AMERICAN BANKRUPTCY INSTITUTE

Winter Leadership Conference

Climate Change: The Leading Cause of Tomorrow's Insolvency Problems

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CONCURRENT SESSION

2023

Climate Change: The Leading Causes of Tomorrow's Insolvency Problems

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I. The impact of climate change on the overall domestic economy

A. Overall evaluation of the economy, sectors and businesses

B. Businesses' responses to climate change

1. Preparing for climate change – possible/realistic?

2. The invisible hand - risk analysis and mitigation before bankruptcy

a) The economic market's response to climate change

b) Feeling the impacts of climate change

(1) Lending costs

(2) Supply chain and inputs

(3) Productivity

(4) Insurance

(5) Consumer market for products

C. I'm from the Government, and I'm here to Help

1. Government' role in directing responses to climate change?

a) Regulation/incentives that direct choices on investment

b) Regulations/incentives to mitigate problems that are apparent

c) Regulations/incentives when the problems affect a business

2. Is regulatory compliance sufficient to avoid economic liability?

D. Businesses' response to climate change, part 2

1. Are businesses failing to address climate change?

2. Does it make a difference if a business prepares for climate change?

II. The negative impact of environmental events (drought, flooding, heat, deforestation and fires) on specific industries.

A. Fossil Fuels & Natural Resources

1. Availability of inputs

a) Land

b) Water

c) Electricity

2. Market for goods

a) Economic impact on cost of goods

b) Reputational impact on cost and markets

c) Demand & costs compared to alternatives

3. Scope of parties interested in investment or involvement

B. Alternative Energy Sources

1. Inputs to make alternative energy

2. Governmental incentives for investment

3. Current vs. cost to scale

4. Size of ultimate market

C. Development

1. Does existing infrastructure support investment?

2. Do resources exist to support new development?

3. Costs and other obstacles to investment and development

D. Tourism

1. Impact of climate change on tourism

E. Agriculture

1. Does climate change really affect a cyclical industry
2. How to deal with changes over the long-term, rather than through a cycle
3. What is the cost to deal with climate change
4. Can consumers afford the added cost of agricultural products

F. Insurance, Coverage and Risk

1. When insurers no longer cover a market
2. Dealing with recurring catastrophic claims from fire or water

III. Climate Change Related Commercial Bankruptcy Cases

A. Pacific Gas & Electric (Bankr. N.D. Cal.)

1. Risk analysis & proactive response
2. Judicial and government oversight of public utility

B. Basic Water (Bankr. D. Nev.)

1. An altered landscape
2. Valuation of the assets and plan for the future

C. DC Solar/Red Rose (Bankr. D. Nev.)

1. Government incentives driving investment
2. International competition
3. Economic hope overrides economic realism
4. Consumer impacts

D. Anonymous Ranching or Agricultural Business (Anywhere)

1. You Can Lead a Horse to Water: If there is water
2. Tragedy of the Commons: What if you aren't first in line?

3. Government incentives: A lifeline, or a perverse solution?

IV. Whether legal doctrines and restructuring strategies can proactively and reactively provide relief from the financial distress caused by climate change.

THE CONVERSATION

Academic rigor, journalistic flair

Corn yields can suffer in high heat. AP Photo/Seth Perlman

4 ways extreme heat hurts the economy

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Summer 2021 will likely be one of the hottest on record as dozens of cities in the West experience all-time high temperatures. The extreme heat being felt throughout many parts of the U.S. is causing hundreds of deaths, sparking wildfires and worsening drought conditions in over a dozen states.

How does all this broiling heat affect the broader economy?

As an economist who has studied the effects of weather and climate change, I have examined a large body of work that links heat to economic outcomes. Here are four ways extreme heat hurts the economy – and a little good news.

1. Growth takes a hit

Research has found that extreme heat can directly hurt economic growth.

For example, a 2018 study found that the economies of U.S. states tend to grow at a slower pace during relatively hot summers. The data shows that annual growth falls 0.15 to 0.25 percentage points for every 1 degree Fahrenheit that a state's average summer temperature was above normal.

Laborers in weather-exposed industries such as construction work fewer hours when it's hotter. But higher summer temperatures reduce growth in many industries that tend to involve indoor work, including retail, services and finance. Workers are less productive when it's hotter out.

2. Crop yields drop

Agriculture is obviously exposed to weather: After all, crops grow outdoors.

While temperatures up to around 85 F to 90 F (29-32 C) can benefit crop growth, yields fall sharply when thermostats rise further. Some of the crops hit hard by extreme heat include corn, soybeans and cotton. These reductions in yields could be costly for U.S. agriculture.

For example, a recent study I conducted found that an additional 2 degrees Celsius of global warming would eliminate profits from an average acre of farmland in the Eastern U.S.

A prominent example of this was the collapse of the Russian wheat harvest in response to the country's 2010 heat wave, which raised wheat prices throughout the world.

3. Energy use soars

Of course, when it's hot, energy use goes up as people and businesses run their air conditioners and other cooling equipment at full blast.

A 2011 study found that just one extra day with temperatures above 90 F increases annual household energy use by 0.4%. More recent research shows that energy use increases the most in places that tend to be hotter, probably because more households have air conditioning.

This increase in electricity use on hot days stresses electric grids right when people depend on them most, as seen in California and Texas during recent heat waves. Blackouts can be quite costly for the economy, as inventories of food and other goods can spoil and many businesses either have to run generators or shut down. For instance, the 2019 California blackouts cost an estimated $10 billion.

4. Education and earnings suffer

A long-term impact of increasingly hotter weather involves how it affects children's ability to learn – and thus their future earnings.

Research has shown that hot weather during the school year reduces test scores. Math scores decrease more and more as the temperature rises beyond 70 F (21 C). Reading scores are more resistant high temperatures, which this research claims is consistent with how different regions of the brain respond to heat.

One study suggested that students in schools that lack air conditioning learn 1% less for every 1 degree Fahrenheit increase in the school year's average temperature. It also found that minority students are especially affected by hotter school years, as their schools are especially likely to lack air conditioning.

Lost learning results in lower lifetime earnings and hurts future economic growth.

The impact of extreme heat on development, in fact, begins before we're even born. Research has found that adults who were exposed to extreme heat as fetuses earn less during their lifetimes. Each extra day with average temperature above 90 F (32 C) reduces earnings 30 years later by 0.1%.

Air conditioning can help – to a point

Air conditioning can offset some of these effects.

For example, studies have found that having a working air conditioner means fewer people die, student learning isn't compromised and extreme heat outside during pregnancy doesn't hurt fetuses.

Not everyone has air conditioning, however, especially in normally cooler areas like Oregon, Washington and Canada that have experienced unusually extreme temperatures this year. And many people can't afford to own or operate them. Survey data from 2017 found that around half of homes in the Pacific Northwest lacked air conditioning. And about 42% of U.S. classrooms lack an air conditioner.

While heat waves are shown to induce more households to install air conditioning, it's hardly a panacea. By 2100, higher use of air conditioning could increase residential energy consumption by 83% globally. If that energy comes from fossil fuels, it could end up amplifying the heat waves that caused the higher demand in the first place.

