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Drill Baby Drill?
Political and Market Influences on Federal Onshore Oil and Gas Leasing in the Western United States

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Abstract:
This paper examines the role of federal elected political influence and market factors in determining the acres of oil and natural gas leases issued on Bureau of Management (BLM) lands in the western United States between 1978 and 2008. This paper seeks to determine if a political party and ideology of the federal political environment influence the number of acres that are leased and if there is disparate federal political influence in states that have a large amount of federal lands. Using a random effects Tobit model for a 17-state sample of the westernmost states in the contiguous United States, the findings indicate that more conservative

Purpose

In this paper, I analyze the political and market determinants of federal onshore oil and natural gas leasing in the western United States. Previous research on this topic has focused on examining either oil and natural gas markets or federal bureaucratic outcomes generally. I synthesize both the market and political determinants of federal lease issuance and provide a theoretical and empirical framework for analyzing the determinants of oil and gas leasing on BLM lands in the contiguous western United States. Using a supply and demand framework, I move away from the existing research that analyzes either oil and gas market factors or the role of the federal political and bureaucratic structure. By focusing on both simultaneously it is possible to ascertain whether the influence of politics or resource prices are the main determinants of leasing on federal lands in the western United States. Also, given the potentially important influence of both market and political factors, the inclusion of both sets of measures in this analysis mitigates issues of omitted variables bias, which is a concern when either set of factors is analyzed separately.

The existing market literature provides both theoretical and empirical analyses, but the empirical work focuses on offshore rather than onshore leasing. In addition, this literature does not focus directly on the political determinants of lease issuance. The existing literature on federal leasing has instead largely focused either on auction price theory to analyze the process for issuing competitive leases (Moody and Kruvant, 1988; Hendricks, Porter, and Tan, 1993; Hendricks, Pinske, and Porter, 2003), or on the determinants of oil and gas supply and production using a market supply and demand framework. (Walls, 1992; Iledare and Pulsipher, 1999)

The federal political environment in the United States and its influence on bureaucratic outcomes has been extensively studied in the literature. This literature has focused on two areas:

Background

the Interior (DOI), is responsible for almost 700 million acres of federal mineral estate lands, mostly in the western United States. This includes 258 million surface acres of BLM lands and the federal mineral estate that lies under federal lands managed by other federal agencies.[5] In addition, the federal mineral estate includes federal minerals under surface land that is privately owned, but for which the federal government administers the subsurface mineral rights.[6] In the federal mineral estate, approximately 12 million acres contain oil and natural gas and of these acres approximately 470,000 acres have oil and gas activities. According to the BLM, the "domestic production from over 63,000 Federal onshore oil and gas wells accounts for 11 percent of the Nation's natural gas supply and five percent of its oil." (BLM, Oil and Gas) Onshore oil and gas resources thus compose an important part of the nation's energy supply.

The BLM's responsibility for managing these resources derives primarily from two historic acts: The Mineral Leasing Act of 1920 and the Mineral Leasing Act for Acquired Lands of 1947, which give the BLM responsibility for oil and natural gas leasing. (MacDonald 6-7, 15-16). While the BLM has been existed since 1946 and has issued mineral leases since its inception, it was not given its official mission until Congress enacted the Federal Land Policy and Management Act of 1976 (FLPMA). (Muhn and Stuart, 1988, p.158) Prior to 1976, the BLM inherited its mission from the two organizations that preceded it, the General Land Office and the Grazing Service. Oil and natural gas leasing at the BLM was and continues to be

sustained yield." (Muhn and Stuart, 1988, p.158) In addition, the 1970's began with the passage of the National Environmental Policy Act of 1969 (NEPA), which profoundly influenced the way that the BLM manages its public resources. Consideration of environmental impacts from oil and gas leasing and other activities became a legally dictated process requiring environmental impact statements and additional public influence in the overall land use planning process. (Muhn and Stuart, 1988, p.158)

After the 1970's, the mission of the BLM continued to evolve and was shaped by three other major regulatory changes. The Federal Onshore Oil and Gas Leasing Reform Act of 1987 (FOOGLRA) and the Energy Policy Acts of 1992 and 2005. Of these, the influence of the 1987 Act was by far the strongest. This act amended the leasing act of 1920, which led to changes in the definition of leasing types and gave the Forest Service the authority to dictate leasing on their lands, among other changes. In addition to the executive management of these agencies, the legislative environment has also significantly influenced the DOI and BLM through major legislative changes such as the FLPMA and the National Environmental Policy Act of 1969 (NEPA). Also, appointees to the Secretary of Interior and BLM director posts are approved by the federal legislature. Thus, executive management and Congressional influence have shaped the mission of both the DOI and BLM and altered the course of federal lands management.

The goal and definition of responsible drilling on public lands became a contentious issue in the 1960s and early 1970s with the rise of the conservation movement. (Muhn and Stuart, 1988, p. 104) During this time the BLM "began to transform itself from an agency primarily processing land and mineral applications into an agency actively planning for the nation's future needs." (Muhn and Stuart, 1988, p. 106) This transformation led to more thorough land management planning.

Currently, drilling on federal lands begins with the formation of a land management plan. Under NEPA, there are five phases of land use planning for oil and gas development on federal lands. The first is the creation of a Resource Management Plan (RMP), which designates the areas of land that are available for oil and gas leasing. For areas that are designated as open for development, "the RMP analyzes impacts of reasonably foreseeable development and spells out any stipulations needed to provide extra protection for sensitive resources in the plan area." (BLM, Land Use) The resources requiring protection range from sensitive ecosystem areas to

less than 1% of their lands owned by the BLM.[11] The additional states are geographically adjacent to the first sample and contain a mixture of oil and natural gas producing states such as

party and also ideology are expected to also represent the leadership at the DOI. For each elected official, I expect both party and ideology to be important in influencing leasing.

