THE PERMIAN FUELS AMERICA

When Foreign Entities Dump Excess Oil: It's Texas that Pays the Price

by Stuart T. MacDonald and Katharine Cruse Harrell

Introduction

While we fully realize that United States Gulf Coast refineries operate at their most efficient when they are refining a blend of 65% lighter West Texas Intermediate with 35% heavier foreign produced crudes, it is reasonable to believe that not all imports of foreign crudes (especially Saudi and Canadian) are driven by market demand. Some of the imports are most likely the dumping of excess Saudi production and part of a deliberate strategic plan by the Saudis to destroy the domestic independent United States oil industry. One need not speculate to reach this conclusion; one needs only to take the Saudis at their word. Saudi Arabia clearly telegraphed its position on the United States oil industry in the December 2014 OPEC meeting when Saudi oil minister Ali al-Naimi stated that "…not all producers deserve a share of the oil market," and that he welcomed a war with U.S. producers for market share. It is also clear that ARAMCO has a history of exploiting market rigidities to extract a premium for Saudi production. ARAMCO has long extorted a premium for oil it sells in Asia. This has been well documented by Nader, Al-Rashed, Doshi, and Murphy in a recent article in *Energy Economics* entitled "'Asian Premium' or 'North Atlantic Discount': Does Geographical Diversification in Oil Trade Always Impose Costs?", where the authors demonstrate that while geographic diversification in the oil trade need not always impose costs, when properly manipulated it certainly can. The manipulation that occurred in the Spring of 2020 on the Texas Gulf Coast was extremely expensive for the state of Texas.

What is more disturbing is that this manipulation came at a time when the oil and gas industry was under assault domestically. Recent executive orders cancelling approved pipelines and calling into question the continued ability to drill on federal and offshore lands have been estimated to expose the oil and gas industry to aggregate job losses that could be as high as one million jobs and aggregate GDP losses of $700 billion dollars. As the February 2021 Texas winter storm demonstrated, there is a necessity for the production of fossil fuels in addition to alternative energy sources. Furthermore, when the government simply states that there will be alternative energy jobs available at some unspecified point in the future, it does not consider that any transition needs the economic resources of continued oil and gas production to support technology development and changes in infrastructure, as well as continuing ongoing contributions the industry makes to the educational system and talent development. This is not an either/or situation. This is a situation where the existing industry can't go quietly into the night without catastrophic consequences, not only to the economy, but also to the overall standards of twenty-first century living.

As a matter of fact, this type of transition can be counterproductive in terms of both energy independence and employment. In 2009 with the passage of the $790 billion American Recovery and Reinvestment Act, the stimulus package du jour of the Obama Administration, green jobs were at the heart of the argument for the package. The results were disappointing. By 2013 the Department of Labor had ceased keeping records of green jobs created. However, there is a record of oil and gas employment in California. In 2017, 366,000 jobs were reported in the industry. As of 2020 with California deliberately seeking to wind down the oil and gas industry, employment had dropped to 155,000. While some of the oft spoken-of green jobs are well-paid jobs with utility companies in California, the bulk of the green jobs created have been for minimum wage rooftop solar panel installers. The energy mix the country uses will continuously change over time but winding down the oil and gas industry or driving the industry overseas will result in little more than a loss of good paying jobs, many of which do not require a college degree.

At a time when the industry is already under assault from foreign interests, a second assault domestically from the U.S. government is particularly devastating.

Barrels In, Dollars Out

Every time a Saudi tanker offloads a cargo of oil at one of the unremarkable buoys off the Louisiana coast and puts oil in surplus of what is required into the system, the costs to Texas and the Permian Basin are quite substantial. Assuming a price of $40/barrel for every barrel of oil imported into the Gulf Coast above what is required to create the optimal refining blend, the resulting losses to Texas can be described as follows:

For every barrel imported, the state will lose $2.45 in tax revenues, there will be $1.26 in losses to University funding that support the University of Texas System and the Texas A&M System, and there will be a loss to the Permian Basin of $0.83 in direct and indirect earnings. What this means is that every barrel of imported oil will result in total losses to the region and state of $3.71 in lost governmental revenue and $0.83 in lost earnings.