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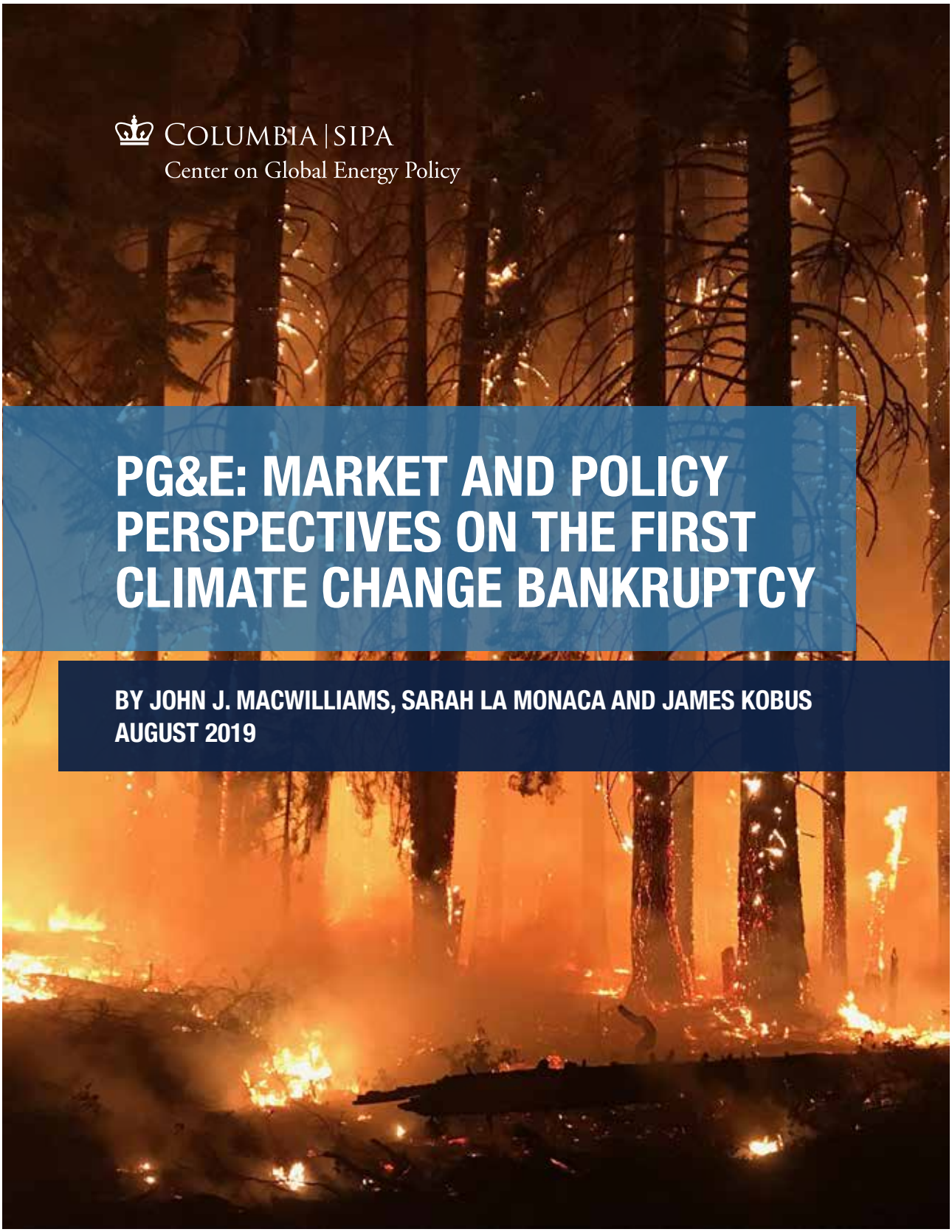
And in the U.S. South, where air conditioning is omnipresent, hotter-than-usual summers take the greatest toll on states' economic growth.

In other words, as temperatures rise, economies will continue to suffer.



PG&E: MARKET AND POLICY PERSPECTIVES ON THE FIRST CLIMATE CHANGE BANKRUPTCY

BY JOHN J. MACWILLIAMS, SARAH LA MONACA AND JAMES KOBUS

AUGUST 2019

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

The Pacific Gas and Electric (PG&E) bankruptcy, which was caused by liabilities resulting from massive wildfires, has widely been called the first climate change bankruptcy. It will likely not be the last, as climate change exacerbates natural disasters, leading to more frequent and intense wildfires, storms, and flooding. Wildfires alone could become up to 900 percent more destructive in certain regions by midcentury, and utility assets will also be increasingly exposed to threats stemming from hurricanes, rising sea levels, and other climate-related events.

These extreme weather events will increase costs to utility-sector stakeholders, including investor-owned utilities, state and local governments, ratepayers, and taxpayers. These risks could place financial stress on utility companies, drive up electricity rates, crowd out essential investment in renewable energy and grid upgrades, and disrupt service.

In this paper, Columbia University's Center on Global Energy Policy reviews and analyzes the PG&E bankruptcy, assesses how capital markets have reacted to the bankruptcy through the lens of valuations in the US utility sector, and discusses policy implications of California's recent legislative response to wildfire risk. This paper examines market indicators to assess investor expectations of climate risk exposure and likely cost allocation. Neither debt nor equity markets suggest widespread concern about climate risk in the utility sector.

In the absence of strong market signals to encourage climate risk mitigation, the authors find that policy frameworks are needed to ensure that companies make necessary preventative investments and to define how costs will be allocated among stakeholders. This paper also reviews a recently passed California bill aimed at achieving these objectives and the lessons and best practices it offers for other policy makers. In short, the paper finds the following:

- Market indicators suggest that the California wildfires and subsequent PG&E bankruptcy have not caused imminent concern about climate risks in the utility sector. Equity valuations for the sector remain strong, with a utility stock index trading at a higher-than-average premium to the market benchmark. In credit markets, regulated utilities in the United States have raised more than $50 billion of corporate debt in 2019 to date, and borrowing spreads are currently below historical averages.
- There are several reasons why markets may not reflect widespread climate risk to utilities, despite the scientific evidence around likely future damage. Investors may believe that cost increases from climate change will occur too far in the future to materially impact the present value of their investments. Even if investors believe that climate change risks are material to valuation, they may also believe that such risks will not be considered by other investors for some time. Investors may be viewing wildfires as a California-specific risk, though the regional skew of wildfires is likely to shift significantly in coming years. They may lack the information or modeling tools for assessing the likelihood and geographic dispersion of high-impact tail events, such as the wildfires that PG&E faced.

- Financial markets may also reflect the belief that the costs of climate change in the utility sector will fall predominantly on ratepayers, insurance companies, and/or taxpayers rather than investors, and therefore investors may not view themselves as materially exposed.
- California's recent creation of a wildfire insurance fund with contributions from both ratepayers and companies provides important policy lessons for designing comprehensive frameworks to allocate climate damage costs. These include the strengthening of both regulatory and corporate climate resilience expertise, mandating preventative investment as a prerequisite for cost-recovery mechanisms, defining utility financial exposure for climate damage situations, and providing liquidity for utilities to provide essential services when facing large disasters.
- The policy also presents some potential pitfalls that may be instructive for other state policy makers. The legislation sets aside large reserves for future damage, a necessary measure, but one that will result in higher electric bills. The bill does not allow utilities to earn a return on safety-related spending, which broadly diminishes incentives for proactive climate mitigation investment. The potential insufficiency of the wildfire fund also creates uncertainty about future cost allocation. Finally, failing to reform the California legal framework that allows utilities to be held liable for damages they did not cause perpetuates risks for companies and ratepayers.