The conventional wisdom is that in politics, party matters. It is a signal of a politician's stance on a variety of social and economic issues. The notion of pro-business Republicans resisting regulation and pro-regulation Democrats pushing for it is common across policy arenas. Republicans generally have pushed for increased domestic energy development while Democrats have been more reticent to lease, noting the environmental impacts of development. Prior to elections, these divergent party stances on oil and gas leasing are incorporated into each candidate's platform. After election, commitment to a particular party tends to constrain a politician's choices. (Levy, 2004; Cox and McCubbins 1994) For these reasons, party differences among politicians are expected to lead to a clear delineation in leasing outcomes along party lines. Given the platforms of the Republican and Democratic parties, one would expect pro-oil and gas development policies under a Republican administration and reduced oil and gas development under a Democratic administration.

Individual ideology is also expected to play an important role. The ideology measure captures the degree of conservatism of each individual politician based on their voting history. This measure provides a unique measure for each individual and Congress and therefore provides a more detailed measure for each politician than the overall political party measures. Given the variance of this measure over individuals and across time, I expect ideology to be a more accurate measure of the political environment than political party. Prior to a discussion of the data and presentation of the empirical results, the theoretical framework is presented below.

Theoretical Framework

The focus of the theoretical framework is to incorporate political indicators and market measures to determine their influence on leasing. The theoretical framework is based on the standard economic supply and demand model. In this case, however, the supply side is determined primarily by elected officials who establish the amount of land that will be available for leasing based on ideology and party affiliation, while the demand side is determined by profit-maximizing oil and gas producers who base their demand for leases on relevant market factors.

Politics and Federal Leasing: Supply

The federal political actors have three possible avenues of influence on the supply of leases: direct influence on the acres of leases offered, X_i, indirect influence on leasing through regulations on leasing, R_L, and indirect influence on leasing through regulations on resource

Specifically, for both leasing and development regulations it is expected that decreases in *Z* will lead to additional regulations. A more liberal ideology is expected to lead to additional regulation.[13] (h'(Z) < 0 over 1 1)

Z, political affiliation, takes one of two forms.

1 1

OR (3)

Z = 0 if Democrat and 1 if Republican

The first form of *Z* is a variable distributed between -1 and 1 where -1 is liberal and 1 is conservative.[14] The second measurement of *Z* is a binary variable indicating political party affiliation. The continuous variable indicates a politician's ideology based on the voting record in each session of Congress and therefore can shift over time for each individual. Party affiliation is not time dependent.

Further, based on the theory of political influence proposed by Nelson (2000), I expect that the 11 westernmost states, BLM states, will experience a disparately large influence from the elected political leadership as compared with the full 16-state sample due to the relatively large allotment of BLM lands in those states.

Oil and Gas Producers: Demand

Firms use the existing level of technology to produce the profit maximizing level of oil and natural gas. For the *j-th* producer:

$$q_j = g(x_j, y_j) \quad (4)$$

[13] In the theoretical model, regulations are defined to include environmental, health, and safety regulations that add to operating costs and therefore lead to decreases in leasing. The converse of these types of regulations are regulations that are designed to lead to increased competitive leasing, such as FOOGLRA. I expect regulations that are designed to increase leasing will do so and will be more prominent in Republican regimes.

[14] See Carroll et al, 2010, for a complete description of the construction of the ideology scores.

2008.[16,17] The states in the sample and the percentage of BLM lands in each state are included in Table 2. Lease information was collected from the BLM LR2000 database which contains all leasing activity tracked by the BLM. Specifically, the "LR2000 provides reports on BLM land and mineral use authorizations for oil, gas, and geothermal leasing, rights-of-ways, coal and other mineral development, land and mineral title, mining claims, withdrawals, classifications, and more on federal lands or on federal mineral estate." (BLM, LR2000)

For this analysis, I focus only on acres of competitive oil and natural gas leases that were issued by the BLM on BLM land. Since the 1987 regulatory change, all leases must first be issued competitively and are only available for noncompetitive lease if they are not leased at the competitive auction. Since the initial leasing decision is made by the BLM in the competitive leasing stage, I expect the political influence to be most dominant when competitive leases are issued as opposed to noncompetitive lease issuance.[18]

Figures 3 and 4 present the numbers and acres of competitive leases issued by each state over the sample time frame. The figures demonstrate the wide variation in both leasing volume and timing. Figure 5 shows the total number of competitive leases and acres of competitive leases issued by the BLM for these 17 states by year. There is a marked increase in 1988 due to

information to construct a measure of the acres of competitive leases issued per acre of BLM lands. As I discussed in the theoretical framework, I expect the available land for leasing in each state to influence the number and acres of available leases. By including a measure for leasing potential, the disparate influence of available land for leasing is included as a direct control.[20]

In addition to the dependent variable, I constructed several market variables. The market data include information on prices and futures prices for both oil and natural gas, that I collected from the Energy Information Association (EIA).[21] For oil price I use real first purchase oil price, which is defined by the EIA as the price paid during the initial transaction involving an equity

Tobit model was used.[29,30,31] (See Figure 6 for graphs of the dependent variable by state.) The specification of the model is:

= + + + + + + 1987

+ 1992 + 2005 +

where Y ~ (0, ¥)
and = +

where i = state and t = year. Y_{it} represents the annual state acres of oil and natural gas competitive leases issued on BLM lands by the BLM per BLM acres in each state. Also, it should be noted that the acres of BLM lands in each state is not a precise measure of available land for leasing, which is not tracked by the BLM. Instead, the measure provides an upper bound on the number of acres that can potentially be leased by the BLM. Z_t represents a set of federal executive and legislative political party and ideology indicators. Resource Price, p_{it}, represents either a three year moving average of annual real state natural gas or oil prices, or futures prices for oil or natural gas[32]. Well costs contains direct well costs that change over time only. Finally, Time Trend is a state-year indicator to control for overall trends in leasing.

The analysis presented below begins with a discussion of the role of legislative committees, followed by an analysis of the influence of the Senate Majority Leader, and then the effect of the President's office on leasing outcomes.

