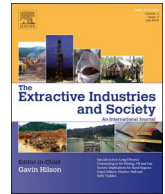




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Fueling the boom or smothering it? Examining oil and gas policy differences across the states

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ABSTRACT

Public concern about the health and environmental risks from oil and gas operations has grown in recent years. However, scholarly attention is just beginning to unpack the differences in how states are regulating oil and gas development. For some states, a laissez faire approach is preferable because of the substantial economic benefits that accompany natural resource development. Others prefer a more activist state government that is more willing to use its oversight and regulatory powers to balance environmental protection with oil and gas development. Using data drawn from a variety of political, economic, regulatory, and energy sources, we find that litigation, state level liberalism, and the number of wells are most helpful in accounting for why some states have stricter regulatory standards as compared to others.

1. Introduction

Fueled by hydraulic fracturing i.e. fracking and associated horizontal drilling technology, the oil and gas boom has contributed millions of dollars to state and local economies and supported thousands of jobs across the United States. The practice has also led to polarized debates throughout the country, often driven by concerns over its environmental and public health risks. At the center are state governments and state regulatory agencies whose missions often involve encouraging efficient oil and gas production while also mitigating its environmental impacts (Davis, 2017a,b, 2012; Warner and Shapiro, 2013). Today, in nearly all shale jurisdictions, state lawmakers have charged state-level regulatory bodies with managing the construction and maintenance of oil and natural gas wells, hydrocarbon extraction via hydraulic fracturing, and site closure. This includes the issuance of permits and the enforcement of applicable regulations pertaining to oil and gas production (Davis, 2012). State agencies also promulgate regulations that manage the extraction process such as establishing well setback distances and setting standards on well venting, flaring, disclosure, and fugitive methane emissions. We provide a brief definition of each below (Fisk, 2017; Davis, 2017a,b):

Setbacks: The distance between new wells and structures and/or water (often occupied structures);

Venting and Flaring: Venting is the intentional release gas through applicable piping into the atmosphere. Flaring is an emission control measure, which involves burning of the gas as it is vented;

Methane emissions: Gases that are unintentionally released (often

through leaks) during the production process;

Disclosure: States often require oil and gas firms to publish or release information;

Fugitive methane emissions: Gases that are unintentionally released (often through leaks) during the production process;

Recent empirical work by Ziropiannis et al. (2015) shows that these regulations vary significantly across jurisdictions.

The primary goal of this paper is to assess if differing sets of political, economic, social, and environmental factors can account for the promulgation of stricter oil and gas regulations. It begins by applying this question to a nation-wide index of state oil and gas policies compiled by Nathan et al. (2013). Ziropiannis et al. (2015), however, notes that when a set of regulations is compressed into a single measure, important variability within those policies is often lost. Given this observation, we include two single-issue areas that Fisk (2017) and (Davis, 2017a,b) describes as related to intergovernmental conflict: setback distances between wells and buildings and well venting standards. These policy areas also represent highly visible portions of oil and gas production and are likely to directly impact citizens (Davis, 2017a,b, 2012; Fisk, 2016). In short, for both the index and the single-issue policies, the paper evaluates what factors lead to the promulgation of more stringent oil and gas policies.

It should be noted that at the beginning of the oil and gas boom, state regulators often applied existing oil and gas framework to extraction made possible by fracking and horizontal drilling (Rahm and Riha, 2014). Despite important changes in the political and economic landscape, many of these policies are still in use as of 2017. As a result,

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this analysis evaluates the stringency of state oil and gas regulations through 2012 rather than the impact that advances in extraction have had on pre-fracking regulations.

2. Literature review

There is a small, but quickly growing body of policy research that assesses state oil and gas practices and regulations (Arnold and Holahan 2014; Rahm, 2011; Small et al., 2014; Warner and Shapiro 2013; Wiseman 2009) policies. Researchers, such as Davis (2012), Cook (2015), and Carter and Eaton (2016), for example, have utilized the comparative case study approach to understand state and provincial (Canada) level regulatory differences. Others have examined a specific policy area related to oil and gas production, such as information disclosure requirements associated with fracking fluids (Fisk, 2013). Another vein of research examines intergovernmental trends across states and localities as they pertain to oil and gas regulatory practices and substate conflicts (Davis, 2017a,b, 2014; Fisk, 2016). Despite the differing focal areas and methods, these studies often highlight the important role of state governors, litigation, and the economic clout of the oil and gas industry within the state play in understanding how states regulate the oil and gas industry.

Davis (2012) was one of the earliest scholars to identify and evaluate factors that may account for state regulatory differences in relation to oil and gas production. In the 2012 work, Davis constructed a hybrid framework that combined elements of Steelman's (2010) work on policy innovation and Kingdon's (1995) agenda setting model. The framework posits that state oil and gas policies are related to: 1) the industry's political and economic influence within the state, 2) elite level support of oil and gas production, 3) the extent to which industry's opponents act as a counterweight at the statehouse. Davis (2012) adds that focusing events, new scientific research, and spills/accidents may also precipitate changes in state regulations, media attention, and/or regulators' inclination to support or oppose industry's priorities. Heikkilä (2014)'s research identified that the release of the movie "Gasland" brought new media attention to fracking's potential environmental impacts.

