, and whether Wilderness Counties offer greater quality of life than Non-Wilderness Counties.
income. Thus, there may be some justification for local political elites and residents to be concerned about new Wilderness designations.

The paper proceeds as follows: Section I provides some background on the issues surrounding Wilderness. Section II provides an introduction to federally designated Wilderness and surveys the existing literature on economic impacts of Wilderness. Section III lays out our methods and explain the data used. Section IV presents our results; Section V provides our analysis and conclusions.

II. Federally Designated Wilderness

A. Federally Designated Wilderness Introduced

Beginning in the late 1800’s, the U.S. Government began setting aside portions of federal land under varying degrees of protection. These efforts resulted in the establishment of the National Parks system in 1887 with the creation of Yellowstone National Park (now managed by the National Park Service, which was created in 1916). Additionally, the National Forests programs started in 1891 through the establishment of the Yellowstone Timberland Reserve (now the Shoshone National Forest). Through the creation of Devil’s Tower National Monument in 1906 a National Monuments system was also created. Then, in 1940 the Fish and Wildlife Service was created through the merger of the Bureaus of Fisheries and Biological Survey. The creation of the Bureau of Land Management to “to sustain the health, diversity and productivity of the public lands for the use and enjoyment of present and future generations” occurred six years later (DOI: BLM: National Home Page).

The identified statutory purposes of each of these types of land reservations anticipated some degree of human use. Indeed, the National Forest Service is located in the United States Department of Agriculture because of the efforts of Gifford Pinchot, first director of the United
States Forest Service. He wanted to preserve and promote the National Forests for production of timber throughout the U.S., something he considered to be an agricultural, not preservationist, activity. Meanwhile, the Bureau of Land Management, National Park Service, and Fish and Wildlife Service are all located in the Department of the Interior.

Although lands managed by the several federal agencies receive a great deal of protection, some preservationists and conservationists argued that these designations did not sufficiently preserve the wild characteristics found in those lands. These concerns led to early designations of “wilderness” within certain forest reserves. The first of these, created through the creation of the Gila National Forest in New Mexico, set aside some 700,000 acres to be preserved as wild lands in perpetuity. The setting aside of lands continued and by the 1930’s over twenty such Wilderness Areas had been created. Managing these areas was left to regional administrators who chose in some cases to allow grazing, logging, and road building. Even parts of the Gila Wilderness were opened to broader use in the 1940’s and 1950’s (Coggins et al. 1993).

Upon the urging of conservationists and preservationists, the U.S. Congress turned its attention to the issue of preserving wild lands in perpetuity in 1964 through passing of the Wilderness Act. There Congress defined Wilderness as:

an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this chapter an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, which the imprint of man’s work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may
also contain ecological, geological, or other features of scientific, educational, scenic, or historical value (16 U.S.C.A. § 1131(c)).

Because the Wilderness Act mandated preserving areas “untrammeled by man,” a variety of acts are expressly forbidden within Wilderness Areas. Roads, road construction, and any mechanized travel are prohibited within Wilderness Areas. Although mining claims were allowed for the first twenty years after the Wilderness Act passed, mining and mineral exploration are now prohibited within Wilderness Areas. Even when mining and mineral exploration and extraction was allowed, almost no mineral leases were granted by the controlling agencies. Thus, indicating a general unwillingness of federal administrators to allow mining, despite the legislative language allowing the activity.

Similarly, while logging was not expressly proscribed by statutory language of the Act, the restrictions on mechanized travel, mechanized equipment like chainsaws, and road construction generally preclude large-scale logging activity (Coggins et al. 1993). A review of the legislative history of the Act further indicates that Congress intended to prohibit logging activity in Wilderness Areas with one exception—the Boundary Waters Canoe Area in Minnesota. Grazing is expressly allowed in Wilderness Areas, but administrators are allowed to make “reasonable regulations” regarding the use. Congress has interpreted this in at least one instance to mean that livestock grazing may be reduced if necessary to improve range conditions (see generally H.R. 96-617).