[29] The Tobit model provides measures of both the probability that leasing will occur and the expected number of acres leased per acre of BLM land given that leasing has occurred.
[30] I include a linear random effects regression model in Table 10 for comparison.
[31] The random effects Tobit model was tested against a pooled Tobit regression specification and was found to provide a better fit. Fixed effects Tobit was also considered, however, the fixed effects Tobit specification is known to be biased. For robustness, a Tobit was run with state indicator variables, the results were consistent, generally leading to an increase in statistical significance for the political indicators. In addition, I ran linear fixed effects and random effects regressions and used a Hausman test to determine if the more efficient random effects model was consistent with the fixed effects model. The results indicate that the linear random effects model is consistent.
[32] Futures prices for natural gas are available from 1994 through 2008, while futures prices for oil are available back to 1983. Given the high degree of correlation between these variables. .9. Oil prices are used as an the indicator of future resource prices.

compared with years in which the state is on the margin, making a leasing decision.[35] This lesser influence on the number of acres leased leaves a large role for bureaucrats to use their discretion to dictate leasing outcomes.

Counter to the BLM states hypothesis, the findings in Tables 4 and 4a indicate that the coefficient on SNRC is statistically significant and positive for the full sample, but is not significant if the sample is restricted to the BLM states.[36,37] According to this hypothesis, the unique political environment in the west as defined by Nelson (2000) should lead to stronger federal influence in states that have a higher percentage of federal ownership. Instead, in the case of the SNRC chair the federal political influence is mitigated if only the BLM states are analyzed.[38] For the SNRC chair in the BLM states sample, the political influence is diminished to ten percentage points and the statistical significance of the coefficient is lost. These results are not supported by the analysis of the interaction of politics and BLM states presented in Table 9. The comparison of BLM and non-BLM states indicates that the two groups are not statistically significantly different, which also does not support the BLM states hypothesis. The findings in Table 9 do support the previous conclusions regarding the statistically significant influence of politics and the affect of conservative leadership, which leads to increased leasing.

Elected political influence on leasing outcomes is demonstrated across several political measures and sample specifications. This finding supports the existing literature (i.e. Weingast

[35] This margin of influence may also indicate that states that have significant resources and are consistently leasing have diminished political influence. As a robustness check, I analyzed the influence of the interaction of political indicators and high resource states. The results indicated that high resource states did receive diminished political influence in some cases, for the SAC and SEPW committees, but the finding was not consistent across the other political indicators.

[36] This pattern is matched by the Senate Majority Leader as is shown in Table 7.

[37] As a robustness check, in Table 9, I analyzed the full 16-state sample and included an interaction term to determine if there was a statistically significant difference in the influence of politics between the BLM and non-BLM states. The findings indicate that the interaction variable is not statistically significant indicating that the influence of politics is the same across both sample groups. The effect of politics remains positive and statistically significant.

[38] This is supported by an analysis of the interactions between the political indicator and BLM lands presented in column 1 of Table 9.

To investigate the role of the federal legislature further, I have also examined the influence of the Senate Majority Leader. For this political variable the findings in Table 7 indicate that the role of politics is mitigated rather than enhanced in BLM states. For the Senate Majority Leader, the magnitude of the influence on the probability of leasing for a one standard deviation increase in the ideology score indicator differs by only one percentage point between the 16-state and BLM states samples. It decreases from approximately five percentage points in the 16-state sample to four statistically insignificant percentage points in the BLM states sample. The influence is diminished in the BLM states in direct contrast with the BLM states hypothesis. These findings are robust to the analysis of BLM and non-BLM states that is presented in Table 9. The results in Table 9 show that BLM states have significantly less political influence than non-BLM states. To further explore the role of the Senate Committees and Senate Majority Leader, I have also analyzed the political party of the relevant actors.

BLM States – The role of the U.S. Senate and Political Party

I expected that the role of ideology would prove to be more significant because the measure describes in more detail the political identity of each individual. This proved to be particularly true when identifying the potentially disparate influence of the Senate Committee Chairs and Senate Majority Leader. Over this time frame, the political party changes were identical so it is not possible to separately identify the influence of the political party of the committee chairs and Senate Majority Leader on leasing. In Table 6, I present the results of the analysis of the influence of the political party of the Senate leaders. The findings indicate that more conservative leadership leads to additional leasing.

The results for the party of the Senate Majority Leader follow the pattern of the Senate Majority Leader's ideology in that for the BLM states sample there is not a statistically

point increase in the probability of leasing. For the full sample, the increase is only two statistically insignificant percentage points. These findings support the BLM states hypothesis and demonstrate that at the executive level, the amount of federal lands in a state do matter. The pattern of results is consistent if the political party of the U.S. President is analyzed. The

significant for both samples.[45] If the joint significance of well costs and futures prices are analyzed they are also found to be jointly insignificant.[46,47] The lack of significance in the price results, both historical prices and futures prices, could be due to the fact that producers are basing their leasing decisions on prices much farther in the future. The futures prices used in the analysis are based on months in the future while leases issued currently will not be producing until approximately one to three years in the future. Also, as noted by Paddock, Siegel, and Smith (1988), the process of production has a high level of uncertainty in market factors other than resource price. The authors argue that across the three stages of production; exploration, development, and extraction, there are several factors that affect the valuation of a lease. In addition to uncertainty in future resource prices, these include uncertainty in resources, development and exploration costs, expected extraction rates, and expected tax structures. (Paddock, Siegel, and Smith 1988, p.483-485) In the future, other market factors may be analyzed to investigate the role of the market further, however, for this paper the focus is on the political determinants.

In addition to price and well cost, the state time trend is generally positive but proves to be consistently statistically insignificant across samples. The linear time trend was included to measure the overall influence of each year in the sample. It also serves as an indicator of technological progress.[48] In the future, alternative measures of technological progress will be utilized to more fully examine the role that technological changes have had on leasing.

[45] The findings regarding well costs are consistently insignificant across specifications using all political variables.
[46] The findings are consistent across the three-year moving average of oil prices and natural gas prices as well. The price and well costs measures are not jointly significant.
[47] If prices and well costs are tested in conjunction with the 2005 indicator variable the three measures are jointly significant. The regulatory indicator is a coarse measure with which to identify regulatory change. It also identifies a time period of significant price and leasing increases. Although the price, well cost, and the regulatory measure are not individually or pair wise significant. The joint significance and positive sign of the coefficient does indicate that the market factors are influencing leasing.
[48] The results were consistent if a linear time trend across states was used. Also, the findings regarding political influence are not significantly affected if a year random effects model is used.

