

Transportation Policy Brief #6

State Energy Severance Taxes and Comparative Tax Revenues

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**State Energy Severance Taxes and Comparative
Tax Revenues**

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FOREWORD

The Lyndon B. Johnson School of Public Affairs, The University of Texas at Austin, has established interdisciplinary research on policy problems as the core of its educational program. A major part of this program is the nine-month policy research project (PRP), in the course of which two or more faculty members from different disciplines direct the research of 10 to 20 graduate students of diverse backgrounds on a policy issue of concern to a government or nonprofit agency.

During the 2013–2014 academic year, the Texas Department of Transportation (TxDOT) funded, through the Center for Transportation Research (CTR), a policy research project addressing seven key policy issues.

The research team interacted with TxDOT officials throughout the course of the academic year. Overall direction was provided by Mr. Phil Wilson, former Executive Director of TxDOT. Mr. Wilson participated in an October 10, 2013 workshop to determine the scope of the study. As a consequence, the following policy issues were selected for study:

- Air Transportation in Texas
- Autonomous Vehicles in Texas
- North Carolina’s Strategic Mobility Formula
- Oregon’s Voluntary Road User Charge Program
- Potential Use of Highway Rights-of-Way for Oil and Natural Gas Pipelines
- State Energy Severance Taxes and Comparative Tax Revenues
- U.S.-Mexico Transportation and Logistics

The findings of each policy issue are presented within the context of separate transportation policy briefs. This particular policy brief, “State Energy Severance Taxes and Comparative Tax Revenues,” was researched and written by Corey Howell and Wu Zheng.

The following template was also approved for each of the above-mentioned briefs:

- Executive Summary
- Background
- Key Issues
- Lessons Learned
- Relevance to Texas
- Appendices

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This policy research project would not have been possible without the generous contributions of assistance of a great number of individuals and organizations. Useful contacts are provided in Appendix 1 of each of the respective transportation policy briefs. As previously mentioned, overall direction and guidance was provided by Mr. Phil Wilson, TxDOT's former Executive Director. We are also indebted to the following TxDOT officials for participating in weekly class presentations or scheduled interviews, sharing information and data, and suggesting useful contacts:

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EXECUTIVE SUMMARY

The shale gas industry in the U.S. accounted for over 600,000 jobs in 2012.¹ States' revenue from the severance tax, which is a tax imposed on the production of oil and gas resources, has increased from \$5 billion in 1993 to \$20 billion in 2012.² This spike in oil and gas production has accelerated the consumption of state and local transportation infrastructure due to the volume of heavy trucks and equipment needed for well sites; these heavy trucks are traveling over roads not built to support their weight. This increase in heavy traffic has created additional road maintenance needs not easily funded by traditional highway user fee mechanisms. This policy brief will address the issue of whether the current severance tax rates justify road use for well sites, or if there is a need for additional fees, by comparing the tax structure on oil and gas production in Texas to that of other producing states.

The tax structure in each state is different and complicated. Several factors must be considered when comparing tax structures among states. First, while most states have a severance tax, some do not because other taxes and fees serve the same revenue-generating purpose, such as the conservation tax and clean-up fees. This inconsistency can complicate interstate comparison of taxes. Second, while the overall tax structure tends to be more static, various exemptions and fees are commonly used as policy levers, or measures to incentivize or discourage certain activities. These exemptions and fees can significantly influence the outcome of interstate comparisons. Third, some states collect property tax on oil and gas, while others collect property tax on equipment. Finally, some states' severance tax is a fixed amount that is based on volume, while others use a percentage of market value.

Several studies have attempted to compare the overall tax burden on oil and gas production between states. The states chosen and taxes included in these studies are inconsistent and, therefore, policymakers cannot readily make comparisons and draw conclusions. However, each study provides a valuable view into the complicated tax system. This brief will analyze three different methodologies for comparison. In an attempt to provide a face-value comparison of tax rates, this brief describes the oil and gas tax structures for selected states and highlights the key differences between the states. Additionally, the brief presents a methodology used to compare effective taxes, including severance tax and property tax. Furthermore, the brief assesses the benchmark comparison, which compares the tax obligations of an artificially defined benchmark oil and gas company in different states.

