



RESEARCH SUMMARY

Relinquishing Riches: Auctions vs Informal Negotiations in Texas Oil and Gas Leasing

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KEY TAKEAWAYS

1. Oil and gas resources are spread throughout large sections of the United States, primarily beneath privately-owned land.
2. In sharp contrast to the rest of world, landowners in the United States usually own the mineral rights on their land. To turn minerals into revenues, landowners must partner with oil and gas companies by signing mineral leases with them.
3. Most landowners use an informal “negotiation” process to choose a contracting partner and agree upon terms. Existing survey evidence suggests that many landowners are prematurely entering into lease agreements, without shopping around for the best deals, researching the process, or consultation with a lawyer. In contrast, state and federal governments use auctions to choose contracting partners and set mineral lease prices.
4. Using data from Texas between 2005 and 2016, this study compares outcomes from negotiated lease agreements on private land with leases on similar public land that are sold through open and competitive auctions.
5. The authors find that auctions generate upfront payments that are 67 percent higher than those in negotiated transactions. For the average negotiated lease, this difference is worth more than \$200,000. In total, auctions could have generated hundreds of millions of dollars in additional upfront payments than negotiations did.
6. Auctioned mineral leases are also much more productive than negotiated leases. They are more likely to be drilled and produce about 44 percent more output. This greater productivity increases industry output, and increases landowner revenues by about \$250,000 per lease.
7. Because most private land is leased using informal and decentralized negotiations, there may be large private and public benefits from using auctions instead of negotiations in the broader population of U.S. mineral leasing.

Introduction

U.S. production of oil and natural gas has increased to record levels in recent years—comfortably surpassing Saudi Arabia and Russia in both oil and gas output. This surge in production, primarily driven by the development of hydraulic fracturing technologies for shale formations, coincides with substantial accumulation of proved reserves. At the end of 2017, the U.S. Energy Information Administration reported that oil and gas companies in the United States held 42 billion barrels of proved oil reserves and 464 trillion cubic feet of proved natural gas reserves. At current prices, those reserves are worth more than \$4.5 trillion. The sharp growth in production from these resources has led to abruptly lower energy prices, stronger energy security and even lower carbon dioxide and air pollution emissions by displacing coal.

Unlike the rest of world, the majority of these newly discovered mineral resources in the United States belong to private landowners instead of the government, so the shale revolution has also created a tremendous private wealth shock. However, to transform reserves into cash, landowners must partner with oil and gas exploration companies by signing mineral lease agreements, which pay landowners an upfront payment and a share of subsequent production revenue.

The market for mineral leases on private land in the United States is informal and decentralized. Most transactions are initiated by oil and gas exploration companies, rather than the landowners, and upon receiving a mineral lease offer, landowners have the opportunity to “negotiate” better terms or “shop” the deal to other potential contracting partners. However, while oil and gas exploration companies conduct extensive research into the relative value of resources at one place versus another, landowners may not know how valuable their resources are or how competitive the market for their resources might be.

Because of these information asymmetries, it is possible that land owners may not capture as much economic benefit as they could under more formal mechanisms, like auctions, and they may not even be signing contracts with the best users of their mineral resources. This study quantifies for the first time the private and public costs of using informal and decentralized negotiations in the market for private mineral leases.

Research Design


For most private mineral leases in the United States, it is difficult to directly calculate the private and public benefits generated by a lease transaction. Private benefits, in the form of the landowner’s revenues, are hard to measure because up-front bonus payments are often not recorded in the lease document itself. Similarly, little is known about lease-level public benefits, in the form of oil and gas production, because most leases are combined into larger “units” for a single project, with pooled drilling investments and production outcomes.

This study takes advantage of a unique class of lands in Texas, those initially belonging to the Permanent School Fund (PSF), in which direct measurement of public and private benefits is possible. Unlike land transactions in the rest of the United States, initial land transactions out of the PSF stipulated that landowners did not have a claim to the minerals underneath. While this may have been a minor annoyance to land owners prior to the discovery of oil in Texas, it became a hotly contested issue in the early 20th century after big discoveries, like Spindletop. To ward off armed rebellion by landowners who had purchased surface-only rights from the PSF, the Texas legislature passed the Relinquishment Act in 1919, which eventually allowed these landowners to act as the State’s agent in leasing. In exchange for negotiating a lease with an oil and gas company, on behalf of the State,

landowners got to keep half of the bonus payment and half of any subsequent production royalties. In contrast, landowners who bought from the PSF after the passage of the Relinquishment Act did not get this right.

To this day, landowners of parcels first purchased from the PSF before the passage of the Relinquishment Act continue to negotiate on behalf of the State, while the State uses auctions to allocate mineral leases in parcels purchased later. As a result, within the PSF, there is observable variation in the formality of the allocation mechanism (auction vs. negotiation) that was determined by legislative decisions that took place decades before the discovery of shale resources and technology. This variation is “as good as” random. Moreover, the State carefully records both bonus payments and royalty revenues for both types of leases.