While this number may sound trivial, for the sake of argument, let us apply the aforementioned $3.71 in lost revenue and $0.83 in lost earnings to 150 million barrels of oil dumped into this country in surplus of what is needed for the optimal refining blend by Gulf Coast refineries over a three-month period. This example would result in a loss of $367,500,000 in state tax revenues, $189,000,000 in University Lands revenues, and $124,500,000 in earnings for the Permian Basin, resulting in a total loss of $681,000,000 to both the public and private sector. As large as these estimates seem, the actual losses for 2020 are higher still. By examining the record of daily oil imports to the United States between March and June of 2020, it becomes apparent that between 93 million and 200 million barrels of oil in surplus of refining requirements were imported into the United States. In the loss estimates above and below we have chosen a midpoint of the losses caused by 150 million barrels of oil that was imported and then go on to demonstrate what the losses would have been if that level of excess imports were maintained for over a year.

As staggering as these numbers are, it is important to note that an accounting of lost employment within the Permian Basin has not been discussed yet. This data will be highlighted later in this report.

Estimates of Lost Governmental Revenues

Now we can turn to the topic of public finance. In the state of Texas, oil and gas is taxed fairly heavily and the state relies on these revenues. It has been estimated that 8.49% of the State's budget is tied directly to oil and gas taxation. It is easy to see why if one looks at the taxation scheme for Texas:

SEVERANCE TAX
The standard rates for Texas severance tax are:

- Oil: 4.6% of market value of oil produced
- Natural Gas: 7.5% of market value of gas produced
- Condensate: 4.6% of market value

A tax of 2.42% (.0242) of taxable services is imposed on those in the business of providing certain well services and who own, control, or furnish the tools, instruments and equipment used in providing well service; or use any chemical, electrical, or mechanical process in providing service at any oil or gas well during the drilling, completion or reworking or reconditioning of an oil or gas well. Services that are taxable include:

- Cementing the casing seat
- Perforating the formation
- Fracturing the formation
- Acidizing the formation
- Surveying or testing the formation

In addition to these taxes that are levied directly on the industry, oil and gas companies, like all other companies, pay franchise tax, sales and use tax, property tax, and environmental permitting fees.

Forty-five percent of the total local property tax base in the Permian Basin is a function of oil and gas properties. It's easy to see why most counties in the Permian Basin rely heavily on oil and gas property taxes. This is the property tax levied directly on oil and gas properties *alone* and leaves out the value of businesses that exist to service the oil and gas industry. Therefore, as we know, an increased supply of imported oil, above the preferred optimal refining blend needed by Gulf Coast refineries, will lead to a downward pressure on the price of WTI, thus decreasing activity and employment in the Permian Basin, as well as decreasing all of the above tax revenues derived from Permian Basin oil and gas production.

Furthermore, the losses from severance tax, the oil and gas occupational tax, the oilfield cleanup fund, and to the Permanent University Fund can be estimated with reasonable precision and these calculations and the significance of each are included below.

Losses to Severance and Occupational Taxes

In Texas, both severance taxes and occupational taxes are used to fund the General Revenue Fund. The General Revenue Fund is used to support a myriad of programs and services such as road and bridge construction and maintenance, Medicaid, Children's Health Insurance Program (CHIP), Child Protective Services, Teacher Retirement & Health Benefits, and maintenance of state parks and historic sites, among other things. In aggregate, this would be a $276,000,000 loss to the General Revenue fund, and as such, would have an impact on programs and services provided for in part by oil and gas revenue.

Table 1: Lost Revenues from Permian Basin Displaced Oil from 4.6% Severance Tax

Oil Price Per Barrel	GR Lost Per Barrel	Per 150 MM Barrels	Per Month	Per Year
$20	$0.92	$138,000,000	$46,000,000	**$552,000,000**
$25	$1.15	$172,500,000	$57,500,000	**$690,000,000**
$30	$1.38	$207,000,000	$69,000,000	**$828,000,000**
$35	$1.61	$241,500,000	$80,500,000	**$966,000,000**
$40	$1.84	$276,000,000	$92,000,000	**$1,104,000,000**
$45	$2.07	$310,500,000	$103,500,000	**$1,242,000,000**
$50	$2.30	$345,000,000	$115,000,000	**$1,380,000,000**
$55	$2.53	$379,500,000	$126,500,000	**$1,518,000,000**
$60	$2.76	$414,000,000	$138,000,000	**$1,656,000,000**
$65	$2.99	$448,500,000	$149,500,000	**$1,794,000,000**
$70	$3.22	$483,000,000	$161,000,000	**$1,932,000,000**
$75	$3.45	$517,500,000	$172,500,000	**$2,070,000,000**
$80	$3.68	$552,000,000	$184,000,000	**$2,208,000,000**