Lastly, ɟ, a measure of the percentage of the total variation in acres of competitive leases issued per acre of BLM lands that is due to persistent state characteristics is markedly different between the two samples. In the 16-state sample, the percentage of variation in leasing that is due to persistent state characteristics is approximately 40 percent while for the 11-state sample it is approximately 30 percent. This indicates that the 16-state sample is more heterogeneous than the 11-state sample. This finding supports the hypothesis that the BLM states are more homogeneous.[49] Since the federal political influence is not consistently significantly different in the BLM states, however, this finding does not support the hypothesis that the BLM states are more homogeneous due to a unique federal political environment.

Conclusions and Future Work

The results indicate that the role of federal elected political influence in determining oil and natural gas leasing outcomes on BLM lands is as hypothesized in three ways, but the findings are mixed with regards to the dominant role of politics that I expected in the BLM states. First, the ideology and party of the committee chairs, Senate Majority Leader, and U.S. President did influence leasing, demonstrating that the elected political framework does affect bureaucratic outcomes at the BLM. The influential role of the elected political leadership supports the existing literature which argues that bureaucrats are constrained in their behavior by the political environment in which they operate (i.e. Weingast and Moran, 1983). Additionally, the findings support arguments put forward in other papers regarding the important role that political party, ideology, and committee membership play in influencing outcomes, in this case bureaucratic rather than Congressional outcomes. (Levy, 2004; Poole and Rosenthal, 1991; Shepsle and Weingast, 1987) Second, this influence was positive across all measures indicating

[49] The percentage of variation due to persistent state affects also captures other economic, geographic, and political characteristics of each state.

that more conservative elected political influence does lead to increases in leasing. Lastly, the margin of influence was the same. Elected political influence affects the probability of leasing and has little influence on the number of acres leased per acre of BLM lands.

The expected dominance of the federal political influence for the BLM states relative to the full 16 state sample was robustly demonstrated for the office of the U.S. President, but it was not found in the legislative leadership. This indicates that the expected role of the federal government in the westernmost states in the United States is not consistent across political offices. The argument put forward by Nelson (2000) regarding the unique political environment in the west is not supported in terms of oil and gas leasing at the legislative level but it is at the executive level. Given the appointment power of the U.S. President over the DOI Secretary and BLM Director, the dominant role of the political influence of the U.S. President in the BLM states indicates that bureaucratic influence is stronger in these states as well.

The market influence, particularly as measured in terms of short term futures prices and historic prices was not significant. The lack of significance in the price results, both historical prices and futures prices, could be due to the fact that producers are basing their leasing decisions on prices much farther in the future. As Paddock, Siegel, and Smith (1988) noted, the three stages of the development process have uncertainties in various factors including expected price. Future work will focus on identifying additional futures prices that may more strongly influence the leasing decision. Finally, regulation, particularly the passage of FOOGLRA in 1987, played a key role in influencing competitive leasing outcomes and leasing outcomes generally.

Forthcoming work will examine in more detail the role of state delegations and the potentially disparate influence of committee leadership based on the state of origin of the leader.

In the future I plan to investigate further the role of the DOI and BLM and their influence on leasing outcomes in the West. It is important to note that the political findings describe the influence of elected political actors and not all political influence. The small influence on the

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Tables and Figures

Table 1: Oil and Gas Resources by State

State	Oil Resources	Natural Gas Resources
Arizona	• Minimal oil resources	• Minimal natural gas resources
California	• Third largest crude oil reserves in the U.S. • 10% of total U.S. annual production on average	• Less than 2% of total U.S. production
Colorado	• 3 of the top 100 oil fields in the U.S. • 1% of total U.S. annual production on average	• 10 of the top 100 natural gas fields in the U.S. • 5% of total U.S. annual production on average
Idaho	• No oil resources	• No natural gas resources
Kansas	• 2% of total U.S. annual production on average	• One of the top producing natural gas fields in the U.S.
Montana	• 2 of the top 100 oil fields in the U.S. • 2% of total U.S. annual production on average	• Minimal production
Nebraska	• Minimal oil resources	• Minimal natural gas resources
Nevada	• Minimal oil resources	• Minimal natural gas resources
New Mexico	• 3% of total U.S. annual production on average	• 10% of total U.S. annual production on average
North Dakota	• 2% of total U.S. annual production on average	• 1% of total U.S. annual production on average
Oklahoma	• 2 of the top 100 oil fields in the U.S. • 3% of total U.S. annual production on average	• 12 of the top 100 natural gas fields in the U.S. • 10% of total U.S. annual production on average
Oregon	• Minimal oil resources	• No natural gas resources
South Dakota	• Minimal oil resources	• Minimal natural gas resources
Texas	• 20 of the top 100 oil fields in the U.S. • 1/4 of U.S. oil reserves	• 1/3 of U.S. natural gas reserves • 1/3 of U.S. natural gas annual production on average
Utah	• 4 of the top 100 oil fields in the U.S. • 1% of total U.S. annual production on average	• 2 of the top 100 natural gas fields in the U.S. • 2% of total U.S. annual production on average
Washington	• No oil resources	• No natural gas resources
Wyoming	• 3% of total U.S. annual production on average	• 10% of total U.S. annual production on average