This unusual situation allows for comparisons between privately negotiated leases and publicly auctioned leases that would be impossible in other settings. The authors take advantage of this natural experiment by comparing the outcomes of thousands of auctioned and negotiated mineral leases in Texas between 2005 and 2016. In these comparisons, all other factors surrounding a pair of neighboring auctioned and negotiated leases—such as resource quality or information about its production potential—are unlikely to be correlated with the formality of the transaction mechanism, allowing for a causal interpretation of the differences. The authors quantify differences between negotiated and auctioned leases in landowner revenues, investment, and output. They then consider what kinds of economic forces could be responsible for the observed differences.



“While governments own mineral rights in most of the world, private landowners own them here in the United States. Unfortunately, landowners often don’t have enough information to reach a fair bargain, or to choose the best leasing partner. We’ve found that by trying to negotiate mineral leases on their own, landowners are missing out on revenues—and, surprisingly, so is the industry.”

THOMAS COVERT
ASSISTANT PROFESSOR, BOOTH SCHOOL OF BUSINESS

Findings

1. Auctions generate upfront payments that are 67 percent higher than those from negotiated transactions.

Auctioned leases generate upfront payments that are, on average, more than \$700 per acre than those from similar negotiated leases. For the average negotiated lease in the data, this difference is worth more than \$200,000. Over the 10 years of leasing activity studied, auctions could have generated hundreds of millions of dollars more in upfront payments than negotiations did.

2. Land leased through auctions is used more productively, benefiting both the industry and landowner.

Auctioned leases are 22 percent more likely to be drilled and produce 44 percent more output than negotiated leases. This greater productivity increases the landowner's total revenue by about \$250,000 per lease.

These differences in landowner revenues, investment, and output even exist between leases signed by the same firm, which suggests that auctions facilitate better “matches” between the land and the firms who wish to develop on them.

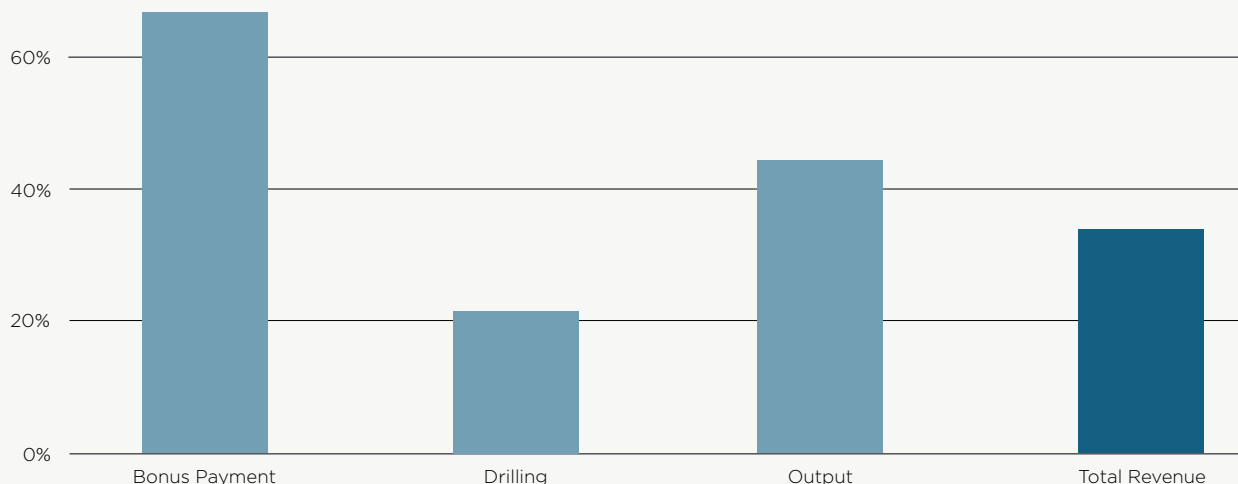
3. The benefits of auctions over negotiations may be even larger in the broader population of private mineral leasing outside of the PSF.

The private landowners who enter into negotiated leases on PSF land Texas may be more informed than the typical landowner in the United States. Additionally, because the State of Texas must approve all privately negotiated leases that are subject to the Relinquishment Act, it sometimes intervenes on behalf of the landowner, with the government requesting, for example, a higher bonus payment. The study found that 19 percent of negotiated leases are somehow improved before being approved, with typical improvements in bonuses and royalty payments of 50 percent and 17 percent, respectively. Because there is no equivalent outside party protecting landowner interests in private mineral lease negotiations beyond this setting, the results from the study likely underestimate the potential value of auctions over negotiations in the broader population of private mineral leases.

“With U.S. oil and gas reserves worth more than \$4 trillion, and private landowners responsible for managing the vast majority of those resources, it’s important that we understand how best to produce from them, and how to ensure landowners capture their fair share. Formal, centralized auctions are a transparent way for landowners to earn more and for industry to produce more.”

RICHARD SWEENEY
ASSISTANT PROFESSOR, BOSTON COLLEGE

Figure 1 • Relative Gain From Using Auctions



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