The main lessons learned are that a variety of taxes and fees have been and can be used to collect tax from oil and gas companies. Moreover, fees, incentives and exemptions are effective levers that are easier to change than are the tax rates. Tax rates and types used by states tend to be similar within a geographical region, but differ across geographical regions. Finally, Texas has a relatively low severance tax rate when compared to other states and has a low effective tax rate.

¹ Petroff, 2014.

² O'Sullivan et al., 2013.

BACKGROUND

THE SEVERANCE TAX IN TEXAS

Texas uses the Crude Oil Production Tax and the Natural Gas Production Tax as severance taxes for oil and gas production. The Crude Oil Production Tax is imposed on the production of crude oil at a rate of 4.6% of market value.³ The Natural Gas Production Tax is imposed on the production of natural gas at a rate of 7.5% of market value.⁴ In 2013, Texas collected close to \$3 billion—up 42.2% from the previous year—from the Crude Oil Production Tax, which is about 3% of the state’s total revenue.⁵ Texas also collected about \$1.5 billion—down 2.6% from the previous year—from its Natural Gas Production Tax, which is about 1.5% of its total revenue.⁶

Texas has several incentives and exemptions in place for companies, which reduce the tax burden associated with the oil and gas severance taxes. These include the enhanced oil recovery incentive, the high-cost gas incentive, the incentive to market previously flared or vented casinghead gas, the two-year inactive well incentive, severance tax relief for marginal wells, the enhanced efficiency equipment severance tax credit, the orphaned well reduction program, the incentive for reuse/recycling of hydraulic fracturing water, and advanced clean energy-enhanced oil recovery tax reduction.⁷ For example, the enhanced oil recovery exemption reduces the oil severance tax rate to 2.3% from 4.6%. The exemptions come with qualifications and certain formulas for reduction calculations. Consider the example of low-producing oil leases receiving severance tax relief for marginal wells. In order to qualify, a well has to produce fewer than 15 barrels of oil per day, or less than 5% recoverable oil per barrel of produced water. Oil prices at a given time determine the exemption amount (as Table 1 shows).

TABLE 1: Severance Tax Relief for Marginal Wells⁸

Average Taxable Oil Price	Exemption
More than \$30	No Exemption
\$25 – \$30	25% Credit
\$22 – \$25	50% Credit
\$22 or less	100% Credit

Oil and gas production are also subject to the regulatory tax and fee, which is \$0.008125 per barrel for oil and \$0.000333 per thousand cubic feet of gas produced. This tax is negligible when compared to the severance tax on oil and gas, which, varies from \$1 to \$6 per barrel depending on oil prices.⁹

³ Texas Comptroller of Public Accounts, 2013a.

⁴ Texas Comptroller of Public Accounts, 2013b.

⁵ Texas Comptroller of Public Accounts, n.d.(a)

⁶ Ibid.

⁷ Railroad Commission of Texas, 2014.

⁸ Texas Comptroller of Public Accounts, n.d.(b)

⁹ Texas Comptroller of Public Accounts, 2013a.

Oil and gas production companies either own land and mineral rights or lease land from property owners. If a company owns land, then it will pay property taxes on an annual basis. Property tax rates vary greatly between states. According to a survey conducted in 2007, Texas has the highest average property tax rate (2.57%) and Hawaii has the lowest average property tax rate (0.44%).¹⁰ In a more recent survey, Texas ranks third in terms of highest average property tax rate (1.81%).¹¹

Furthermore, oil that is in the ground contributes to property taxes in Texas in the form of higher appraised value of land. The tax rate itself is set locally, because, like any other real property, the rate depends on the local taxing authorities such as school districts, hospital districts, and other districts. Moreover, state law governs the appraisal and assessment of property to provide uniformity across counties.¹² However, the assessed value of a property includes the net present value of the oil and gas calculated with the discount rate, which includes both the risk-free rate and the risk premium.¹³

Texas also has a franchise tax, which is a tax on business revenue. The franchise tax rate is 1% of total revenues for all industry groups. This tax has two major exemptions available. First, the retail and wholesale industries pay a reduced rate of 0.5%. The oil and gas industry does not enjoy this special rate. Also, companies whose franchise tax is less than \$1,000 or have revenue less than \$600,000 do not have to pay franchise tax.

