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A Well-Oiled Approach to Keep Small Firms Environmentally Accountable

By Judson Boomhower

When it comes to the oil and gas industry, many people focus on “big oil.” Companies like ExxonMobil, Royal Dutch Shell, and Chevron are multi-billion dollar companies that are among the world’s largest publicly traded firms. Their critics often complain that the deep pockets of energy companies give them undue influence in public policy.

But in the United States, smaller oil and gas companies present an entirely different public policy challenge. There are thousands of domestic firms, many of which bring in less than a few million dollars per year. And those revenues can be easily dwarfed by the cost of environmental damages that might come from risky production methods.

If a company racks up fines, lawsuits, and cleanup

costs it doesn’t have money for, bankruptcy protection absolves the company from having to pay. Given the protection that bankruptcy provides, incentives are needed to ensure that the companies reduce environmental risks.

Hazardous Industries and the “Judgment-Proof Problem”

In almost all modern legal systems the debts of insolvent parties can be eliminated through bankruptcy. Bankruptcy protection benefits society by improving the incentives of insolvent individuals and firms and protecting individuals against unforeseen events. But it also distorts incentives by insulating people and companies from worst-case outcomes. Since they do not

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About The Author

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bear the cost when things go wrong, investment firms may become overly leveraged or consumers may accumulate excessive personal debt.

One important implication of bankruptcy protection is that small companies in hazardous industries will take excessive environmental and public health risks. Since damages can be discharged in bankruptcy, companies whose worst-case liabilities exceed their assets face inadequate safety incentives. Economists call this the “judgment-proof problem.”

In addition to reducing precaution in the short run, the judgment-proof problem may also affect industry structure. The ability to avoid liability through bankruptcy can create an artificial cost advantage for small firms. In the long run, this means that the share of the industry’s output produced by small firms may be larger than it would be if all firms were equally accountable for environmental costs.

This problem extends well beyond the oil and gas industry. Many industries in the United States feature small companies and pronounced environmental risk. This includes landfills, manufacturing, shipping, and gas stations.

It is also not limited to environmental hazards. Taxi

companies in New York have registered individual taxis as separate corporations in order to limit their liability for injury accidents.¹ Economists have also suggested that more aggressive enforcement of liability claims for workplace hazards (such as mesothelioma) during the 1970s increased the number of small companies in the sectors with the most carcinogen exposure.²

Insurance and Bond Requirements Can Correct Incentives

Policymakers have several options for addressing the judgment-proof problem. One option is direct regulation of safety. Regulators can tell companies how and where to conduct their operations, for example, by requiring the installation of specific safety equipment. This type of regulation is best suited to well-understood risks. For more complicated or novel risks, regulators may not be in the best position to determine how to operate safely. And enforcing compliance with such regulations can be difficult.

Another solution is to require companies to post a hefty bond or buy insurance. A bond requirement ensures

that companies have “skin in the game” of environmental protection. They deposit assets with the regulator, and those assets are returned when production is completed safely.

An insurance mandate creates a similar kind of accountability. In this case the insurer’s “skin” is at risk. Insurance companies will carefully vet potential producers and price annual premiums in a way that encourages them to operate safely. These coverage and premium decisions may be based on the company’s environmental compliance record, reputation, or financial health.

As long as insurers can predict incident risk based on measures like these, an insurance requirement improves safety incentives of small firms. This is the same economic reasoning that motivates compulsory liability insurance for motorists. Auto insurers are large enough to absorb even the worst car accidents and, in turn, they encourage their customers to drive safely through premium pressure.

Bond and insurance requirements are an attractive response to the judgment-proof problem because—theoretically—they

1 Che and Spier, “Strategic Judgment Proofing,” *The RAND Journal of Economics*, 2008.

2 Ringleb and Wiggins, “Liability and Large-Scale, Long-Term Hazards,” *Journal of Political Economy*, 1990.



make companies accountable and then let them choose the best way to reduce risk in their own operations. Policymakers in many sectors have adopted some version of these “financial security” requirements.

Texas’s Bond Requirements for Oil and Gas Producers Provide Empirical Evidence

Despite the prevalence and perceived importance of the judgment-proof problem, there is little empirical evidence about the magnitude of the distortions it creates and the effectiveness of various policy responses.

Texas provides a notable exception.

In the early 2000s, the state phased in a bond requirement for oil and gas producers. The implementation of this policy—in combination with rich administrative data on oil and gas production and environmental outcomes—creates an opportunity to understand the effects of the judgment-proof problem on industry structure and the environment in one of the most important industries in the world.

There are more than 1 million active oil and natural gas wells in the United States. More than 15 million Americans have had an oil or gas well drilled within one mile of their

home since 2000.³ These wells can produce for 20 years or more, with output declining over time. Throughout its life, each well poses a risk of environmental contamination.

Crude oil, natural gas, drilling fluids, and concentrated saltwater (an unavoidable co-product) can all seriously damage human health and natural resources. Surface leaks occur when storage tanks, waste pits, and pipes are not carefully monitored and maintained. Leaks in the cement-and-steel casing around the wellbore can contaminate groundwater, especially as the well ages or if the casing is poorly constructed.

Once wells are no longer producing (or leaks are detected), they must be plugged with cement below groundwater depth. Firms often delay plugging, a process that costs thousands of dollars. In the worst situations, wells remain unplugged after the firm is dissolved. During 1983–2008, such “orphan” wells caused 17 percent of oil and gas groundwater contamination cases in Texas and 22 percent in Ohio.⁴

³ Gold and McGinty, “Energy Boom Puts Wells in America’s Backyards,” *Wall Street Journal*, October 25, 2013.