In addition to the prohibitory language found in the statute, the Courts have acted to aggressively protect Wilderness Areas. Courts have blocked a variety of activities in Wilderness Areas including treatment of beetle infestations to maintain forest health (See Sierra Club v. Lyng 662 F. Supp. 40). Uses of land surrounding Wilderness Areas often receive more stringent review. The 10th Circuit Court of Appeals, for instance, upheld an injunction of logging in an
area that approached a Wilderness Area (*Parker v. United States* 448 F.2d 793 cert. denied 405 U.S. 989 (1972)). Wilderness Areas often raise review standards under the National Environmental Policy Act (NEPA). Under NEPA, land uses near Wilderness Areas may be found to have a more “significant” impact than actions near lands not under federal protection. This presumed impact may increase the costs associated with county or state activities occurring near Wilderness areas and may change the cost calculus in making governance decisions.

Managing designated Wilderness Areas remains within the jurisdiction of the original managing agency. Lands designated by Congress as Wilderness within National Parks, for instance, remain under the jurisdiction of the National Park Service. Similarly, the National Park Service, the U.S. Fish and Wildlife Service, and the Bureau of Land Management all manage the Wilderness lands within their jurisdictions.

Currently, there are 759 Wilderness Areas in the United States, totaling 109,663,992 Acres. The National Forest Service manages over 36 million acres of Wilderness. The National Park Service manages over 44 million acres of Wilderness. The Fish and Wildlife Service manages over 20 million acres and the Bureau of Land Management manages almost 9 million acres of Wilderness. The Wilderness Areas also dramatically vary in size from the Pelican Island Wilderness in Florida which occupies a mere six acres to the 9,078,675 acre Wrangle Island Wilderness in Alaska (Gorte 2010).

Due to the stringent requirements laying out Wilderness characteristics, the majority of Wilderness Areas are found within largely rural and lightly populated counties. Indeed, over half of all designated Wilderness is located in Alaska (Gorte 2010). An additional 13 percent of total designated Wilderness is found in rural areas in California. Other states containing large amounts
of Wilderness include Colorado, Montana, New Mexico, Nevada, Oregon, Utah, and Washington.

B. Impact of Federally Designated Wilderness

As noted in the introduction, many local government officials bemoan the designation of Wilderness. They note that the restrictions found in Wilderness Areas prohibit activities leading to economic growth. They also lament the loss of access for mechanized travel, in part because they believe mechanized recreation generates more local revenue than non-mechanized alternatives. These concerns are often countered in the environmental community who point out the “true” value of Wilderness. They include the value of ecosystem services performed by Wilderness and are often not accounted for in traditional economic analysis and the amenity value of Wilderness that increases the value of property with close proximity to Wilderness Areas (see for example, The Wilderness Society 2004).

Much of the academic literature investigating the impact of Wilderness represents a critique of the efficiency of the federal government as land manager (see generally, Anderson et al. 1999) and the expansive use of Wilderness Designation as a land management tool in departure from original congressional intent (Osterle 1997). Some research supports at least parts of the claim that Wilderness Areas detrimentally impact local economies. There is, for example, evidence of a temporal aspect to the economic impact of protected lands designations. Ruzitis and Johnson (2000) note short-term but limited long-term economic detriment to local economies. Wilderness does shut down access to resources traditionally used for extractive economic activities. These losses may be somewhat offset by an increase in service sector activities, but the service sector jobs generally pay less than the extractive jobs that were lost.
Several studies support the claim the Wilderness positively affects local economies. Power (1991), for example, conducts a case study examining the stringent rules in place protecting the ecosystem surrounding the Greater Yellowstone Area. He finds that extraction based industries have diminished over time and have been replaced by economic activities specifically dependent on preservation including tourism, permanent relocation to be closer to the natural amenities offered, recreational homes and cabins, and retirement.

Rasker (1994) finds that entrepreneurs often choose to live in areas where there is a high quality of life including the presence of protected lands. Duffy-Deno (1998) finds no evidence that employment at a county level is adversely effected by the presence of federal Wilderness. Rasker (2006) rejects the notion that federal land ownership negatively impacts counties. Using correlation and regression models to investigate how different management of public lands—including Wilderness—impacts local counties' economies, he finds that public lands are associated with higher personal income tax levels in rural areas.