If the first climate change bankruptcy is indicative of a new reality, it is not that utilities are going to go bankrupt overnight. Rather, climate disasters will increasingly add financial stress to utility-sector stakeholders, as costs accumulate from both acute events and damaging extreme weather impacts. Adapting the regulatory bargain for a climate-exposed future will require lawmakers, regulators, and shareholders to develop new approaches and new incentive structures to ensure an accountable, robust utility sector. Moreover, while climate change is already presenting real financial challenges to utilities, it will not be the only sector to face large climate-driven costs. Other corporate actors can look to the utility experience to better understand how policy makers, investors, and companies will respond to the growing financial threat from climate change.

INTRODUCTION

In January 2019, Pacific Gas and Electric (PG&E), California's largest electric utility, declared bankruptcy, estimating that it could face liabilities surpassing $30 billion from the 2017 and 2018 Northern California wildfires.[1] The PG&E case has been called the first climate change bankruptcy, and commentators have predicted that it is a harbinger of additional bankruptcies caused by catastrophic impacts of climate change. California's subsequent legislation creating a wildfire insurance fund with contributions from both ratepayers and companies represents an important test case for the way that society will allocate the costs of climate damage.

The terms of providing electricity have been governed since the inception of the industry by what has been called the "regulatory bargain": since electricity is an essential service, and is most affordably delivered through a shared infrastructure, a utility operates as a natural monopoly and in return accepts state regulation of its rates and profits. In this framework, the costs resulting from natural disasters have typically been borne by electricity customers in the form of increased rates and bill charges. In the absence of evidence to the contrary, it has generally been assumed that utilities that incur those costs have managed their networks prudently, so companies and shareholders have typically not been penalized.

As California demonstrates, increasingly frequent and intense climate-driven extreme weather events are beginning to strain this framework by adding high recovery costs to already high electricity rates. Yet as costs stress the customer base, they cannot be shifted entirely to utility companies. Maintaining financial soundness is critical to utilities' ability to deliver electricity and make important investments in resiliency and renewable electricity sources to combat climate change. In the context of these trade-offs, policy makers will be forced to grapple with the question of how to pay for climate damages in a way that protects ratepayers but maintains the financial health and accountability of utilities. This is especially true as climate damage becomes more likely to occur and can and should be mitigated through reasonable preventative investments.

The California proposal provides a first, if imperfect, example of an explicit regulatory road map for allocating climate costs. The subsequent policy frameworks that governments implement will shape how these costs will be allocated in the future among shareholders, ratepayers, and federal and state taxpayers. Though it is specific to wildfires, the legislation passed in California provides important takeaways for other states as they shape their own climate adaptations to the regulatory bargain.

CALIFORNIA FACES HISTORIC WILDFIRES AND THE "FIRST CLIMATE CHANGE BANKRUPTCY"

California has faced more destructive wildfires in recent years, exacerbated by the effects of climate change. The fires have resulted in tragic loss of life and catastrophic destruction of homes and properties. They have also led to the state's largest utility declaring bankruptcy. If PG&E is indeed the first clear example of a climate change bankruptcy, it is important to understand how the company came to declare bankruptcy after last year's historic wildfires and what the role of climate change was in shaping PG&E's financial situation.

PG&E is one of three major investor-owned utilities (IOUs) in California, providing electric and gas services to more than five million customers in Central and Northern California. In recent years, the company has faced challenges from intensifying wildfires, beginning with the 2015 Butte Fire, which burned more than 70,000 acres and caused two deaths. The California Department of Forestry and Fire Protection—Cal Fire—determined that PG&E's equipment ultimately caused the fire. While settlements are still being resolved, the utility estimates it will incur $1.1 billion in resulting losses.[2] In 2017, PG&E's equipment was found to have sparked 18 of 21 major fires in Northern California.[3] The company has estimated $3.5 billion to be a low estimate for likely damages under those settlements.[4]

PG&E therefore entered the 2018 wildfire season already facing considerable fire-related liabilities. The Camp Fire that devastated Northern California communities last November was the state's deadliest wildfire on record and the costliest natural disaster of 2018.[5] The disaster claimed the lives of 86 people and resulted in the destruction of over 150,000 acres, 13,972 residences, 528 commercial structures, and 4,293 other buildings. Together with the 2017 wildfires, the company has recorded charges of approximately $13.4 billion and estimated that its wildfire related liabilities could exceed $30 billion, a figure that does not include potential punitive damages, fines and penalties, or damages related to future claims.[6]

Facing this wall of potential liabilities, PG&E announced on January 14, 2019, that it would preemptively file for Chapter 11 bankruptcy protection.

Notably for PG&E, California is one of only two states that have a legal framework, known as inverse condemnation, which holds utility companies strictly liable for wildfire damages if the company's equipment ignites a wildfire even if the utility's operations were not unreasonable or negligent. This allows for property damages to be brought against utilities even if they are not shown to be at fault.[7] Nonetheless, while many commentators have suggested that the inverse condemnation framework significantly contributed to PG&E's financial distress, it is worth noting that the company could potentially have been liable even in the absence of this legal framework. An investigation by Cal Fire confirmed that the fire began when PG&E-owned power lines malfunctioned and ignited surrounding trees,[8] and subsequent media reporting has raised serious questions with respect to the appropriateness of the company's operations.[9]

PG&E's bankruptcy announcement generated an abundance of media coverage and commentary. Many news articles sounded the alarm on widespread climate risk, quoting

experts who said that the PG&E bankruptcy should be a warning for the corporate world. *Bloomberg News* wondered if "California utility PG&E may be the business world's biggest climate change casualty yet."[10] The *Wall Street Journal* warned "PG&E: The First Climate Change Bankruptcy, Probably Not the Last." Former New York City mayor and current chair of the Task Force on Climate Related Financial Disclosures Michael Bloomberg published an op-ed stating that the PG&E bankruptcy "is a wake-up call on financial risks of climate change."[11]

How did climate change contribute to the bankruptcy of a major California utility?

Certainly, numerous factors contribute to the cause and spread of wildfires, and it can be difficult to disentangle the complex dynamics when analyzing any one particular incident. Factors that may have played a role in the large 2017 and 2018 fires include vegetation management practices, trends in urban-wildland development, and safety-culture issues that were specific to PG&E. Regarding this last point, it is worth noting that PG&E had faced significant scrutiny for oversight and safety culture issues well before the 2017 and 2018 wildfires. For example, PG&E has been subject to numerous investigations following the 2010 San Bruno pipeline explosion that killed eight people and leveled an entire neighborhood. The utility company even faced a federal criminal trial in which the utility was found guilty of six felony counts.[12] Moreover, a recent Wall Street Journal article reported that the company knew that 49 of the steel towers that carry the electrical line that failed (causing the 2018 Camp Fire) needed to be replaced entirely. Facing operational and capital constraints, the company delayed the required upgrades, ranking them as low-risk projects and directing capital expenditures toward what it considered higher priority projects.[13] In a recent bankruptcy hearing, however, PG&E disputed these accusations, arguing that the deferred projects would not have addressed the conditions that started the 2018 fire.[14]