⁴ Kell, “State Oil and Gas Agency Groundwater Investigations and Their Role in Advancing Regulatory Reforms—A Two-State Review: Ohio and Texas,” *Ground Water Protection Council*, 2011.

As Texas is the largest and one of the oldest oil- and gas-producing states, its regulators are familiar with these risks. In 2001, more than 5,000 operators reported production of crude oil or natural gas to the Texas Railroad Commission, the state agency that oversees the industry. Many of these were small companies, with a handful of very low-producing wells. Many small operators had good safety records, but in the aggregate small firms had much worse environmental records than large, well-known energy companies.

As much as 90 percent of the most serious rules violations and 95 percent of orphan wells were associated with the 20 percent of oil and gas production that came from the smallest operators.

Enforcement of these violations was often frustrated by bankruptcy. According to a report by the State Review of Oil and Natural Gas Environmental Regulations, Texas was unable to collect 68 percent of the penalties assessed for oil and gas rules violations.

The most common reason these fines were uncollectible was because firms had gone out of business and had no recoverable assets. Some “bad apple” operators may have intentionally acquired wells that

they knew they could not afford to operate responsibly.

“They acquired large numbers of low-producing wells that will generate insufficient revenue to pay the cost of plugging when it becomes necessary to do so,” according to Texas Railroad Commissioner Michael Williams, who was quoted in a 2003 press release issued by the commission. “They made no plans to handle future environmental problems. ... Their actions threaten the health of Texas waters and even the future viability of their very own oil and gas operations.”

To address this bankruptcy problem, the state legislature imposed a bond requirement for oil and gas producers. Most small operators purchased surety bonds, which are a specific type of insurance contract designed to deal with bankruptcy. The surety bond obligates the insurer to compensate the state for environmental damages left behind if the oil producer goes out of business. The required coverage depended on the number of wells and was calculated to roughly cover plugging costs in most cases.

Oil and gas producers purchased the required amount of surety bond coverage from private insurers. Most operators were able to acquire coverage

at premiums of about 2 to 3 percent of the coverage amount each year. However, some producers that were judged by insurers to be high-risk—because of precarious financial positions or poor environmental records—faced much higher costs of coverage.

Addressing the Judgment-Proof Problem Benefited the Environment and Reallocated Production

The policy was politically controversial. An op-ed in the Midland Reporter Telegram stated, “Bonding is no problem for major oil companies and large publicly owned independent companies. The small independent, however, is finding bonding very difficult at best ... If the Railroad Commission persists in its current bonding requirements it could put thousands of honest hardworking Mom and Pop operators out of business.”

Under the headline, “Can’t Afford the Bond? Then Don’t Run a Well,” the San Antonio Express News editorialized, “Texas is better off if only companies that can afford to be responsible environmental stewards stay in the oil and gas business.”

Despite its lack of popularity with high-risk producers, the bond requirement was a clear success. Environmental

outcomes improved sharply.

The policy decreased the rate of well orphaning among small firms by about 85 percent, and rules violations also decreased. Even more interesting from an economic perspective are the effects on production. Instead of decreasing production, the policy reallocated output to larger firms. The data suggest that something like 1,000 wells changed hands in response to the policy—and continued to produce.

The exception was the very lowest-producing wells, where the policy coincided with a decrease in operations.

These wells have high per-barrel costs, including high environmental costs for saltwater disposal and eventual site reclamation. After being forced to price in environmental costs, small firms may have found that it was no longer in their interest to acquire additional very low-producing wells.

But because output from these wells is such a tiny fraction of the state’s total output, the overall effect of the policy on the state’s oil and gas output was essentially indistinguishable from zero.

These empirical results are consistent with greater internalization of environmental costs by small producers. Prior to the policy change, small,

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financially weak operators could produce oil and gas at low private cost by avoiding environmental costs through bankruptcy.

Bonding mitigated this problem. Firms with high expected environmental costs, as judged by insurers, faced high bond premiums. Previously judgment-proof firms either became bonded and produced less output with greater safety effort, or they left the industry. These changes reallocated wells from small to large producers and reduced the number of high-cost projects where social cost may exceed social benefit. The end result was striking environmental improvement in the industry.

An Example To Be Emulated Elsewhere?

The Texas experience is a historical case study, but it is relevant today. Between 2006 and 2013, U.S. oil and natural gas production increased by 65 percent and 40 percent, respectively.

The boom has had

economy-wide benefits but also presents massive environmental challenges. The growth in production creates more opportunities for accidents, and the deployment of new chemicals and techniques creates novel risks. Whether or not new drilling continues at a similar pace, the huge number of recently constructed wells will continue to operate for many years.

At the same time, bond requirements in most jurisdictions remain very low. The minimum bond requirements for oil and gas production on federal lands have not been increased since 1960, even to adjust for inflation.⁵ Texas's bond requirements are stricter than many other major oil- and gas-producing states. This study supports arguments to increase bonds in other jurisdictions to at least the amounts required in Texas. While it is impossible to extrapolate beyond the

⁵ Davis, "Bonding Requirements for Natural Gas Producers," *Review of Environmental Economics and Policy*, 2015.

observed levels, it seems likely that somewhat higher bond requirements would yield further benefits given that Texas's requirements are still well below potential damages.

More broadly, the results suggest that bankruptcy should be taken seriously as a determinant of market structure in hazardous industries.

Within the energy sector, these results have implications for transportation of oil, natural gas, and gasoline and other refined products by pipeline, road, and rail. In 2013, an oil train explosion in Lac-Mégantic, Quebec, killed 47 people and caused \$200 million in damages. The railroad declared bankruptcy and had only \$25 million in liability insurance.

Examples in other sectors include chemical manufacturing and transportation network companies. Continuing to evaluate and address the judgment-proof problem will be an important component of efficient safety regulation in some of the world's most important industries.

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