Holmes and Hecox (2004) similarly find a positive relationship between economic growth and publicly designated lands. Through studying 113 rural counties, 43 percent of which contain public lands. The authors find that there is a significant, positive correlation between the percent of land designated Wilderness and population, income, and employment growth. They also find that growth of investment income and nonfarm self-employment income are correlated with presence of Wilderness. Lorah and Southwick (2003) similarly find positive impacts of protected lands. Using county level data, the authors calculate the proportion of protected lands occurring within fifty miles of the center of the county. Applying this metric, the researchers find that the protection of these lands is positively correlated with high population growth, high employment, and income growth.
Population dynamics and personal perceptions of Wilderness represent another line inquiry that may have a direct impact on county economics. The perception of Wilderness as a draw to move to or remain in a given area may create diverse economic opportunities and growth. Although Duffy-Deno (1998) finds no significant relationship between federally designated Wilderness and population, a variety of studies find a positive relationship. Rudzitis and Johansen (1991), use a survey of 2,670 residents of Wilderness counties to measure public opinion regarding public lands including Wilderness lands. Fifty-three percent of respondents indicated they moved to an area at least partially because of the presence of wild-lands, 81 percent felt Wilderness was important and 65 percent were against mineral or energy development in such areas. This finding indicates that Wilderness may create conditions that create economic opportunities in addition to extractive uses. Shumway and Otterstram (2001) similarly find migration patterns toward counties with protected areas.

III. Methods and Data

The academic debate about the effects of Wilderness on local economies reaches the same conclusions as the arguments between local politicians and environmental groups—there are many claims but conflicting evidence. We address the question of local impacts of Wilderness designation using a different, and we believe, better methodology than those employed previously. We take the middle ground between the debates and begin with the null hypothesis that wilderness designation has no impact on county economic conditions.

Our study represents a departure from previous work in several ways. First we use longitudinal statistical analysis to identify the dynamic economic conditions found within counties. This approach provides more information regarding actual conditions and may identify changes occurring over time in Wilderness counties compared to Non-Wilderness counties. This
approach seems particularly useful for understanding the long-term economic impacts of Wilderness. If the declaration of Wilderness may result in short term negative economic impacts from lost extractive resource opportunities, longitudinal analysis seems to be the best way to identify these claims. If, as claimed, these short term losses are made up over the long term by economic transitions to different activities, longitudinal analysis is again the best way to better understand these dynamics.

Much of existent work on the economic impact of Wilderness has relied on cross sectional data, and in doing so provides an snapshot of the correlative effects of Wilderness and economic development. This approach however fails to capture and model effectively the lag that often exists in predicting economic outcomes. It is our belief that approaches of this sort while useful, fail to adequately address the question of causality, and that a cross-sectional time series model is the more appropriate approach if the goal is teasing out causation.

Second, we focus on only officially designated Wilderness, not public lands in general. As may be noted from the discussion above, many researchers include Wilderness within a broader category of protected lands or public lands generally. This approach may confuse the true impact of Wilderness and fail to provide meaningful information regarding variable impacts of different land designations. Non-Wilderness portions of National Parks, for instance, may be quite different in terms of economic impact from travel tourism than stand-alone Wilderness within the Forest Service system, which may not have the same ability to attract travel tourists.

We include data for all public lands in each county as control variables to ensure that the effects of Wilderness are discreetly modeled. This approach is a significant improvement as it teases out the partial effect of each of the various types of land protection regimes in the United
States. Further, it is likely that given the variation in rules associated with land protection, lumping all protected classes together will confound the effects of any particular designation.

A third departure from others’ work is that we focus our analysis on all counties in the United States rather than focusing on only public land states found in the West. We examine all counties for two primary reasons. First, by casting a broader net, we expand the scope of investigation and examine whether there are indeed differences between economic dynamics in Wilderness and Non-Wilderness counties, while avoiding regional economic phenomena that may be present in the West. Specifically, the Western United States has been undergoing a demographic transformation with significant population and land use transformations throughout the past two decades. By examining all of the United States, we hope to avoid those Western-specific phenomena.