Note: GR stands for "General Revenue". The "Per Year" figures extrapolate the impacts of direct displacement.

Table 2: Lost Revenues from Permian Basin Displaced Oil from 0.35% Oil Field Occupational Tax

BBL Oil	LR Per 150 MM Barrels	Per Month	Per Year
150,000,000	$53,724,000	$17,908,000	**$214,896,000**

LR stands for Lost Revenue. Lost revenues from oil field occupational tax is calculated by $14.80 * 0.0242 per barrel of oil. The Society of Petroleum Accounts

Oil Field Cleanup Fund

The Oil Field Cleanup Fund is a fund administered by the Railroad Commission that is committed to the protection of the state's land and water resources by restoring land used in energy production to a safe and productive condition. The fund revenue is derived primarily from regulatory and permitting fees paid by the oil and gas industry. In fiscal year 2020 alone, the Oil Field Cleanup Program plugged 1,477 orphaned wells, cleaned up 258 abandoned sites, and remediated 1,959 surface locations.

Table 3: Lost Revenues to the Oil Field Cleanup Fund from Permian Basin Displaced Oil from 0.625% fee

Oil Price Per Barrel	GR Lost Per Barrel	Per 150 MM Barrels	Per Month	Per Year
$20	$0.125	$18,750,000	$6,250,000	**$75,000,000**
$25	$0.15625	$23,437,500	$7,812,500	**$93,750,000**
$30	$0.1875	$28,125,000	$9,375,000	**$112,500,000**
$35	$0.21875	$32,812,500	$10,937,500	**$131,250,000**
$40	$0.25	$37,500,000	$12,500,000	**$150,000,000**
$45	$0.28125	$42,187,500	$14,062,500	**$168,750,000**
$50	$0.3125	$46,875,000	$15,625,000	**$187,500,000**
$55	$0.34375	$51,562,500	$17,187,500	**$206,250,000**
$60	$0.375	$56,250,000	$18,750,000	**$225,000,000**
$65	$0.40625	$60,937,500	$20,312,500	**$243,750,000**
$70	$0.4375	$65,625,000	$21,875,000	**$262,500,000**
$75	$0.46875	$70,312,500	$23,437,500	**$281,250,000**
$80	$0.50	$75,000,000	$25,000,000	**$300,000,000**

Note: GR stands for "General Revenue". The "Per Year" figures extrapolate the impacts of direct displacement.

A Special Note on University Lands

Many Texas universities are funded in part by oil revenues through the Permanent University Fund (PUF). Upon admission to the Union, Texas maintained control of state lands. So historically, especially in the 19th century, the state was funded by land sales and rents from land. In the Texas Constitution of 1876, along with an 1883 constitutional amendment, the PUF was established. The fund was initially endowed with one million acres of land, mostly within the heart of the Permian Basin. This endowment has been expanded a few times over the years. Initially, revenue to the PUF came mainly from leasing the land for grazing rights. However on May 28, 1923, when the Santa Rita No.1 was completed on Section 2, Block 2 of the University of Texas Lands in Reagan County, it became clear that grazing was far from the most valuable part of the land endowment.