A number of subsequent studies have also identified the explanatory value of political variables in accounting for state regulatory differences. In Pennsylvania, Rabe and Borick (2013) found that cooperation between the Republican governor and supportive state lawmakers led to a more fracking-friendly regulatory environment within the State. Using his appointment power, for example, Republican Governor Corbett formed a 30-member Marcellus Shale Advisory Commission primarily composed of representatives of the oil and gas industry. Governor Corbett also shepherded through the industry-supported Act 13. Additionally, Davis (2017a,b) found that states with a greater percentage of Democratic voters were more likely to enact larger building setbacks and venting requirements for oil and gas drilling.

Schenk et al. (2014) also suggests a complex relationship between support for shale development and state level characteristics. Their findings identify several factors that typically contribute to greater levels of support for oil and gas development. First, states must have substantial reserves available for extraction. Second, they must have some experience with conventional oil and gas development. Finally, states with political branches controlled by the Republican Party tend to be more supportive of oil and gas development (Weible and Heikkilä, 2016).

Additional papers examining state oil and gas' rulemaking processes have also largely found political and institutional variables as key explanatory pieces. Cook (2015) described the Colorado Oil and Gas Conservation Commission's (COGCC) collaborative rulemaking process as highly responsive to the political preferences of the Governor, COGCC staff, and the oil and gas industry. Relying on interviews with legislators, regulatory agency personnel and interest groups, Rinfret et al., 2014 noted that industry groups in New York, Colorado and Ohio

were highly influential throughout those states' rulemaking processes. The study also noted that state governors and staff were often able to steer the preferences of industry into state regulatory policies. In Colorado, for example, they described that the state's governor was in an especially strong position to direct the COGCC's priorities as they related to oil and gas development.

State-level political elites have also influenced oil and gas' inter-governmental and fiscal politics. Rahm (2011) noted that in Texas, sympathetic governors and regulators at the Railroad Commission (RRC), have pushed for a variety of industry friendly regulations and tax rules. Following the passage of a fracking ban in the City of Denton, Texas, State Governor Greg Abbott, for example, led a successful campaign for state restrictions on local bans (HB40). Similarly, Colorado's Governor supported a state lawsuit against local governments (Davis, 2014; Fisk, 2017, 2016).

The literature on unconventional oil and gas is maturing. It has provided important foundations for understanding the state level regulatory processes that oversee oil and gas production and extraction. Extant research has also shed light on how political, economic, and social factors influence the types of policies that states enact, the degree to which regulators enforce applicable regulations, and the degree to which states are able to balance environmental concerns with economic development. Despite the salience of fracking, available research is often limited to small-n comparative case studies, focuses on one particular policy area such as information disclosure or accounts for policy change in one state. This is increasingly problematic as oil and gas production via hydraulic fracturing is now a standard industry practice and is widely used across the United States (Fisk, 2017).

3. Design and methodology

Recognizing the aforementioned gaps, this cross-sectional study addresses oil and gas regulation in twenty-seven states that contain unconventional oil and/or gas production. Though four other states (North Carolina, Georgia, New Jersey, and Vermont) have some form of oil and gas activity (i.e. land-leasing), they did not contain a significant number of wells at the time the index was constructed (Nathan et al., 2013). Despite the small number of overall cases, the study includes all U.S. states in which large-scale oil and gas development is taking place and approximately 90% of total onshore domestic oil and gas production (U.S. Department of Energy, 2013). The study is also the first and to our knowledge, the only study that examines the variety of and variation among state oil and gas regulations and that measures regulatory strictness as part of an overall index and as individual policies.

3.1. Dependent variables

This paper utilizes Nathan et al. (2013) stringency index as its main dependent variable. The regulations included in the index were current through 2012. Importantly, by including regulations through 2012, the Nathan et al.'s (2013) index includes regulations in place at the height of the oil and gas boom and after the industry had widely adopted hydraulic fracturing and horizontal drilling as part of its standard extraction processes. To make cross-state comparisons possible, Nathan et al.'s (2013) constructed a stringency index that consisted of regulations from throughout the oil and gas extraction process and that could be quantitatively measured. This included pre-drilling notifications, setbacks (building and water), site selection, well preparation and drilling, plugging, and accident reporting regulations. The authors then defined a regulatory stringency range for each quantitative element (0–1) with zero being no regulation and one being highly regulated. The authors then standardized these values from 0 to 100 percent (i.e. 0.00–1.00). Applying their process to building setback distances is instructive. For example, if the most stringent state had promulgated a building setback of 1000 feet, that state would be given a score of 1.

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