Second, many Wilderness Areas exist outside of the West. The Charles C. Deem Wilderness Area, for instance, was carved out of the Hoosier National Forest in Indiana, the Citico Creek Wilderness is in Tennessee, and the Dolly Sods Wilderness is in West Virginia. Virtually every state in the union now contains at least some federally designated Wilderness. As we observed above, Wilderness designation has most often been investigated as a primarily western phenomenon, and most studies that have investigated these questions severely limit the observations included in the data to a specific region, and at times a specific state. We reject both approaches for theoretic and methodological reasons. Using a limited non random sample of the United States will necessarily paint a different picture of the effects of Wilderness than will a sample that is either random, or draws on the full population of United States counties. We believe that many of the conflicting results that have been found by other authors can be directly attributed to how they define the universe of their study.
We further assert that the most appropriate universe is the full United States county population and that the proper reference group for evaluating the effect of Wilderness is not non-Wilderness Western counties. The very large urban centers in the West are likely to be in Non-Wilderness counties, making them difficult to compare with the lower-populated Wilderness counties. Thus, we believe comparing all non-Wilderness counties across the country paints a better picture of the effects of Wilderness.

We have selected three uniformly applicable variables as proxies for county economic conditions—average household income, total payroll, and total tax receipts. The U.S. Census Bureau gathers average household income and total tax receipts. The Bureau of Labor Statistics gathers total payroll figures.

Average household income is calculated by dividing the sum of all income of the residents over the age of eighteen in each household by number of households. Average household income has the advantage of specifically addressing how individual households are on average affected by Wilderness designation in these counties. It has the disadvantage of being self-reported to the U.S. Census Bureau and, accordingly, may not be as valid as a more direct measure.

Total payroll is a broader metric that captures those under the age of eighteen and commuters who may live outside but work within a county. Further, it is a measure of the economic situation of individuals rather than households. Another approach would have been to use total receipts. We selected total payroll rather than total receipts on the assumption that payroll dollars are more likely to be spent in the geographic area than are total receipts, which may include corporate profits that leave the area. Total payroll is not a perfect proxy because it
does not capture the capital investment, county residents who work outside the county, or most importantly, retirees who do not receive payroll.

County tax receipts is a measure that has at least two advantages over the others measures. First, the data are largely complete; local governments are required by state and federal statute to correctly report tax receipts. These requirements provide some confidence in the data that self-reporting does not provide. Second, tax receipts represent all taxable transactions in the county. This provides a useful metric of economic activity. Tax receipts, however, are not a perfect proxy as there are significant institutional differences across states, regions, and often counties themselves about how, when, and why taxes may be collected.

Although none of our dependent variables is a perfect proxy for economic conditions, taken together, they paint a relatively complete picture of the economic situation. We expect that the presence of Wilderness should have similar effects on each variable.

To test our hypothesis we use a dummy variable to indicate the presence or absence of Wilderness in each county across time. The Dummy is coded 1 for the presence of Wilderness within a county and 0 when a county contains no Wilderness. If the null hypothesis is incorrect, we expect that the sign on the coefficient for the Wilderness dummy would be significant and consistent across models. To ensure that it is the effect of Wilderness and not simply federal land ownership that harms economic conditions we include control variables for each of the federal agencies that manage public land. These variables are expressed in percent of county owned by that entity and provide a necessary disaggregation of the effects of federal ownership.

We also include several variables that control for the significant differences among counties. These variables include population, land area, and number of households. We include more traditional controls that are indicated by published research as likely to affect economic
development. We include birth rate and school enrollment, which act as proxies for the age of the population. Infant death rate provides information about the health care system in the various counties. Further, we include variables indicated by the economic development literature as likely important in determining outcomes: high school graduates, median household income, poverty rate, crime rate, government employment, unemployment rate, and social security recipients.