Source: EIA, State Energy Profiles

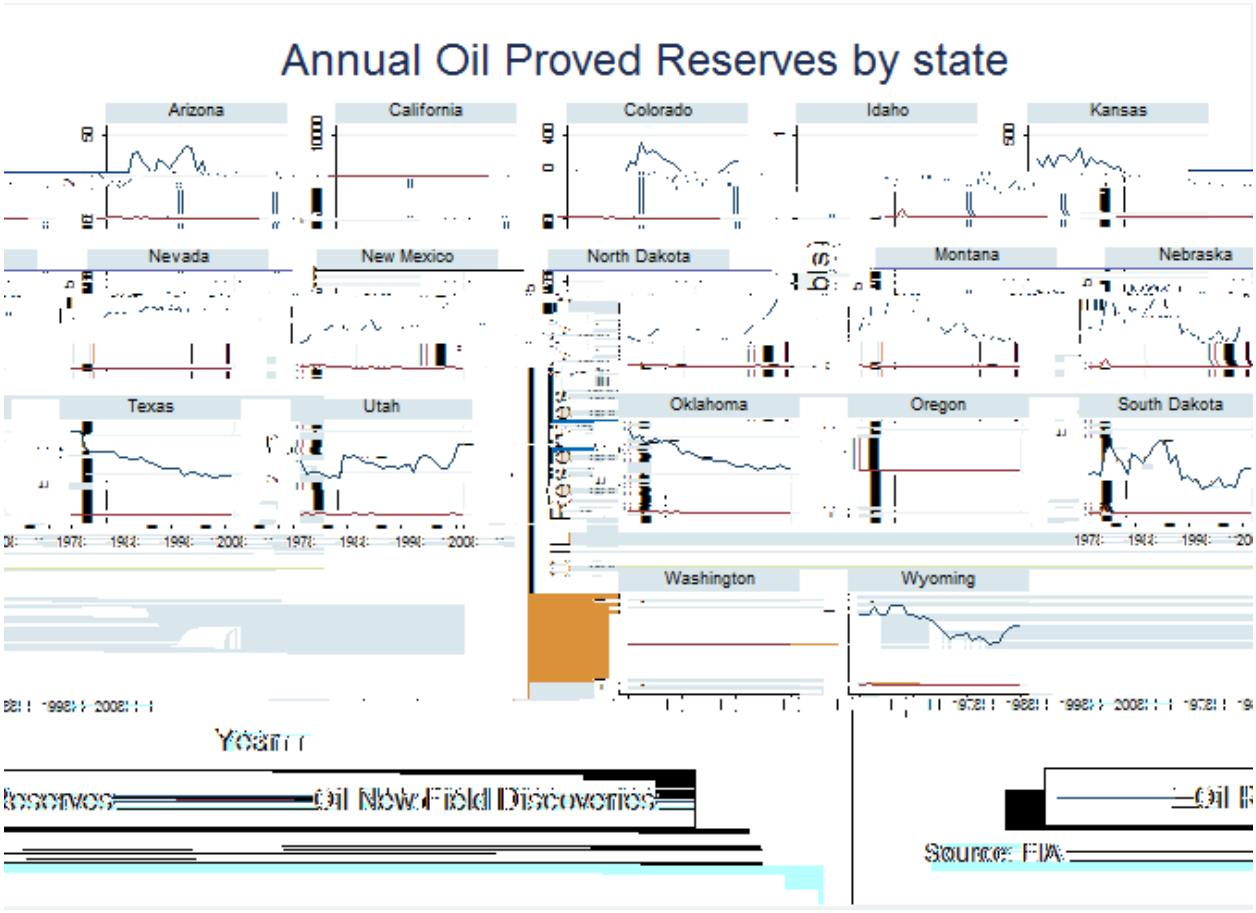
Table 3: BLM States

State	BLM States
Nevada	1
Utah	1
Wyoming	1
Oregon	1
Idaho	1
New Mexico	1
Arizona	1
California	1
Colorado	1
Montana	1
Washington	0

Figure 1: Natural Gas Reserves

Note: In both Figure 1 above and Figure 2 below, proved reserves and new field discoveries are included.

Figure 2: Oil Reserves



Note: Idaho and Washington also lack oil reserves and Oregon joins this group for oil. Again, these states did have some lease issuance over this time frame. Figure's 3 and 4 below contain the number and acres of competitive leases issued over time by state.