SELECTION OF COMPARED STATES

When selecting states to compare tax structures to Texas, it is important to consider several factors. Comparing high production states to low production states might create discrepancies due to differences in the need for a robust oil and gas tax policy. Therefore, such a comparison requires knowledge of production levels relative to other states. Table 2 shows several states inside major productive shale plays, which is based on Figure 1.

¹⁰ Moody's Analytics, 2007.

¹¹ Moreno, n.d.

¹² Peppard, 2010.

¹³ Texas Comptroller of Public Accounts, 2012.

FIGURE 1: Lower 48 Shale Plays



Source: Energy Information Administration based on data from various published studies.
Updated: May 9, 2011

TABLE 2: Shale Plays and States Covered

Shale Play	State Selected
Bakken	North Dakota
Barnett and Eagle Ford	Texas
Haynesville-Bossier	Louisiana
Marcellus/Utica	Ohio & West Virginia
Monterey	California

RAW TAX COMPARISON

States impose different taxes and fees and use varying formulas to determine tax rates on the production of oil and natural gas. The most direct mechanism to analyze these taxes is to simply compare each state’s tax structure at face value. Table 3 compares the different taxes and rates of major energy-producing states.

TABLE 3: Oil and Gas State Severance Taxes as of 2012¹⁴

State	Type of Tax	Description of Tax Rates
California	Oil and Gas Production Assessment	Rate determined annually by Department of Conservation
	Oil and Gas Conservation Levy	Maximum 1.5 mills/\$1 of market value at wellhead
Louisiana	Natural Resources Severance Tax	Varies according to substance
	Oil Field Restoration Fee	Varies according to type of well and production
North Dakota	Oil Gross Production Tax	5% of gross value at the well
	Gas Gross Production Tax	\$0.04 per 1,000 cubic feet of gas produced. The rate is subject to a gas rate adjustment each fiscal year.
	Oil Extraction Tax	6.5% of gross value at the well. Exceptions exist for certain production volumes and incentives for enhanced recovery projects.
Ohio	Resource Severance Tax	\$0.10/barrel of oil
		\$0.025/1,000 cubic feet of natural gas
Texas	Natural Gas Production Tax	7.5% of market value of gas
		Condensate Production Tax is 4.6% of market value of gas
	Oil-Field Cleanup Regulatory Fees	5/8 of \$0.01/barrel
		1/15 of \$0.01/1,000 cubic feet of gas
West Virginia	Natural Resource Severance Taxes	5% of gross value for natural gas; 10% of net tax is distributed to local governments
		5% of gross value for oil; 10% of net tax is distributed to local governments
		Additional tax for workers' compensation debt reduction rate of \$0.047/mcf of natural gas produced

The information in Table 3 is based on a study of oil and gas severance taxes conducted in 2012 by Jacquelyn Pless.¹⁵ The Pless study indicates that 36 states collect some sort of severance tax and 31 states levy taxes specifically on the extraction of oil and gas. The list in the Pless study is extensive but not without issues. First, the Pless study includes conservation taxes as part of the severance tax list in California and other states. In a different study by the Covenant Group, the conservation tax is not included in California's severance tax, so the Covenant Group claims California does not collect a severance tax from the oil and gas industry,

¹⁴ Pless, 2012.

¹⁵ Ibid.

making the property tax the main tax.¹⁶ Second, the list in the Pless study is incomplete, which is evidenced by the omission of the 4.6% Crude Oil Production Tax on oil production in Texas.