The value of the PUF can be illustrated through the many worthwhile projects that it finances. "From 2004 to 2013 alone, PUF appropriations funded nearly $1.5 billion worth of projects – everything from a UT Permian Basin Kinesiology Building to a research park complex at UT Health in Houston." William H. McRaven, Chancellor of the University of Texas System from 2015-2018, stated before the Joint Interim Committee on Higher Education Formula Funding in 2018, "…every dollar of support that flows from the PUF through the AUF (Available University Fund) to UT and A&M institutions is a dollar that doesn't come from students, parents, taxpayers, or donors," and the PUF fund "…allows us to recruit the most talented faculty from around the nation into our classrooms and labs through our STARs program, where we use PUF bond proceeds to purchase the capital equipment these faculty need to support their teaching and research." McRaven remarked that the return on this investment in the STARs program was substantial, "… as the faculty recruited from FY 2005 to FY 2014 with $195 million in equipment and renovations have generated $1.9 billion in research funding." In summary, the PUF plays a crucial and essential role in establishing the standard of learning in the University of Texas and Texas A&M systems.

The value of the oil produced on University Lands has experienced the same ups and downs as the oil and gas industry. Estimating the exact losses that would accrue to the University Lands from displaced WTI would be nearly impossible. The Permian Basin comprises 86,000 square miles, covering 52 counties in two states. University Lands constitutes 3,281 square miles or 3.8% of the Permian Basin. Inevitably, some of the loss from displaced WTI as discussed above would affect University Lands financially, however it is difficult to precisely estimate that loss. What we can state is that on average University Lands receives about a 21% royalty on oil and gas leases ranging from one eighth to one quarter royalty interest. Additionally, we can assume that on University Lands leases a royalty is always paid for associated gas, as the lease they use states that even if gas is flared, a royalty must be paid as if it was sold. Thus, for every barrel of oil displaced by surplus imported oil, University Lands loses its average 21% royalty of that barrel of oil, and also its average 21% royalty on the sale price of gas. Therefore, the losses sustained by University Lands would be substantial. If we simply assume, for the sake of argument, that University Lands would absorb 3% of the displacement of 150 million barrels, then the loss would be a royalty on 4.5 million barrels of oil and royalty on 4.5 BCF of natural gas. Although not wholly quantifiable, there is no doubt that the loss to University Lands would be real and meaningful. At $40.00/bbl

and $1.83/MCF for gas, the equivalent of 150 million barrels of oil extracted from Texas soil provides $180,000,000 in royalties for oil and $8,235,000 in royalties for gas. Is this the "whole truth"? No way. But it is far too significant a figure to ignore.

Table 4: Lost Revenues to University Lands from Permian Basin Displaced Oil

Price Per Barrel	GR Lost Per Barrel	Per 150 MM Barrels	Per Month	Per Year
$40	$1.255	$188,235,000	$62,745,000	**$752,940,000**

Employment

While the aforementioned losses are indeed substantial, they understate losses to the region from the slowdown in production and do not fully capture the economic impact to the Permian Basin from the excess dumping of foreign oil. The response to COVID-19 brought about a sudden slowdown in oil demand. We examined very direct methods in an attempt to quantify damage sustained to the economy due to surplus imports of foreign oil. We found that it is impossible to disentangle harm to the Permian Basin's economy from importing surplus foreign oil from harm to the Permian Basin's economy from our COVID-19 response. For example, Midland and Odessa receipts from the motel and hotel occupancy tax collapsed during 2020. Should this be laid at the feet of a slowdown in oil production due to an influx of imported oil, or the response to the coronavirus pandemic? This is an unanswerable question. However, by using econometric methodology, though not without faults, one can capture multipliers and impacts on employment that are a function of the oil and gas industry in the Permian Basin. This relies on pre-coronavirus shutdown data and is thus free of the confounding influence of the COVID-19 pandemic.

It can be demonstrated that every million barrels of oil produced in the Permian Basin supports 70 jobs. It can also be shown the median income of oil and gas workers in the Permian Basin is $89,000. To give additional context, a million barrels of oil only provides about 7.7% of the total daily demand for fuel for personal vehicles. One million barrels of oil generates a substantial volume of liquid fuels and other refined product as outlined in the table below:

Product per 1 MM Barrels	Quantity
Gasoline	430,000
Heating Oil/Diesel	230,000
Kerosene/Jet Fuel	90,000
Coke	50,000
Heavy Fuel Oil	40,000
Liquefied Refinery Gasses	30,000
Still Gas	40,000
Asphalt	30,000
Petro Chemical Feedstock	20,000

Lubricants	20,000
Kerosene	10,000
Other	10,000

As can be seen from this chart, one tanker load of oil would on average allow for a passenger car to be driven 10,750,000 miles, a semi-truck to be driven 1,840,000 miles, or a Boeing 747 to be flown for 18,000 miles.