IV. Methods and Results:

To test the null hypothesis we use a panel data approach with three five year panels beginning in 1995 testing each dependent variable while controlling for temporal effects. Table 1 shows the results of the three regressions.

{Table One About Here}

The results from each of the three regressions show the designation of Wilderness consistently harms the economic situation of a particular area. Thus we can reject our null hypothesis that Wilderness designation has no impact on county economic conditions. We get this result regardless of the measure of economic conditions in the model. Controlling for other factors influencing county economic conditions, Wilderness designation is associated with lower per capita income, lower total payroll, and lower total tax receipts.

V. Analysis and Conclusions

We began our analysis of the economic effects of Wilderness on local economies by positing that Wilderness has no economic effects. We chose this beginning point because of contradictory academic findings and contradictory claims by stakeholders in the policy process.

3 One related finding is particularly intriguing. Department of Defense ownership of greater land area in a county has a uniformly negative effect on economic conditions, which might provide some input to the ongoing controversy about base closures and changes affecting local economies.
We found that Wilderness, when other types of public lands are controlled for, is associated with lower economic well-being. The argument often stated by the environmental community that Wilderness is good for a local economy is simply not supported by our data. In fact, Wilderness harms local economies.

If the test for whether or not to designate public lands as Wilderness is an economic one, Wilderness fails. Our results show that Wilderness is not justified on economic grounds. But economics did not underlie the Wilderness Act or any of the Wilderness Areas established since the Act was passed. Wilderness is established for emotional, ecological, and cultural purposes. Our results show that those purposes are accomplished at a cost to local economies.

There are a variety of factors that could lead to the negative relationship between Wilderness and economic conditions. Arguably, areas “untrammeled by man” have less existing economic activity and reducing the potential for future economic development by designating those areas as Wilderness will not, on net, be economically positive. It is also possible that different types of Wilderness may have different implications for economic conditions. As noted above, four federal agencies currently manage Wilderness Areas. Wilderness managed by different agencies may have different economic impacts on counties. Wilderness within National Parks, for instance, may more effectively attract tourists than Wilderness on Bureau of Land Management or National Forest Service lands.

Finally, it is probable that the location of Wilderness has an impact on the direction and magnitude of its economic impact. Phillips (2004), for instance, found that Wilderness designation in the Green Mountains of Vermont had a positive impact on private land values in the area. We should assume that some Wilderness does, in fact, have positive economic impacts, even though our findings indicate that this is not the general rule.
Wilderness may not increase local economic growth, but that does not imply that Wilderness is a bad thing, per se. Rather, it identifies tradeoffs inherent in land designations. The emotional, ecological, or cultural values of Wilderness may still justify Wilderness designations, especially since Wilderness has consistently maintained a popular position nationally. The benefits and costs of Wilderness, however, are not evenly distributed since local communities bear a disproportionate share of the costs of Wilderness designations. This is probably why local officials (especially in rural areas of the Western United States) often rail against Wilderness.

If Wilderness proponents wish to create more Wilderness they might pay more attention to the interests of local communities, since Wilderness designations economically disadvantage those communities. Local interests simply do not trust claims about economic advantages from Wilderness and, apparently, for good reason. By working with those local interests to overcome the costs of Wilderness, proponents could generate the trust necessary to develop outcomes that protect wilderness values while reducing economic harm.

There has been some progress in this direction in recent years, as increasing consensus has developed about the value of local participation in Wilderness designations. In Washington County, Utah for example, local officials participated in discussions for years with farmers, ranchers, environmentalists, and outdoor recreation enthusiasts to create a consensus position regarding lands that could be designated as Wilderness. Though difficult and time consuming, the process led to Wilderness designations in 2009 that had the support of local political elites, the local populace, and the environmental community.

The Washington County process was modeled on an earlier and also successful process in Nevada in which Clark and Lincoln counties also developed a comprehensive land use plan that envisioned Wilderness as part of the local land portfolio. These processes seem to avoid
acrimonious debate between local officials and environmental activists and may represent a way forward in creating locally supported environmental regulation.
Works Cited