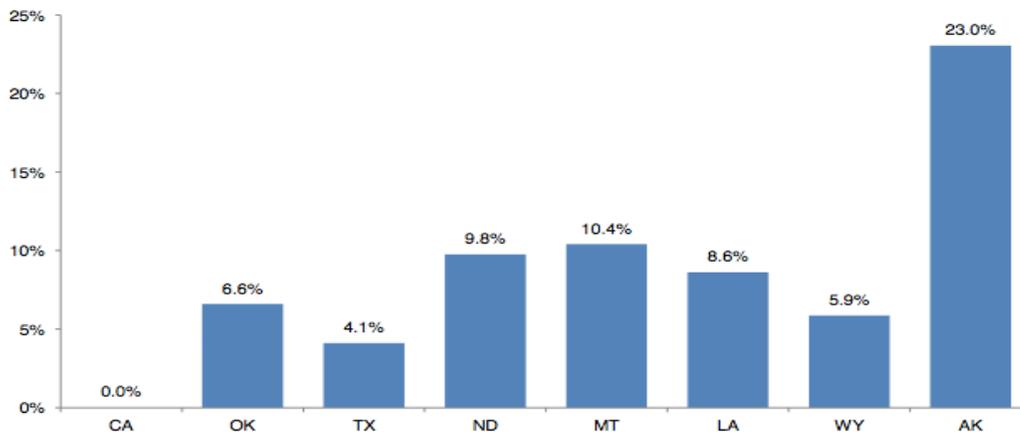
This method of simply listing the rate of severance tax does not include exemptions and incentives and does not allow for an easy comparison of tax rates based on market value versus fixed rates for volume of production. Therefore, the Pless study does not allow for a comparison of the relative rates of tax and, ultimately, the ability to determine which states have higher taxes.

EFFECTIVE TAX COMPARISON

An effective tax is defined as the ratio of tax collected over the market value of the production. The North Dakota Legislature requested a report comparing the tax obligations of oil and gas firms in several comparable high energy-producing states, which the Covenant Group produced. The comparison uses eight states: California, Oklahoma, Texas, North Dakota, Montana, Louisiana, West Virginia, and Alaska. The effective tax is used in the Covenant study, as well as an emphasis on the importance of including property tax. Three of the eight states used in the study do not have property taxes.

Therefore, there are relatively significant changes in effective tax rankings of the states when property taxes are included in the comparison, as is shown in Figures 2 and 3.

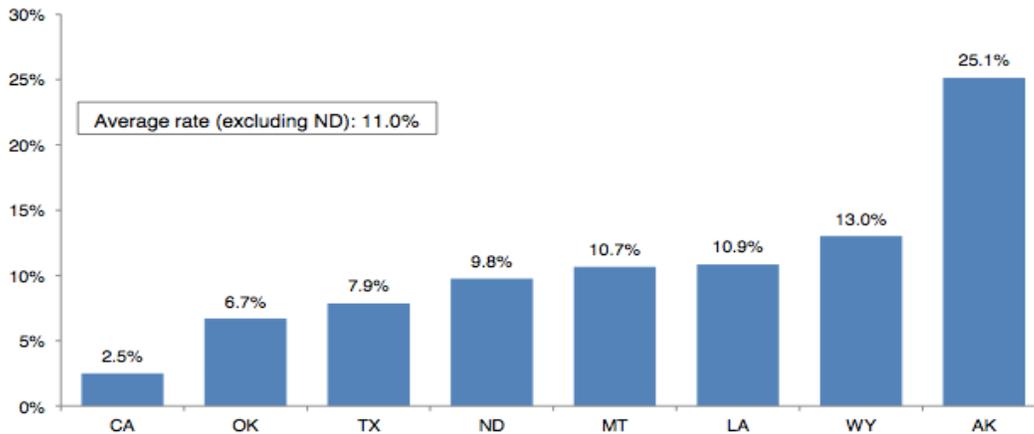
FIGURE 2: Effective Severance Tax Rates¹⁷



¹⁶ Covenant Consulting Group, 2012.

¹⁷ Ibid.