Using 2019 employment data, the following multipliers can be generated for the contribution of the oil and gas industry to employment in the Permian Basin. From this data we can calculate the impact to employment that the estimated 150 million barrels of surplus foreign oil dumped on the Gulf Coast refineries had on the Permian Basin. We can also break that down per month over the 3-month duration for the dumping, as well as calculate what the losses would have been had the dumping continued for over a year.

Table 5: Jobs Losses to Region from Displaced Oil Production

	Per 1 Barrel	Per 1 MM Barrels	Per 150 MM Barrels	Per Month During Event	Per Year or Event
Initial	0.00007	70	10,500	3,500	42,000
Direct, Indirect, Induced	0.000742	742	111,300	37,100	445,200
	0.0000812	812	121,800	40,600	487,200

It is worth noting that this table and these multipliers understate job losses, as they capture only jobs lost among those residing in the Permian Basin. One need not stay in the area long before you meet individuals working in the Permian who reside anywhere from the southern coast of the United States to the plains of Alberta, Canada. So in addition to the regional job losses reflected in Table Five above, there are others who have lost their jobs scattered throughout the oil producing regions of North America. The US oil rig count dropped from 678 in early 2020 to below 200 rigs in the spring of 2020 to now 306 rigs in Spring 2021. We have seen a loss of 30,000-40,000 people just on the drilling rigs alone. Assuming the 372 idle rigs were drilling 1 well per month each and the wells cost say $8MM a piece, that is conservatively a loss of over $3 billion in capital investment each month alone.

Economic Losses to Region

Low oil prices have never meant good times for Texas. It is important to remember that the robust employment and economic growth we have seen in Texas in the last few years is a blessing that shouldn't be taken for granted lest we return to the grim economic times of thirty-four years ago when, as a result of the oil bust of the 1980s, the unemployment rate in Texas was 9.1%. Unemployment before the 1980s bust was 4.3% and at the height of the bust was 9.1%.

Texas never bested that low of 4.3% reached in 1979 until the fracking boom hit in the 2000's with unemployment dipping to 3.4% in 2019.

In November 2018, the USGS published an assessment of undiscovered continuous oil and gas resources in the Wolfcamp Shale and Bone Spring Formation of the Delaware Basin, Permian Basin Province, New Mexico and Texas. This assessment argued that in fact the Permian Basin was the biggest oil field ever discovered. The boom was well under way before this publication, and one can see in the chart below the impact of the boom on employment in Texas. The ugly impacts of the COVID-19 pandemic, as well as the dumping of surplus Saudi oil in our Gulf Coast refineries in 2020 are also obvious. The bottom line is very simple: when the rig count goes down, the unemployment rate goes up.