Even considering these additional contributing factors, it is undeniable that climate change also has had an effect on the severity and likelihood of wildfires. Columbia University researchers have found that climate change has caused an extra 4.2 million hectares—an area approximately the size of Massachusetts and Connecticut combined—of wildfire damage in the Western United States since the 1980s. This is nearly double the number of acres burned than would otherwise be expected.[15] While PG&E's faulty power lines may have sparked the Camp Fire, scientists believe that conditions caused by climate change made the fire more likely to occur and more damaging. Another recent study led by Park Williams, a hydroclimatologist at Columbia University's Lamont-Doherty Earth Observatory, finds that average summer temperatures in California have risen more than three degrees Fahrenheit since the late 1800s, with three-quarters of the increase occurring since the early 1970s. From 1972 to 2018, the annual acres burned by wildfires have increased by a factor of five, resulting from a more than 800 percent spike in summer forest fires.[16] Researchers note that warming average temperatures in the state have diminished autumn rains and increased winds, which have led to tinderbox conditions as brush and vegetation become drier and more prone to burning.[17] Dana Nuccitelli of Yale Climate Connections outlines several additional academic studies showing how climate change has worsened wildfire conditions in California over the past several years.[18]

The California Policy Response

With the 2019 wildfire season already underway, California lawmakers have moved quickly to implement plans for preventing, mitigating, and allocating the costs of future wildfires.

Last month, California Governor Gavin Newsom signed into law a wildfire insurance package that is the first in the nation to address major utility financial risk resulting from increasing climate risk. The legislation is designed both to mitigate the risk of future wildfires and allocate the costs of any future damages, providing improved clarity to investors as to the maximum amount utility shareholders would be expected to pay. The package lays out a total of $5 billion of safety investments that utilities would be required to make, on which they would not be permitted to earn a return on equity.[19] These include measures such as more frequent power line inspections and better vegetation management. The bill also establishes a Wildfire Safety Advisory Board, staffed by industry experts, to advise the California Public Utility Commission (CPUC). The advisory board would review utilities' implementation of specific safety requirements, including having an approved fire mitigation plan, establishing a fire safety committee, and tying executive compensation to safety culture. On the basis of the review, the board would make a recommendation to the CPUC as to whether to issue a safety certificate to the utility. These requirements are intended to reduce the likelihood of future catastrophic wildfires. However, the proposal goes beyond risk reduction to address how costs would be shared in the seemingly inevitable event that wildfires happen anyway. It creates a $21 billion insurance fund, capitalized through ratepayer contributions in the amount of $10.5 billion, as well as $10.5 billion in company contributions shared proportionally between California's IOUs. While the utilities had the option to instead access a $10.5 billion reserve fund to be used as a bridge loan facility, PG&E, Southern California Edison, and San Diego Gas & Electric have all confirmed to the CPUC that they will opt in to the $21 billion insurance fund.[20] The CPUC-issued safety certificate would be a prerequisite for accessing funding through these mechanisms.

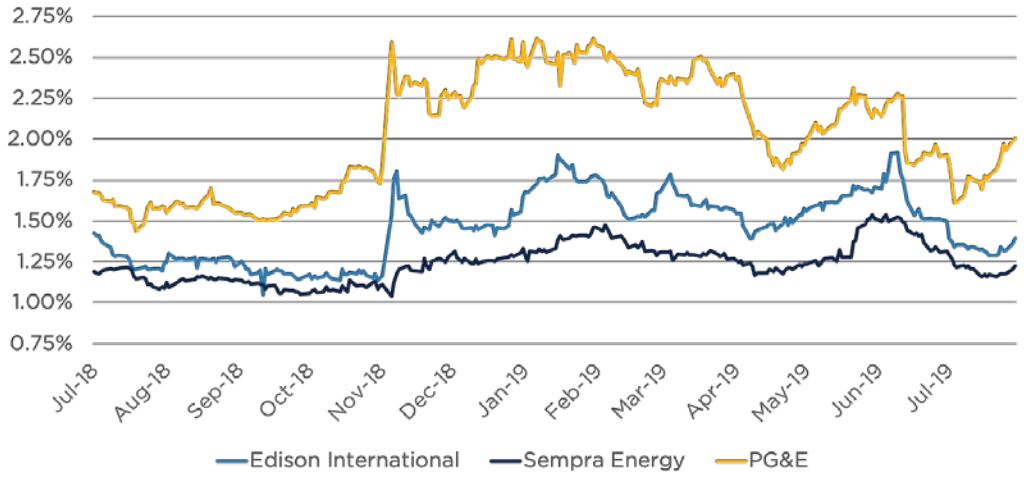
THE MARKET'S RESPONSE

One would expect that a major climate-exacerbated bankruptcy would increase investors' recognition that such events may be more severe and more frequent throughout the industry than previously thought. While in theory this risk has been present for some time, it seems plausible that the severity of the 2017 and 2018 wildfires revealed new information about the seriousness of the risk and brought the issue to the forefront of investor consciousness. It also attracted the attention of the credit rating agencies, with Standard & Poor's (S&P) threatening to downgrade all of the state's utilities to junk status if a new regulatory framework were not adopted.[21] If investors were of the view that PG&E's was the first of many future climate-driven utility bankruptcies, prospective lenders would begin to demand higher rates on debt, and equity valuations would decline to reflect increased perceived risk. This market response could, itself, present a financial risk to utilities by making capital more expensive or difficult to access. Below, we examine whether the market has behaved in a manner consistent with this expectation.

Are Lenders Treating PG&E as a Canary in the Coal Mine or as an Isolated Event

Looking first at debt markets, there was a marked uptick in debt costs for all three California utilities following the November 2018 wildfires. Figure 1 shows borrowing rates for California IOU parent companies Edison International (which owns Southern California Edison), and Sempra Energy (which owns San Diego Gas & Electric), relative to treasury bonds.[22] Interestingly, all of the utilities experienced a sharp spike in borrowing costs in November as details of the Camp Fire came to light, even though the fire was limited to PG&E's service territory. This suggests that the market viewed the 2018 Camp Fire as new information, and investors in the other two utilities updated their beliefs regarding the probability of future wildfires.

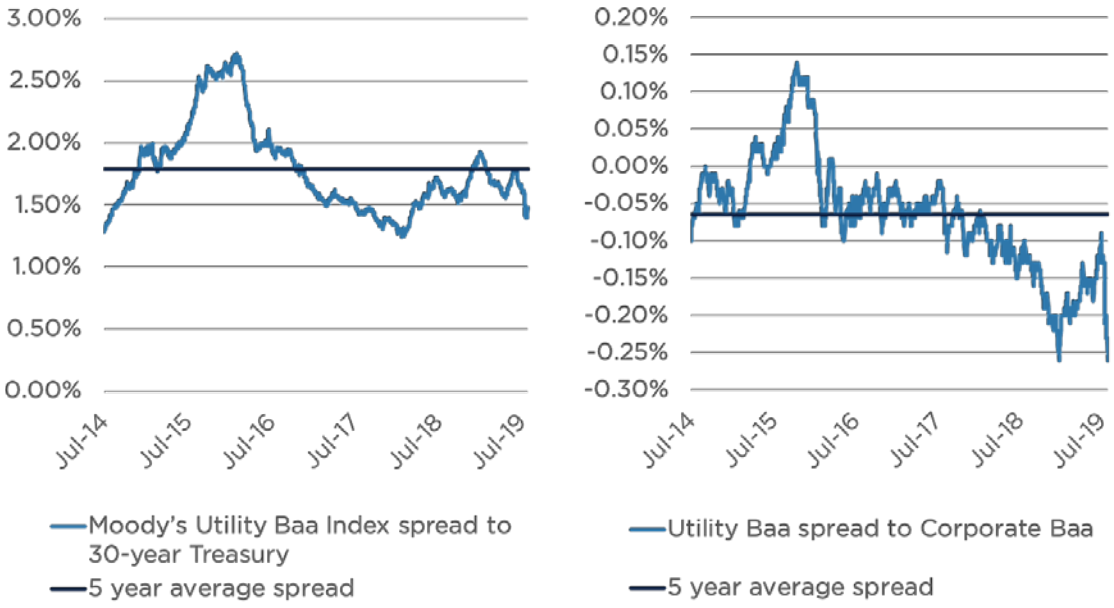
Figure 1: California utilities' borrowing rates (Yield spread over benchmark Treasury bond)