FIGURE 3: Effective Severance and Property Tax Rates¹⁸



The outlier states are California and Alaska. In the Covenant study, California does not have a severance tax, but rather a conservation tax, which the study does not include. The conservation tax is low enough that inclusion of the tax in the comparison would not change the rankings. When the two outlier states are removed, then the average effective tax is 9.8% compared to Texas' 7.9%.¹⁹

BENCHMARK COMPARISON

Another applicable method of comparing taxes is the benchmark comparison, which calculates the tax liabilities of a benchmark company. The benchmark company is an artificially constructed company based on the economic activity of an average or typical firm. Dr. Jose Luis Alberro used this methodology in creating an interstate comparison of taxes on oil and gas production. The Alberro study poses the same argument as the Covenant study, which is that severance taxes alone are not a good enough measurement.²⁰ The Alberro study also accounts for unique tax circumstances, such as Colorado allowing companies to deduct property tax from severance tax; otherwise, Colorado's severance would be 137% higher. In addition to severance tax and property tax, the Alberro study also includes corporate/franchise tax and retail tax.

Since most severance taxes are based on or related to oil and gas prices, results based on different market prices are charted, as is shown in Figures 4 and 5. The tax burden for the benchmark oil and gas firm in Texas is at the median amount relative to the states studied. However, the study used data from 2007, so the comparison results may have changed.

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ Alberro, 2013.

FIGURE 4: Total Tax Collections Based on Benchmark Oil Firm²¹

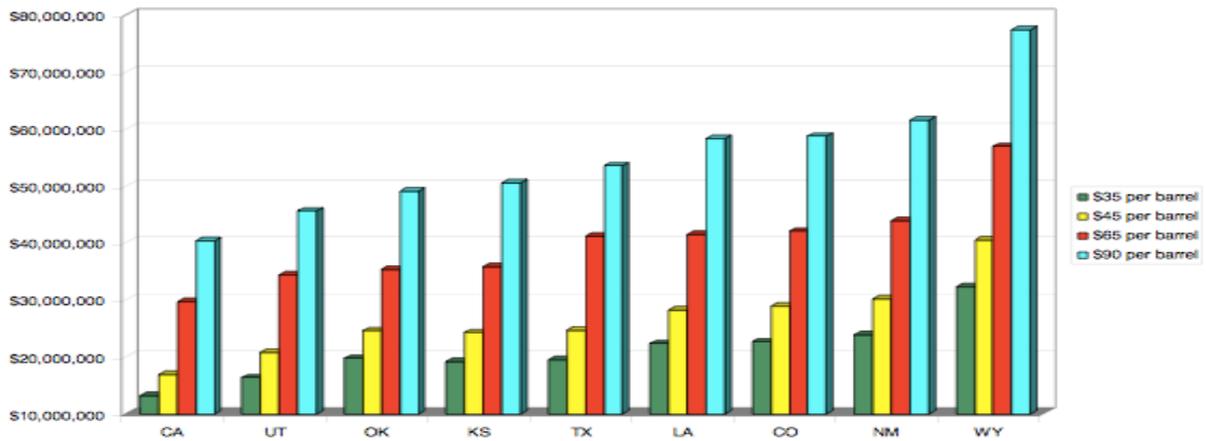
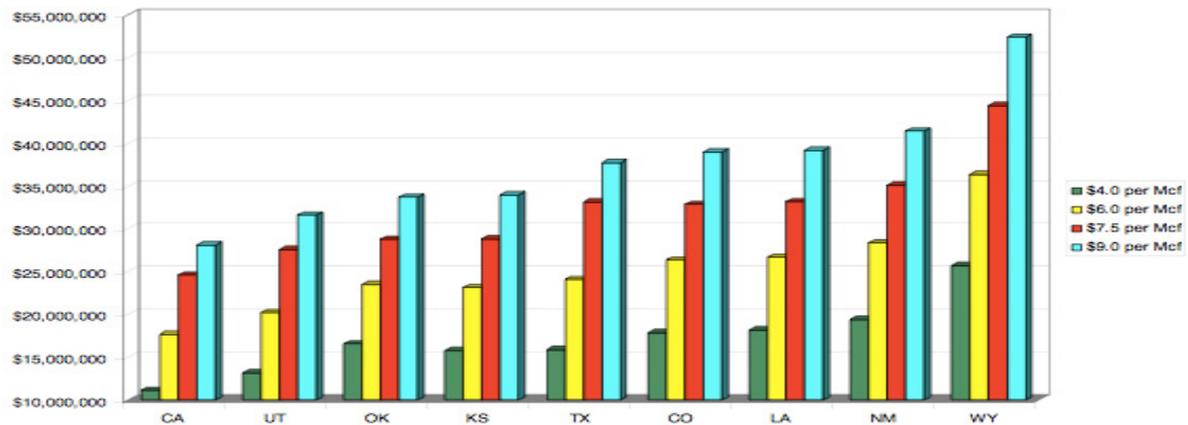