Figure 3: Competitive Leases Issued by the BLM

Figure 4: Thousands of Acres of Competitive Leases Issued by the BLM

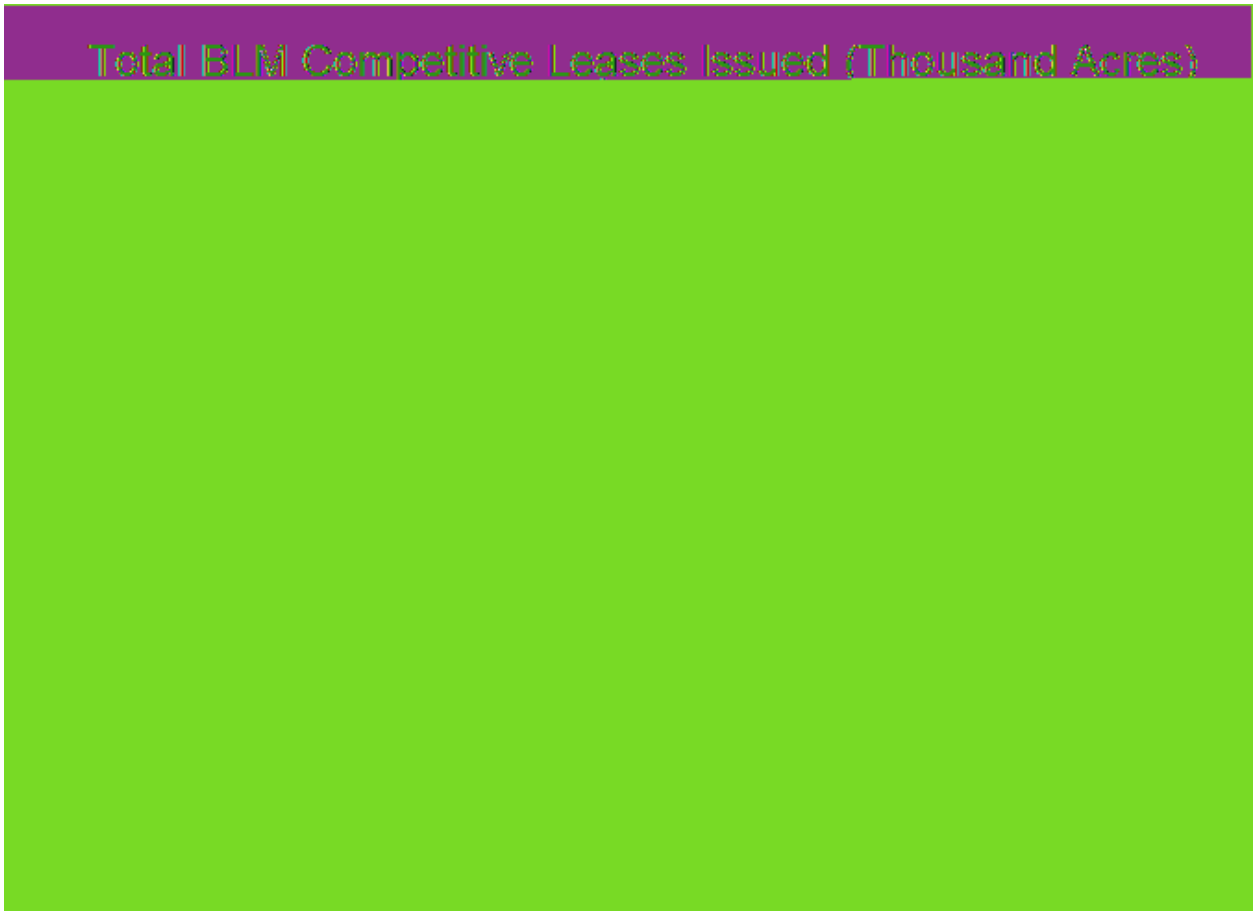


Figure 5: Competitive Leases and Thousands of Acres of Competitive Leases Issued by the BLM in the United States