Source: Bloomberg. Data as of 8/6/19. Uses "Mid Spread to Benchmark" function, showing EIX 4 1/8 03/01/48 Corp (parent company of Southern California Edison), SRE 4.15 05/15/48 Corp (parent company of San Diego Gas and Electric), and PCG 3.95 12/01/2047 REGS Corp (PG&E). PG&E debt is unsecured while the other two are secured issuances, explaining some of the outsized PG&E spread.

However, the effect seems isolated to California, and there does not appear to have been a measurable effect across utility credit markets as a whole. Regulated utilities in the United States have raised more than $50 billion of corporate debt in 2019 thus far, borrowing at an average rate of approximately 3.8 percent. While there was a modest uptick in the average sector spread over treasuries coinciding with the November 2018 Camp Fire, the spread returned to historical levels and is still below its historical five year average of approximately 1.8 percent (figure 2, left image). Looking at utility BAA debt relative to a broad corporate BAA index, the two have tracked each other extremely closely, as one might expect. While there is some selection bias in this analysis as companies are downgraded and removed from the index, utility debt yields are actually trading tighter (i.e., at lower yields) relative to their historical five year average spread (figure 2, right image). These findings suggest that the market is not pricing in outsized risks in the utility sector relative to history.

Figure 2: Utility bond spreads are below historical norms, suggesting the market is not pricing in outsized risks relative to history



Source: Bloomberg. Data as of 8/6/19.

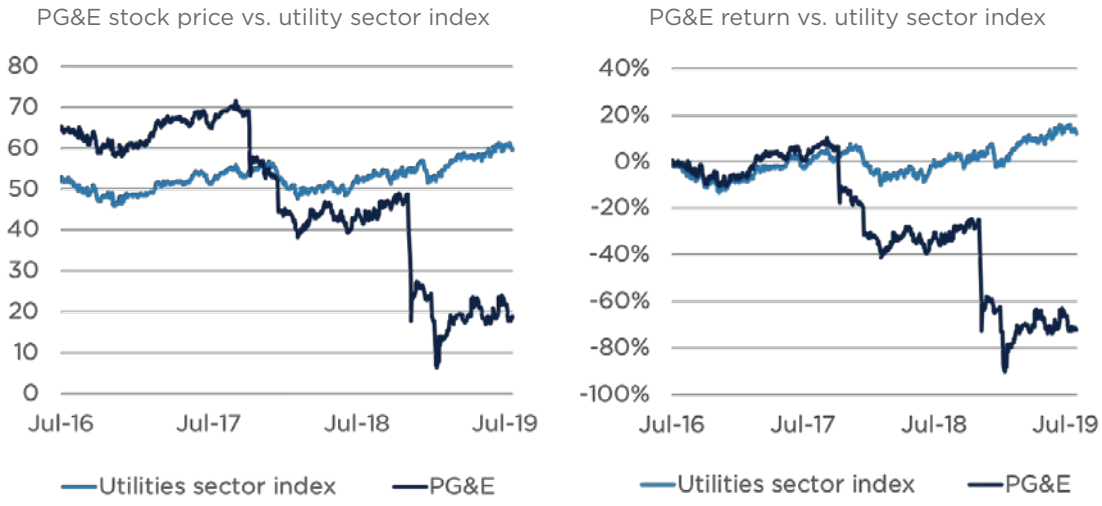
The tenor of debt issuances has averaged over 14 years, with some utilities even issuing debt over more than fifty years. The lack of sustained increase in borrowing costs over those time periods, and comparable duration, indicates that lenders remain comfortable with the financial condition of utilities despite the Camp Fire and subsequent PG&E bankruptcy.[23] This is confirmed by the credit default swap market, which further appears to be pricing in relatively low levels of default risk, even among utility companies operating in California and other climate-exposed regions.[24]

Have the Wildfires or PG&E Bankruptcy Impacted Equity Valuations?

We look first at PG&E's stock price. As shown in figure 3, the company significantly underperformed peer utility companies (as illustrated by the XLU utilities sector index fund) as the severity of the 2017 wildfires became clear. Then, when the devastating Camp Fire hit in November 2018, the stock price experienced a more dramatic fall, culminating in the bankruptcy filing which sent the stock sharply down to approximately $6.40 per share. Interestingly, however, the stock price has outperformed peer utilities since the bankruptcy filing and has recovered to approximately $17.00 per share. This means that the market is now reflecting approximately $9 billion in market capitalization, a large equity value for a company

in the midst of a bankruptcy proceeding. Investors may be concluding that the ultimate liabilities the company is likely to face will be lower than the $30 billion estimate. Investors may also have lowered their expectations for future liabilities following the passage of the recent California legislation.

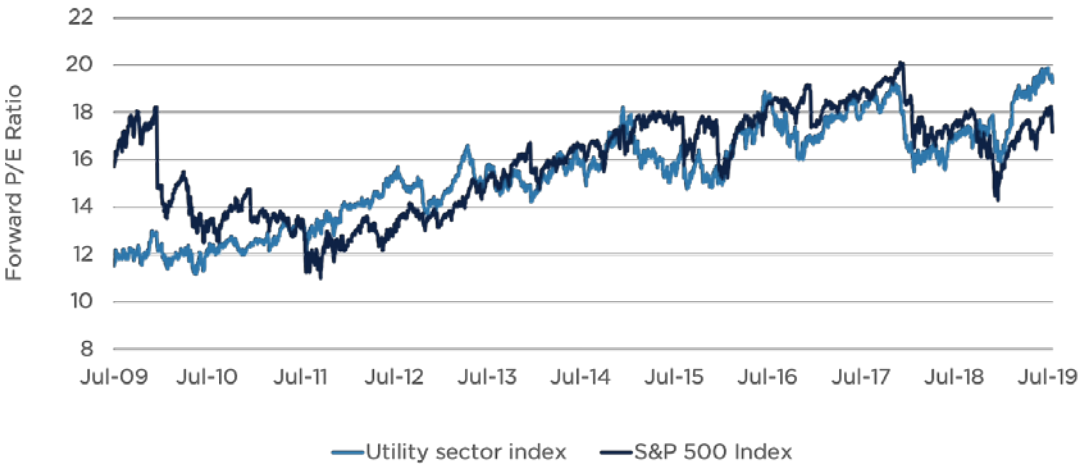
Figure 3: PG&E (ticker: PCG) stock price and returns versus industry average, 2016–2019



Source: Bloomberg - PCG US Equity & XLU US Equity (Utilities Sector SPDR Fund). Data as of 8/6/19.