FIGURE 5: Total Tax Collections Based on Benchmark Gas Firm²²



KEY POLICY ISSUES

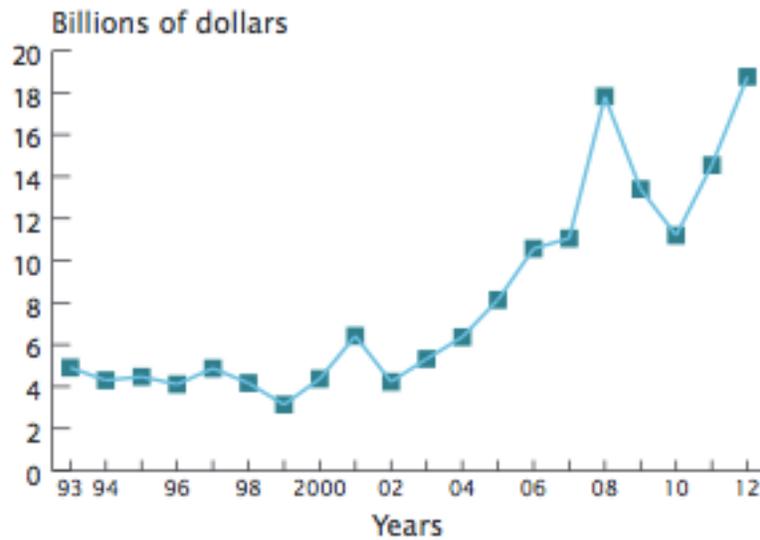
Revenue from the severance tax has been rising since advancements in drilling technologies and extraction methods have made oil and natural gas resources more accessible. This surge is evidenced in Figure 6 as total severance tax collections have significantly increased across the United States in recent years. As oil and gas production and, by extension, severance tax revenues both increase, the lack of a severance tax has become costly to states with oil and natural gas resources. Pennsylvania is the largest gas-producing state without a severance tax. According to the Pennsylvania Budget and Policy Center, between October 1, 2009, and January 30, 2012, approximately \$300 million in revenue was forgone by not having a severance tax in place.²³

²¹ Ibid.

²² Alberro, 2013.

²³ Pennsylvania Budget and Policy Center, 2014.

FIGURE 6: Total State Severance Tax Collections (1993-2012)²⁴



When assessing the various severance taxes, two policy goals are in conflict: 1) raising enough revenue to offset necessary governmental expenditures; and 2) being competitive with other states to attract businesses. Some may argue that adding a new tax or increasing the tax rate can improve revenue, while others argue that higher taxes on oil and gas production will reduce overall business activities and, therefore, decrease the tax base. This brief will not examine the impacts of lowering or raising taxes on overall production activity. Rather, the remaining sections of this brief will assess where Texas stands relative to other states in terms of taxes imposed on oil and gas companies. This information can be useful in the development of certain policies, such as road user maintenance agreements, that aim to ensure proper maintenance of the state and local transportation infrastructure commonly used in drilling activities.

LESSONS LEARNED

Several important observations and key takeaways arise when comparing tax structures around oil and gas production in various states. These could be helpful to policymakers when analyzing the feasibility of developing policies around new revenue sources for road maintenance in high energy producing areas of the state.