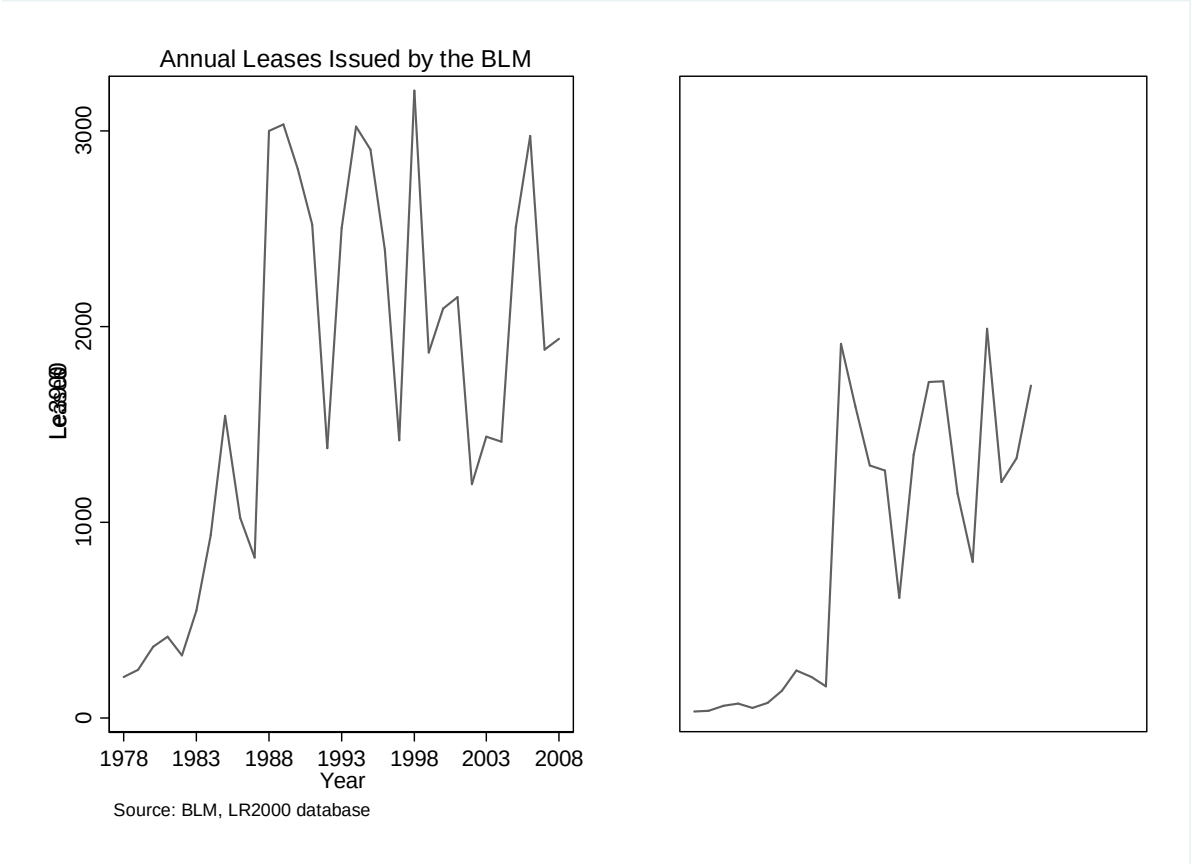


Figure 6: BLM Acres Leased per Total BLM Acres by State

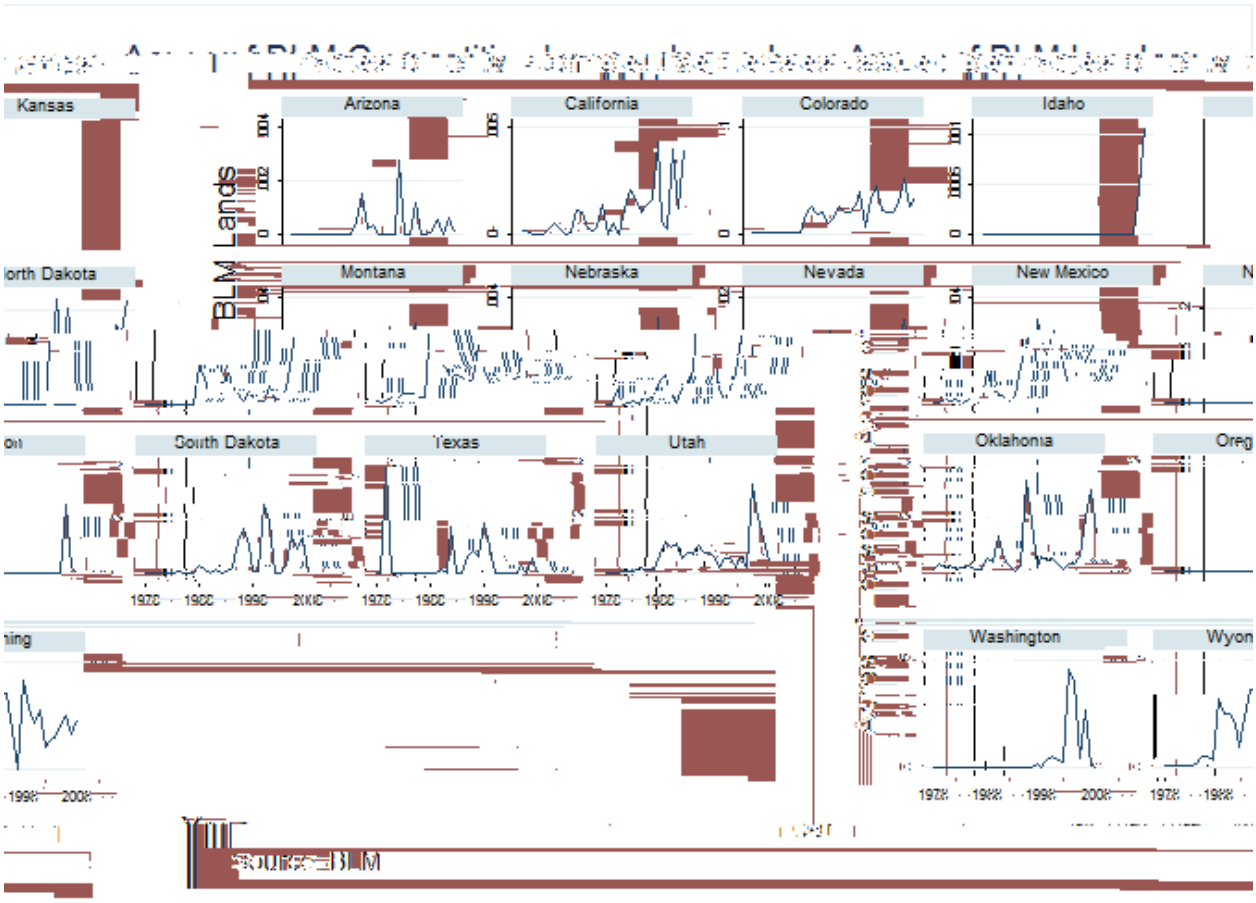


Figure 7: U.S. Futures Prices and Well Costs

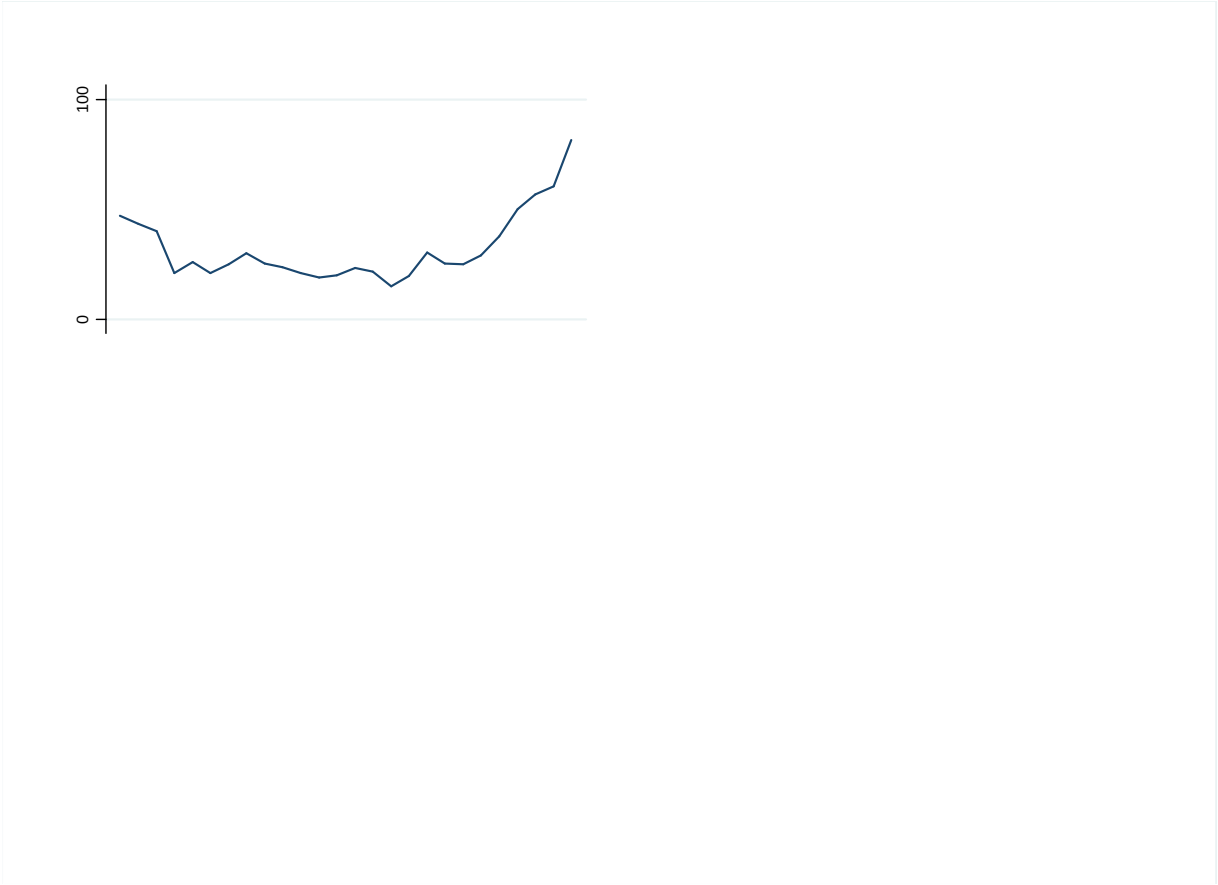


Figure 8: U.S. Senate and President Ideol

Summary Statistics

Full 16 State Sample					
Statistics	**Number of Competitive Leases Issued Annually**	**Acres of Competitive Leases Issued Annually**	**Acres of Competitive Leases Issued per Acre of BLM Lands**	**Political Party of U.S. President (1=Republican 0=Democrat)**	**Ideology of the U.S. President (-1,1)**
Count	496	496	496	496	496
Mean	108.9052	79022.99	.0183181	.6440945	0.1836774
Median	14	3385.84	.0012408	1	0.49
Standard Deviation	254.7718	194515.4	.0492334	.4789754	0.4617792
Maximum	1920	1516111	.4623903	1	0.594
Minimum	0	0	0	0	-0.44

Political Party

Statistics

[*] The political party of the Senate Committees is the same as that of the Senate Majority Leader.