To examine equity valuations across the utility sector more broadly, we compare the forward price-to-earnings ratio of the utility sector index to the market benchmark S&P 500 index. Figure 4 shows the one-year forward price-to-earnings ratio of the utility sector compared with a market benchmark, and table 1 presents the price-to-earnings premium over the S&P 500 based on forecasted growth. Over the past 10 years, the utility sector has traded at approximately a 3 percent lower price-to-earnings ratio relative to the S&P 500, though in recent months utilities have traded up to approximately a 12 percent premium. While such a univariate analysis may only provide part of the story, given the potential for other factors such as interest rates to impact utility sector valuations, this market reaction does not appear to reflect widespread investor concern that the recent wildfires and subsequent PG&E bankruptcy are an indicator of a new systematic risk across the sector.[25]

Figure 4: Price-to-earnings ratio of the utility sector index vs. market benchmark, 2009-2019



Source: Bloomberg "BEST PE Ratio" Function for UTY Utility Sector Index and SPX S&P 500 Index. Data as of 8/6/19.

Table 1: Current and future price-to-earnings ratio and earnings growth for utility index vs. market benchmark

Date	2018	2019	2020
S&P 500 Index			
Price-to-earnings ratio	16.48	17.25	15.60
Consensus earnings growth	*N/A*	*8.0%*	*10.5%*
UTY utility index			
Price-to-earnings ratio	16.89	19.33	15.60
Consensus earnings growth	*N/A*	*3.0%*	*4.7%*
Premium (discount) to S&P 500	*2.5%*	*12.1%*	*18.3%*

Source: Bloomberg. Data as of 8/6/19.

Finally, there have been more than $70 billion of mergers and acquisitions transactions in the US-regulated utility sector over the past few years, with strategic and private equity investors paying high multiples and significant premiums for utility assets, as shown in table 2. While activity has slowed somewhat over the past year in the wake of some notable PUC deal rejections,[26] the recent JP Morgan acquisition of El Paso Electric, which operates in a potentially climate-exposed region, reinforces the notion that the market does not appear overly concerned about climate risk in the sector.

Table 2: Mergers and acquisitions activity in the utility sector, 2016-2019

Date	Acquirer	Acquiree	State(s)	Enterprise Value ($bn)	Premium Paid
6/3/19	JP Morgan Infrastructure Investments Fund	El Paso Electric Co.	TX, NM	4.3	17%
1/2/19	Dominion Energy	Scana Corp	SC	14.6	31%
5/21/18	NextEra Energy	Gulf Power	FL	6.5	N/A
4/23/18	Centerpoint Energy	Vectren Corporation	IN, OH	8.5	28%
8/20/17	Sempra Energy	Oncor/Energy Future Holdings	TX	18.8	N/A
7/19/17	Hydro One	Avista Corp	WA, OR, ID, AK	5.3	24%
5/31/16	Great Plains Energy	Westar Energy	KS	12.2	36%

Source: Company press releases and SEC filings

In summary, these analyses suggest that the capital markets do not view the California wildfires and PG&E's subsequent bankruptcy as indicative of a widespread imminent climate risk for utilities. Though there has been some impact to the financing costs of the other investor-owned utilities in California, the effect has not been borne out in aggregate utility indicators.

NO MARKET PANIC, BUT RISKS REMAIN

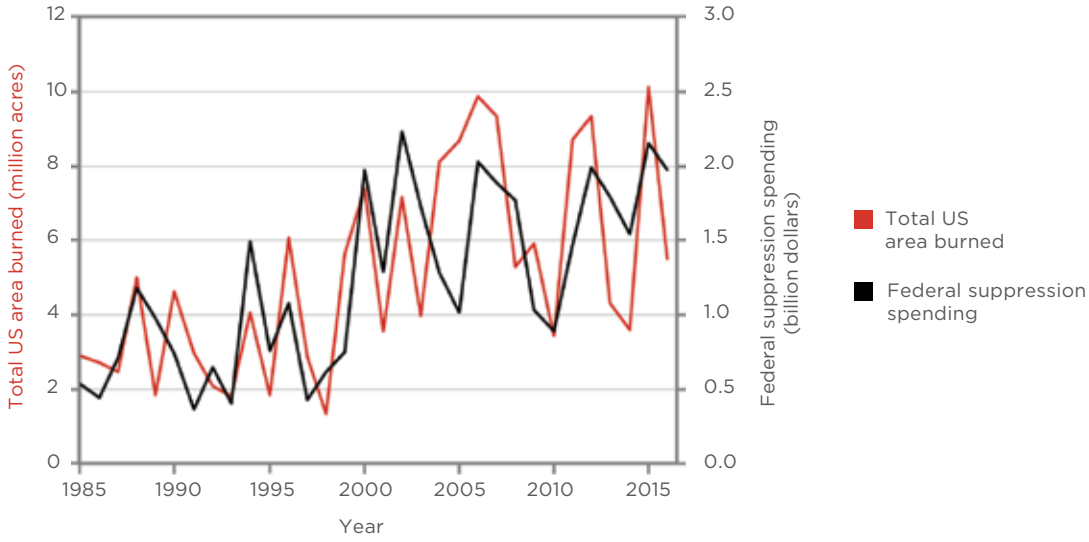
As shown above, despite the dire tone of articles touting PG&E as a harbinger of future climate change bankruptcies, utility investors do not appear to be pricing in material financial climate risk. This is, for the moment, good news for companies and for ratepayers, who would pay for the higher costs of capital. But how does it square with the potential for climate-worsened extreme weather events? Climate change risks in the utility sector are not unique to PG&E or California. Research indicates that climate change will increase the frequency and severity of extreme weather events across the United States.

Wildfires

Wildfires pose a particularly acute threat to utilities. They are forecast to become more severe, more frequent, and more geographically dispersed. They are also extremely costly and represent the singular type of climate change impact that utilities can be shown to directly cause.[27]

As discussed, climate change induced temperature increases and droughts dry up forests and vegetation, fueling larger, more damaging wildfires. Figure 5 shows US wildfire damage by acres burned from 1985 to 2015. Looking to the future, while there is considerable variability in the magnitude of forecasts, studies consistently project significant increases across the United States. The United States government's Fourth National Climate Assessment, released in November 2018, notes that "by the middle of this century, the annual area burned in the western United States could increase from two to six times from the present, depending on the geographic area, ecosystem, and local climate." The assessment cites increased temperatures, earlier snowmelt, and more intense summer droughts as contributors to increased wildfires.[28]

Figure 5: Acres burned from wildfires and federal suppression spending, 1985-2015

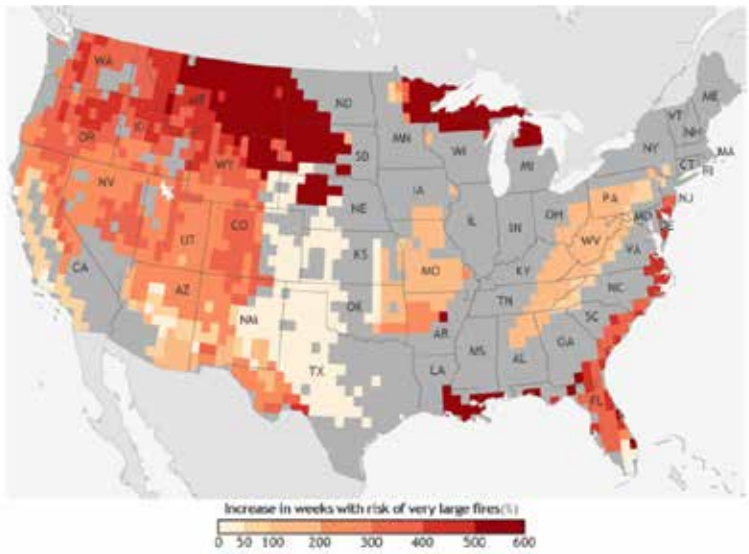


Source: Fourth National Climate Assessment, 2018

A meta study published in the *Journal of Atmospheric Environment* summarizes several peer-reviewed projections for future area burned across the whole country. While some studies reflect only single-digit increases at the low end, others project increases of up to 900 percent in certain regions by midcentury.[29] Forecasts could be even more drastic if updated to reflect the unexpectedly severe 2017 and 2018 wildfire seasons.