CREATIVE TAXING

The severance tax is not the only mechanism to raise revenue from the production of oil and natural gas. Other taxes and fees can be levied on oil and gas production, such as a conservation tax, franchise tax, property tax, extraction tax, and road impact fees. Different

²⁴ O'Sullivan et al., 2013.

states use various approaches and combinations of taxes and fees. California does not have a severance tax, but instead has a conservation tax for oil and gas production.²⁵ Pennsylvania is the largest gas-producing state without a severance tax. Instead, Pennsylvania has an oil company franchise tax, an impact fee on each gas well, which goes to the state and local governments (but is not earmarked for infrastructure maintenance), and excess use maintenance agreements, a legal requirement that roads be maintained.²⁶ Colorado collects property tax based on the nominal oil price and allows for a deduction of the property tax from the severance tax.²⁷ Nevada imposes an excavation tax, which charges \$0.02 for each cubic yard of earth excavated. Additional fees are collected, such as clean-up fees and regulatory fees.

Some states assess more than one tax in the vein of a severance tax. North Dakota, for example, has a production tax and oil extraction tax. New Mexico has an Oil and Gas Severance Tax, Oil and Gas Emergency School Tax, and a Natural Gas Processor's Tax.²⁸

INCENTIVES AND EXEMPTIONS AS POLICY LEVERS

An additional takeaway is that tax rates are relatively stable and tend to be costly to change. In contrast, incentives and exemptions are easy to administer. As a result, incentives and exemptions become policy levers frequently used to adjust taxes. Many incentives and exemptions are created and expire at a given time. When conducting an interstate comparison of tax structures on oil and natural gas production, the fluidity in changing exemptions becomes an additional obstacle in making an accurate or fair comparison.

COMMON SEVERANCE TAX RATES

Despite the variety of severance tax arrangements, there seems to be a common mechanism by which the tax is imposed in most of the major production states: the percentage of market value. The raw tax rate is not an accurate measure of the effective tax, but this rate holds perception value.

From observing the raw rate in Table 4, it seems that raw rates tend to be relatively similar by region and/or shale play. The table indicates that states around the Marcos Shale have lower raw rates than the states in the Avalon Bone Spring, Barnett, Eagle Ford, and Excello-Mulky shale areas.

²⁵ Pless, 2012.

²⁶ Pennsylvania Department of Revenue, 2013.

²⁷ Alberro, 2013.

²⁸ Pless, 2012.

TABLE 4: Severance Tax Rate Comparison

Shale Play(s)	State	Raw Rate
Avalon Bone Spring, Barnett, Eagle Ford, Excello-Mulky	Texas	4.6–7.5%
	New Mexico	7%
	Oklahoma	7%
	Kansas	8%
Marcos	Utah	3–5%
	Wyoming	4–6%
	Colorado	2–5%

RELEVANCE TO TEXAS

Shale formations extend beneath many counties in Texas and hydraulic fracturing, a process that requires the transport of large volumes of heavy payload trucks, is growing too quickly to accurately measure the exact number of wells currently operating within these counties.²⁹ The problem with this booming industry is that Texas currently has no statewide mandate for negotiating road repair payments from energy companies. While severance taxes are collected from the production of oil and natural gas, the collections are not directly allocated to finance the infrastructure needs of the energy companies and public.³⁰

Although oil and natural gas tax revenues do contribute a significant amount of money to the Texas Rainy Day Fund, the fund is not earmarked for infrastructure needs, but rather intended to serve as a safety net to cover any unforeseen budget shortfalls.³¹ Ultimately, using money from the Rainy Day Fund for road maintenance is unsustainable.³² The energy industry is predicted to continue to grow in both the Eagle Ford Shale region and West Texas, where new shale plays are being identified.³³ Statewide measures should be implemented to ensure funding for infrastructure repairs on an ongoing basis and funds should be available for TxDOT to repair road damages as they are incurred to ensure roadway safety.³⁴

As Texas considers various policy options, such as road user maintenance agreements, to address these infrastructure repair needs, an understanding is necessary of the tax liabilities for the oil and gas industry in Texas as they compare to those of other states. The different methodologies used to compare tax structures lead to varying results in terms of a state’s relative tax policies. In the raw tax rate comparison, Texas holds a relatively low tax rate on production of oil and natural gas. Using the effective tax comparison, Texas also falls in the low range relative to other states studied. When a benchmark firm is used to analyze energy-producing states’ tax structures, Texas is the median of the sample. This data can inform policymakers in making decisions as they seek to maintain a competitive tax and fee structure while ensuring the appropriate amount of revenues to finance transportation infrastructure maintenance and repair projects.