BLM States Sample (11 Westernmost States)

Statistics	Number of Competitive

Results

Table 4: Full Sample and BLM States Sample: Senate Committee (Tobit Random Effects)

Table 4: Dependent

Table 4a: Full Sample and BLM States Sample: Senate Committee (Marginal Effects)

Table 4a: Dependent Variable: BLM Acres Leased per Acre of BLM Lands	Political Variable of Interest – Ideology of Senate Natural Resources Committee Chair	
	Probability of Leasing	Expected Increase in Acres Leased Given That Leasing Has Occurred
	(1) Full 16-State	

Table 5a: Full Sample and BLM States Sample: Senate Committees (Marginal Effects – Probability of Leasing)

Table 5a: Dependent Variable: BLM Acres Leased per Acre of BLM Lands	Political Variable of Interest – Ideology of Senate Appropriations Committee Chair		Political Variable of Interest - Senate Ideology of Environment and Public Works Committee Chair	
	(1) Full 16-State Sample	(2) 11 BLM States	(3) Full 16-State Sample	(4) 11 BLM States
U.S. Real Oil Futures (Dollars per Barrel)	0.00113	0.00154	0.00109	-0.000202
	(0.422)	(0.438)	(0.383)	(-0.0539)
Ideology Score Committee Chair	**0.152***	**0.188***	0.0657	**0.144****
Continuous (-1, 1)	(1.826)	(1.725)	(1.297)	(2.137)
Count of Regulatory Changes by Year of Implementation	-0.00241	-0.00243	-0.00102	-0.000771

Table 5b: Full Sample and BLM States Sample: Senate Committees
(Marginal Effects - Expected Increase in Acres Leased Given That Leasing Has Occurred)

Table 5b: Dependent Variable: BLM Acres Leased per Acre of BLM Lands	Political Variable of Interest - Senate Appropriations Committee Chair		Political Variable of Interest - Senate Environment and Public Works Committee Chair	
	(1) Full 16-State Sample	(2) 11 BLM States	(3) Full 16-State Sample	(4) 11 BLM States
U.S. Real Oil Futures (Dollars per Barrel)	$7.19x10^{-5}$	$7.42x10^{-5}$	$6.98x10^{-5}$	$-9.69x10^{-6}$
	(0.422)	(0.438)	(0.383)	(-0.0539)
Ideology Score Committee Chair	**0.00968***	**0.00907***	0.00420	**0.00692****
Continuous (-1, 1)	(1.818)	(1.719)	(1.294)	(2.125)
Count of Regulatory Changes by Year of [redacted]	-0.000154	-0.000117	[redacted]	
[redacted]	(-0.520)	(-0.402)		
[redacted]**ator**	**0.0104*****	**0.00862****		
[redacted]	(2.910)	(2.507)		
[redacted]**ator**	0.00149	-		

Table 6: Full Sample and BLM States Sample: Political Party of Senate Majority Leader and U.S. President (Tobit Random Effects)

Table 6: Dependent Variable: BLM Acres Leased per Acre of BLM	Political Variable of Interest – Political Party of Senate Majority Leader[a]		Political Variable of Interest – Political Party of U.S. President	
	(1) Full 16-State Sample	(2) 11 BLM States	(3) Full 16-State Sample	(4) 11 BLM States
			2.29×10^{-5}	-0.000124
			(0.0582)	(-0.322)

Table 7: Full Sample and BLM States Sample: Senate Majority Leader* and U.S. President (Tobit Random Effects)

Dependent Variable:	Political Variable of Interest – Ideology of Senate Majority Leader		Political Variable of Interest – Ideology of U.S. President	
BLM Acres Leased per Acre of BLM Lands	(1) Full 16-State Sample	(2) 11 BLM States	(3) Full 16-State Sample	(4) 11 BLM States
U.S. Real Oil Futures (Dollars per Barrel)	0.000109	0.000293	2.33×10^{-5}	

Table 8: Noncompetitive Leases and Both Competitive and Noncompetitive Leases (Marginal Effects – Probability of Leasing)

Dependent Variable:
BLM Acres Leased

Robustness Checks

Table 9: BLM States Interaction – All Political Variables (Tobit Random Effects)

Table 9	(1)	(2)	(3)	(4)	(5)
Dependent Variable: BLM Acres Leased per Acre of BLM Lands	Political Variable of Interest – Ideology of Senate Natural Resources Committee Chair	Political Variable of Interest – Ideology of Senate Appropriations Committee Chair	Political Variable of Interest – Ideology of Senate Environment and Public Works Committee Chair	Political Variable of Interest – Ideology of Senate Majority Leader	Political Variable of Interest –

Table 10: Linear Models

Table 10: Dependent Variable: BLM Acres Leased per Acre of BLM Lands	**Political Variable of Interest – Ideology of Senate Natural Resources Committee Chair**	
	(1) Fixed Effects	**(2) Random Effects**
U.S. Real Oil Futures (Dollars per Barrel)	0.000113	0.000160
	(0.653)	(0.651)
Ideology Score Committee Chair	**0.0159***	**0.0163***
Continuous (-1, 1)	(1.944)	(1.891)
Count of Regulatory Changes by Year of Implementation	0.000234	0.000109
	(0.723)	(0.885)
Post 1987 Indicator	0.0160	**0.0208*****
	(1.316)	(2.872)
Post 1992 Indicator	0.00380	0.00846
	(0.316)	(1.510)
Post 2005 Indicator	**0.0236***	0.0216
	(1.789)	(1.286)
Time Trend	0.000826	**7.45×10^{-5}*****
(By State)	(0.422)	(2.793)
U.S. Real Cost per Crude Oil, Natural Gas, and Dry Well Drilled (Thousand Dollars)	-3.76×10^{-6}	-2.24×10^{-7}
	(-0.509)	(-0.0590)
Constant	-0.224	-4.91×10^{-5}*
	(-0.433)	(0.0392)
R-squared	.092	.11
Observations	400	400
Number of states	16	16

Note: asymptotic z-statistics in parentheses, ** p<0.01, * p<0.05. ɟ