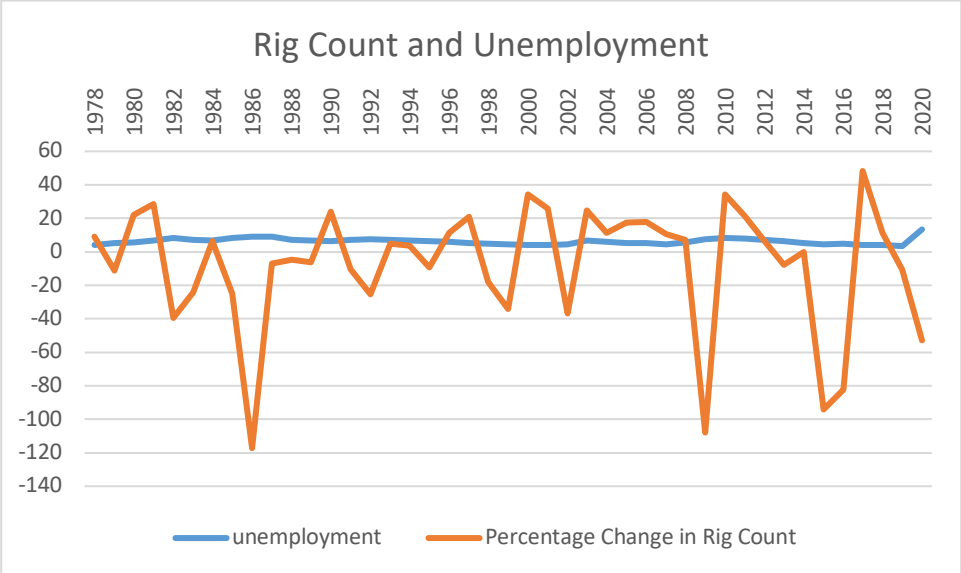

Table 6: Earnings Lost to Region from Displaced Oil Production

	Multiplier	Earning of 1 Emp	Per 150 MM Barrels	Per Month	Per Year
Initial	1	$89,000	$934,500,000	$311,500,000	**$3,738,000,000**
Direct	0.81	$72,090	$756,945,000	$252,315,000	**$3,027,780,000**
Indirect	0.22	$19,580	$205,590,000	$68,530,000	**$822,360,000**
Induced	1.34	$119,260	$1,252,230,000	$417,410,000	**$5,008,920,000**
Total	3.37	$299,930	$3,149,265,000	$1,049,755,000	**$12,597,060,000**

Note: The approximate average yearly salary for one employee is $89,000. Utilizes jobs lost illustrated in Table 5.

It is well understood when one lives and works in the Permian Basin that most other businesses in the area are dependent on the oil and gas industry doing well. One can extrapolate from the table below that losses in the oil and gas industry have a far-reaching effect on nearly every business in the Permian Basin.

Table 7: Sales Lost to Region from Displaced Oil Production

	Multiplier	Sales from 1 Emp	Per 150 MM Barrels	Per Month	Per Year
Initial	1	$89,000	$934,500,000	$311,500,000	**$3,738,000,000**
Direct	0.18	$16,020	$168,210,000	$56,070,000	**$672,840,000**
Indirect	0.04	$3,560	$37,380,000	$12,460,000	**$149,520,000**
Induced	0.33	$29,370	$308,385,000	$102,795,000	**$1,233,540,000**
Total	1.55	$137,950	$1,448,475,000	$482,825,000	**$5,793,900,000**

Note: The approximate average yearly salary for one employee is $89,000. Utilizes jobs lost illustrated in Table 5.

Innovation Historically Driven by Independent Oil and Gas Producers

There is one further point that should be made. Historically, most of the industry innovation, or said differently, discoveries of the "next big thing", have come from the independent oil and gas producer. I could tell the story of Standard Oil passing on Spindletop. I could tell the story of Tom Slick aka Dry Hole Slick bringing in the Cushing Field. Or perhaps I could mention in the 1920s when the chair of OU's department of geology told his students they had simply come to the industry too late as most of the big fields in the United States were already discovered. But I think instead I will simply tell the story of how the combination of drilling and completion techniques that in common parlance are known as fracking are essentially the development of independent producers.

In an assessment of the geological formation known as the Wolfcamp, the USGS described it as the biggest oil field ever. The fact that the United States has become a net exporter of oil is due in no small part to the development of this field. The genesis of the Wolfcamp is generally believed to have begun with Jim Henry in 2003 with the development of slick water fracking techniques. While this is true, the secret to fracking the Wolfcamp was known to Atlantic Richfield in 1998 and became the property of British Petroleum in 1999, and yet both of these majors failed to recognize or capitalize on this bonanza.

In 1998 the M.T. Boultinghouse 11-2 was brought in at 300 barrels per day of oil at the Midland Airport. Inside the old snakeskin Atlantic Richfield building, in the well file for this well, one could find the following formula: "50% pad followed by 0.5#/gal 20/40 sand slurry and tail in up to 2#/gal for the last 5% of the treatment volume." This will read like a secret code to most but to an experienced petroleum engineer it is a formula for a slick water frac. When BP bought Atlantic Richfield they became the owner of this formula and the lease where the M. T. Boulingtonhouse 11-2 was drilled. They in fact drilled a step out well but used a gel frac instead of the new slick water frac recipe and it was a disappointing performer.