²⁹ Railroad Commission of Texas, 2013.

³⁰ Lyndon B. Johnson School of Public Affairs, 2013.

³¹ Texas Tribune, 2013.

³² Lyndon B. Johnson School of Public Affairs, 2013.

³³ Ibid.

³⁴ Ibid.

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APPENDIX 2: COVENANT GROUP STUDY

OIL TAX STUDY

		Avg Rates	ND	AK	CA	MT	OK	LA	TX	WY
Oil	Prod.		87,668,000	203,816,365	200,821,137	26,211,722	83,169,854	58,540,000	321,305,011	50,493,822
	Value		\$5,706,984,000	\$14,038,800,000	\$14,047,438,533	\$1,663,975,228	\$5,390,238,238	\$3,977,300,000	\$22,970,671,438	\$2,439,657,555
	Tax		\$570,786,588	\$3,235,101,557	-	\$174,129,888	\$377,316,675	\$460,700,000	\$1,001,971,125	\$134,883,093
	Rate	10.3%	10.0%	23.0%	0.0%	10.5%	7.0%	11.6%	4.4%	5.5%
Gas	Prod.		68,165,915		262,884,801	90,315,072	1,642,009,701	1,082,000,000	7,006,058,324	2,365,186,657
	Value		\$267,210,387		\$1,185,610,452	\$305,037,670	\$5,714,193,759	\$4,652,400,000	\$26,436,901,514	\$5,861,051,297
	Tax		\$11,924,060		-	\$30,761,372	\$354,834,430	\$282,500,000	\$1,030,866,620	\$351,663,078
	Rate	5.4%	4.5%		0.0%	10.1%	6.2%	6.1%	3.9%	6.0%
Oil & Gas	Value		\$5,974,194,387	\$14,038,800,000	\$15,233,048,985	\$1,969,012,898	\$11,104,431,997	\$8,629,700,000	\$49,407,572,952	\$8,300,708,852
	Tax		\$582,710,648	\$3,235,101,557	-	\$204,891,260	\$732,151,105	\$743,200,000	\$2,032,837,745	\$486,546,171
	Rate	9.8%	9.8%	23.0%	0.0%	10.4%	6.6%	8.6%	4.1%	5.9%
Property	Local		No	Yes	Yes	No	No	Yes	Yes	Yes
	State		No	Yes	No	Yes	No	No	No	Yes
	Tax		-	\$293,400,000	\$380,209,000	\$4,874,477	\$11,500,000	\$193,400,000	\$1,851,813,708	\$594,408,675
	Rate	3.0%	0.0%	2.1%	2.5%	0.2%	0.1%	2.2%	3.7%	7.2%
Definition	Well Equip./ Tanks		No	Yes	Yes	Yes	No	Yes	Yes	Yes
	Minerals		No	No	Yes	No	No	No	Yes	No
Severance & Property Tax Total	Value		\$5,974,194,387	\$14,038,800,000	\$15,233,048,985	\$1,969,012,898	\$11,104,431,997	\$8,629,700,000	\$49,407,572,952	\$8,300,708,852
	Tax		\$582,710,648	\$3,528,501,557	\$380,209,000	\$209,765,737	\$743,651,105	\$936,600,000	\$3,884,651,453	\$1,080,954,486
	Rate	11.0%	9.8%	25.1%	2.5%	10.7%	6.7%	10.9%	7.9%	13.0%
Tax changes since 2010			No	Yes	No	No	No	No	No	No

Notes:

1. Average rates exclude ND
2. Alaska (gas data not segregated from oil)
3. Oklahoma adjustment is excise tax
4. Alaska audit collections adjusted downward for unusually large collection in FY 2010