

# ***LEGACY LITIGATION, REGULATION AND OTHER DETERMINANTS OF INTERSTATE DRILLING ACTIVITY DIFFERENTIALS***

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## **Abstract:**

Simple comparisons of oil and gas statistics across different states, like changes in the number of drilling rigs, well completions, or production-to-reserves ratios, are informative but can be limiting comparisons since a number of other factors (or the interaction of several factors) usually contribute to the relative differences in activities across oil and gas producing states. These additional factors can be incorporated into a comparative analysis through a statistical model that is usually premised upon a set of theoretic relationships, which in turn are transposed into a tractable set of equations that can be measured using real data.

Modeling changes in oil and gas activity across different states and regions can be important for a number of reasons. While these models give researchers, policy makers, and other market observers information about the structure and composition of oil and gas activities (and ultimately supply), they can also offer some potential inferences about regional and state-specific differences.

Over the past several years, most of the producing states in the lower-48 have seen considerable increases in oil and natural gas drilling activity. This activity began in 2001, and despite a brief respite in 2002, continued into the most recent periods. Close examination of the statistics, however, shows that relative changes in drilling activity across different states have not been uniform. Some states, particularly those in the Rockies and western U.S., have seen significant relative increases in drilling activity, while other traditionally-attractive states, like those along the Gulf Coast, have seen relatively less activity.

This paper attempts to examine interstate differences in drilling activity for the period 1987 to 2003. Particular emphasis has been placed on attempting to quantify potential differences that have arisen between states due to the permitting, regulatory, and litigation environment. A special emphasis has been placed on estimating empirical differences in drilling activity that may have arisen as a result of the numerous “legacy lawsuits” filed against oil and gas operators in Louisiana that did not occur in other states during a portion of the time period under examination.

Legacy lawsuits are associated with older oil and gas properties often referred to as “legacy sites,” which in turn, were initially developed and operated by a major oil and gas company but over time have been passed along to smaller independents. Over the past several years, legacy lawsuits have been filed by landowners against the current (or most recent) leaseholder. These lawsuits, however, are not limited to current leaseholders alone and can allow plaintiffs to “reach back” to the original developers of the field and all of the other preceding leaseholders and operators that have ever operated on the site. Depending on the age of the field, some of the lawsuits could hold leaseholders (and their predecessors) liable for damages caused as far back as the 1940s.

## **Methods:**

The empirical model of drilling activity developed for this research is based upon the total number of wells drilled during the period 1987 to 2003 by the major energy producing states in the lower-48. For purposes of this empirical model, major energy producing states include: Alabama; California; Colorado; Kansas; Louisiana; New Mexico; Oklahoma; Texas; and Wyoming. Combined, these states account for 88 percent and 89 percent of all onshore lower-48 oil and natural gas production, respectively.

Drilling activity in all of these states are assumed to be a function of changes in a number of economic variables that includes oil and natural gas prices and drilling costs. A number of technical variables are also assumed to influence drilling activity including resource depletion impacts and average drilling depth.

Two sets of structural variables have been used to estimate a fixed-effects model. The first set of variables included in the model is related to the state-specific factors influencing drilling activity. These factors can include regulatory, permitting, and taxation policies that either encourage, or discourage drilling activity to occur in any of the states included in the model. Louisiana has been used as the reference state for purposes of this model, so parameter estimates generated by the model will measure differences from Louisiana activity.

The second set of variables attempts to measure the fixed effects of each year in the examined time series. These variables will capture the time trend impacts associated with oil and gas drilling activity that is not picked up in the economic and technical variables. Given the limited number of years examined, it is less likely that these fixed time variables are examining technological trends as much as they are capturing potential state-specific structural differences resulting from annual changes in the operating environment including an increased tendency for plaintiff lawsuits against oil and gas operations.

## **Preliminary Results & Conclusions**

Preliminary model results are positive, and would tend to corroborate a number of important relationships influencing interstate drilling activity that includes:

- Drilling activity tends to decrease significantly with increases in drilling costs.
- Increases in proved reserves tend to stimulate additional drilling.
- Drilling activity tends to be lower as average drilling depth increases (in absolute value).
- Oil and natural gas prices have significant impacts on drilling activity, but at an order of magnitude that is lower than other economic factors such as drilling costs, or technical factors, such as drilling depth and proved reserves.

The empirical results examining interstate differences were collectively significant. Louisiana was used as the reference state and the empirical results indicated that:

- Other things being equal, Louisiana was a more attractive state, and more likely to see increased drilling activity, than other lower-48 producing areas during the sample period.
- California tended to be the least attractive state for drilling activities during the sample period examined followed by Texas and New Mexico.
- On an individual state basis, there was no statistically significant difference in drilling activity between Louisiana and Alabama or Colorado (other things being equal).

Of particular interest are the preliminary results regarding differences across time and the period in which legacy lawsuits began to be initiated. Preliminary empirical results indicate significant differences in the time variable representing the periods in which legacy lawsuits began. The parameter estimates suggest that the overall advantages that Louisiana held over other states significantly eroded during this period.

Caution, however, should be exercised in the interpretation of these results. Simple fixed effects time variables are used to measure the differences in state activity during this period. There could be other factors, also difficult to measure, impacting the overall results. Nevertheless, important economic and technical variables have been included in this analysis, their resulting parameter estimates are significant and impressively robust, and supportive of what the theoretic and applied literature (and practice) would suggest, offering a certain degree of empirical confidence that a significant relative shift has occurred in Louisiana drilling activity over the past several years.