What this means is that while the vogue apocalyptic cult of the day, Peak Oil, predicted doom in a dark and starving world starved of energy, the formula and secrets that would open the

largest oil field in the world languished in a well file in someone's archives. It was the independent producer that refined this formula and incorporated horizontal drilling techniques, many of which were developed in other shale plays run by other independent producers, that disproved the then conventional smart person's opinion that peak oil was a disaster right around the corner and made oil produced onshore in the United States a key to our newfound energy independence.

If we wish to keep the engine of innovation that allows us to drill in new ways and new places and produce the reliable energy sources the nation needs to survive, it is critical that we maintain a business environment that leads to a robust competition between many independent producers. This innovation rarely accrues to the benefit of Saudi Arabia and ARAMCO and thus it would be unwise to condone business practices on their part that lead to the destruction of the highly competitive environment that drives innovation forward.

Conclusion

In the unprecedented times of worldwide pandemic, catastrophic weather events, and an ever-increasing villainization of the fossil fuel industry, new and extraordinary actions to support the domestic independent United States oil industry are required by all. Free markets work, but for a market to be free it must be a competition in which everyone is playing by the same rules. In a competition for leases between multiple companies somewhere in West Texas, there is little reason for the state to step in. However, when domestic independent oil producers are competing with massive state owned and sponsored oil companies that are an arm of that nation state's foreign policy, that is not a free market. For us to play as if it were a free market, isn't competition, it's suicide.

ABOUT THE AUTHORS

Stuart T. MacDonald JD, LLM, PhD

Stu MacDonald received his BA from the University of Texas at Dallas. He then attended Oklahoma City University where he received a JD. He practiced law in Texas and Oklahoma until he returned to school and earned his MS and PhD from the University of Texas at Dallas. His dissertation focused on the efficiency of the field wide unitization statutes passed by Texas and Oklahoma. He then accepted a position at Midwestern State University where he served as Associate Professor and Chair of the Department of Economics and Finance. He took a one year leave of absence from Midwestern State University where he earned an LLM from George Mason University, where his research focused on the interplay between federal securities regulation and the promotion of oil and gas deals. He then accepted a position with the University of Central Oklahoma where he most recently served as a Professor of Finance. While at UCO he attended Tulane University for postdoctoral studies in Finance. His teaching focus at UCO was oil and gas finance and risk management. His research has focused on oil and gas regulation and finance throughout his career, and has appeared in outlets such as Resources Policy, Journal of Financial and Economic Practice, Journal of Petroleum Accounting and Financial Management, and Oil Gas and Energy Quarterly. His work on Oil and Gas has been cited in the Journal of Economics Organization and Behavior, Texas Tech Law Review, Michigan Journal of Environmental & Administrative Law, and Terrance Daintith's book Finders Keepers? How the Rule of Capture Shaped the World's Oil Industry. He is currently working on a book about the fracking revolution and the financial and legal systems that made the revolution possible

Katharine Cruse Harrell

Katharine Cruse Harrell grew up in rural southwest Louisiana enjoying many of the actives that make Louisiana a "sportsman's paradise". She earned her B. S. in Accounting from McNeese State University in Lake Charles, Louisiana in 2004 and went on to attend law school at South Texas College of Law in Houston, Texas. After law school, Katharine entered the oil and gas industry in Houston as both a landman and a title examination attorney performing title opinions for clients in the Haynesville Shale and the Permian Basin. In 2012, Katharine followed the industry to West Texas where she now calls the Permian Basin home.

Katharine has been a member of the Texas Bar since 2007 and is a member of both the American Association of Professional Landmen and the Permian Basin Landmen's Association. Katharine is currently looking forward to applying her knowledge of the oil & gas industry as a faculty member of the University of Texas Permian Basin in the fall of 2021, where she will be a Senior Lecturer with the College of Business teaching both business law and energy land management.

Katharine has been married for nine years to her husband, Chris, and resides in Midland, Texas with their five year old son and one year old daughter, as well as their golden retriever, Merle. In her spare time, Katharine enjoys travelling, relaxing in the outdoors, and cooking Cajun and southern cuisine for her family and friends.