The greatest destruction from wildfires (by acres burned) is concentrated in western states. However, the National Climate Assessment anticipates increased wildfire activity not just in the west but also in several southeastern states.[30] Figure 6 shows the expected percentage increase in large wildfires by state, revealing widespread increases in wildfire risk in both western and some eastern and Midwest areas.[31]

Figure 6: Projected increase in "very large fire weeks" by midcentury (2041-2070) compared to 1971-2000



Source: Barbero, R.; Abatzoglou, J.T.; Larkin, N.K.; Kolden, C.A.; Stocks, B. 2015. Climate change presents increased potential for very large fires in the contiguous United States. International Journal of Wildland Fire.

As wildfires become larger and more common, their costs will increase dramatically as well. A 2017 Department of Commerce report, written before the record-setting 2018 fire season, estimated the annual direct costs of wildfires at $7.6–$62.8 billion in the United States alone, with the direct and indirect economic losses representing an incremental $63.5–$285 billion of damages.[32] Applying similar growth rates for forecasted acres burned to these cost estimates, annual direct and indirect wildfire damages could easily surpass $500 billion. This approach may also be underestimating the potential economic damage due to increased development at the wildland-urban interface. These types of areas, where homes are placed in natural areas, currently constitute 9 percent of the United States total land area but are projected to double by 2030.[33] This has the potential to increase the economic damage per acre burned.

Hurricanes, Flooding, and other Climate Impacts

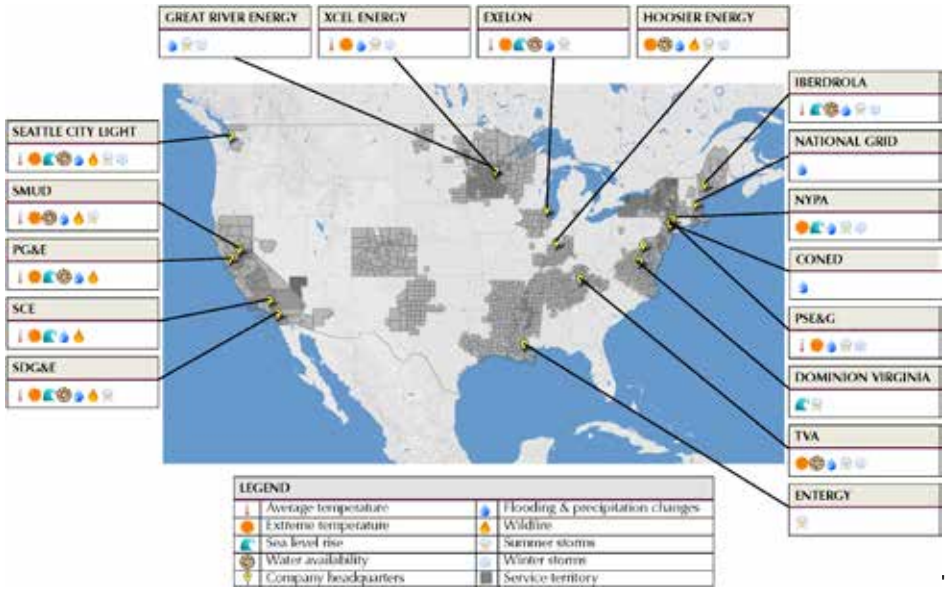
What makes utilities particularly financially vulnerable to wildfire impacts is that they can be held responsible for actually causing fires, as happened in the case of PG&E. However, other climate-related factors such as hurricanes and flooding also represent material risks to the utility sector (as well as to other sectors of the economy.)

Hurricanes and sea level rise are forecast to increase in both frequency and intensity in the coming years and to affect a larger number of people. Peer-reviewed analysis from the

Congressional Budget Office estimates that the number of people living in hurricane-prone counties in the United States will grow 800 percent by 2075.[34] A 2019 paper from asset manager Blackrock Investments details climate risks to the utility sector, noting that storm surge, high winds, and flooding from hurricanes pose a risk to several categories of utility assets, including power plants and transmission and distribution networks.[35] The United States Department of Energy estimates that sea level rise causes hurricane storm-surge exposure increases of 12 to 40 percent for power plant assets and 18 to 44 percent for substations.[36]

A 2016 utility climate risk report from the United States Department of Energy states that "changes in climate and extreme weather, including increasing temperatures, decreasing water availability, more intense storm events, and sea level rise have already damaged or disrupted electricity services." The report details the climate exposure assessments of several major utility companies across the country.[37] Self-assessed climate vulnerabilities are shown in figure 7, with 13 of 17 identifying a risk from increased summer storms, and 15 of 17 concerned about flooding and precipitation. (Notably, many utilities also included wildfire risk in their self-assessments).

Figure 7: Specific climate impacts included in utilities' vulnerability assessments



Source: US DOE, 2016.

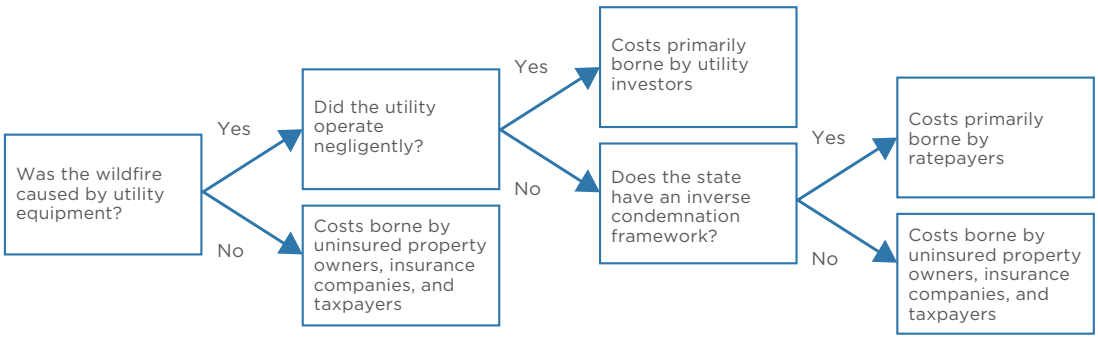
Climate impacts will result in increased costs and financial stress to both ratepayers and utilities.[38] Moreover, the damage will not be evenly distributed geographically. As a result, certain utilities are likely to face overwhelming costs while others escape the worst impacts. It can be difficult to predict ex-ante which climate-exposed utilities will bear the brunt of the damage, but these risks should not be discounted.

PRICING CLIMATE CHANGE RISK IN THE UTILITY SECTOR

As discussed above, markets do not appear to be reflecting systemic climate change risk in the utility sector outside of California, despite scientific consensus that climate change presents a real and substantial threat to the industry. There are several potential explanations for this market reaction.

First, outside of California, financial markets may reflect the belief that the costs of climate change in the utility sector will fall predominantly on ratepayers, insurance companies, and/or taxpayers rather than investors. Utility sector investors may thus be anticipating increases in climate costs but may not view themselves as materially exposed. Not all fires are caused by utility equipment, and of those that are caused by electricity infrastructure, the liability ultimately depends on several factors. These include whether the utility company is found to have operated prudently, whether an inverse condemnation framework is in place, and whether an effective cost-recovery process is established. Figure 8 below outlines several different wildfire cost-sharing scenarios, showing that investors are likely to be exposed to climate costs only when specific conditions are met. Similar principles regarding prudence and cost recovery are likely to determine investor exposure to non-wildfire climate events such as hurricanes and flooding. If investors assign low probabilities to the cases of negligence and ineffective cost recovery, then it would be reasonable for climate risks to not be materially reflected in utility sector financial assets, even if investors believe that climate change is going to make these events more frequent and damaging over time.

Figure 8: Flowchart illustrating wildfire cost allocation under various scenarios



Source: Columbia University Center on Global Energy Policy

Second, investors may believe that preventative resilience and hardening investments such as those mandated by the recent California legislation may significantly reduce the damage that utility companies will face from climate change.

Third, depending on the particular asset class, investors may believe that cost increases from climate change will occur too far in the future to materially impact the present value of their investments. Credit default swaps, for example, are typically structured over a five year period—a time period over which the increased costs of climate change may not materially impact their value. For equity investments and longer term debt, the costs of climate change may be too far in the future to materially impact present values if high discount rates are used.

Fourth, even if investors believe that climate change risks are material to valuation, they may also believe that such risks will not be considered by other investors or reflected in asset prices for some time, and therefore may discount these risks. This may be particularly true given the fact that the investment time horizons for many public market investment funds can be measured in months, and that long-term value investors may only hold positions for a few years. While the early impacts of climate change are becoming painfully apparent now (as evidenced by the California wildfires), the worst of the damage is not expected until midcentury or later.

Fifth, investors may be viewing wildfires as a California-specific risk. Indeed, California has been disproportionately affected in recent years. In 2018, California saw over 80 percent more acres burned than Nevada, the second most affected state. However, as noted previously, the regional skew of wildfires is likely to shift significantly over time (see figure 8). It is not clear that these forecasts are widely appreciated by investors. Moreover, although inverse condemnation is often held up as a reason why wildfire risk is largely isolated to utilities in California, it is worth noting that utilities in other states may still be held liable if they are found to have operated their system in an imprudent or negligent fashion.

Finally, investors may lack the information or modeling tools for assessing the likelihood and geographic dispersion of high-impact tail events, such as the wildfires that PG&E faced. As with any risk, one needs to consider the underlying distribution of potential outcomes. Scientists are repeatedly warning that climate change is happening faster than previously forecast, and therefore that the world will face catastrophic effects sooner than expected. Investors may view climate risk as difficult to quantify for any specific utility company given the difficulty in predicting which utilities may be impacted by climate disasters. The combination of these factors may be causing investors to discount these risks in their valuations. While utilities (and other sectors) may not be in imminent danger of bankruptcy, the "tail" risk in the climate risk distribution may be considerably greater than is currently being priced by capital markets. As the California situation suggests, the probability of high-consequence events is increasing.

It is likely that each of the explanatory factors identified above are contributing in some measure to investor outlooks on climate risk. This discussion naturally raises important questions about market efficiency and climate change risk in financial markets. Investor appreciation of climate risk is a complex subject, and there is an expanding field of research that examines market pricing of climate change risk. Examples of such research include a 2019 paper led by Columbia University economics professor Harrison Hong, which analyzed publicly traded food equities and concluded that these securities have underreacted to climate change risks such as droughts. A 2018 Society of Actuaries study examined trading

dynamics around the introduction of emissions trading schemes and concluded that "Carbon and climate change risks have not been fully recognized and priced by the stock markets in Europe and North America." With respect to the real estate market, a 2018 paper found that houses projected to be underwater in climate change "believer" neighborhoods tend to sell at a discount compared to houses in neighborhoods with a high percentage of climate change deniers. A summary of additional literature on pricing of climate risk is available in Appendix A. Most, though not all, of the analyses reviewed have found instances of market inefficiency. Few studies have evaluated efficient pricing of climate risk among utilities. One notable exception is an analysis from Blackrock Sustainable Investing which examines utility equities and points to evidence of price inefficiencies arising from extreme weather events.[39] Additional research will be required to assess the full range and weighting of the relevant factors, however, it seems likely that some degree of climate risk mispricing is occurring in the utility sector.

POLICY TAKEAWAYS

It's not obvious that there is widespread climate-driven solvency risk in the utility sector at present. However, climate research indicates quite clearly that these risks will increase. Utilities and the cities and towns that they serve need to begin investing large amounts of capital now to mitigate climate damage, adapt to inevitable adverse climate effects, and avoid even higher costs that will result from delay. California has found itself on the front lines of this issue. As the risks of hurricanes, wildfires, extreme temperatures, and sea level rise become more pronounced and more likely, regulators throughout the United States will need to grapple with the same issues confronting California. Policy makers will need to create more comprehensive frameworks to allocate risks and costs among the various stakeholders. California's recent legislation provides a framework that other states can build upon. The bill aims to implement several constructive key principles:

1. *Strengthening Regulatory and Corporate Climate Resilience Expertise and Climate Planning Requirements*

   The California framework sets an example for cultivating deep climate risk expertise among regulators and government agencies. The recent legislation establishes a safety advisory board, situated within the California Public Utility Commission, which will review utilities' comprehensive wildfire mitigation plans every three years. To our knowledge, this is the first such wildfire safety board established by a public utility commission. States prone to storms and hurricanes have implemented infrastructure hardening and storm resiliency planning requirements (e.g., recent legislation in Florida and an ongoing Hurricane Sandy response in New York). But California's plan goes further by specifying required mitigation measures and establishing a dedicated commission of experts to review safety plans. Other climate-vulnerable states could benefit from adapting aspects of this approach to safety planning, particularly those prone to wildfires that could learn from sharing of best practices on fire mitigation. California—and others—should ensure the effectiveness of safety review boards by providing adequate compensation to attract the necessary level of expertise.

   An important caveat to the merits of the wildfire mitigation planning efforts is that part of the approach to risk reduction includes exercise of public safety power shut-off actions, known as deenergization policy. According to the CPUC, deenergization may be used as "a preventative measure of last resort if the utility reasonably believes that there is an imminent and significant risk that strong winds may topple power lines or cause major vegetation-related issues leading to increased risk of fire."[40] The extent to which PG&E and the other California IOUs will need to rely on shutting off power to customers is not clear. Neither is it apparent how vulnerable customers, such as the young, elderly, and those with electrical medical equipment, will be considered in a deenergization event. Using all available technical and regulatory tools to prevent wildfires is critical, but it should be noted that frequent disruptions could threaten the fundamental principle of the regulatory bargain that utilities provide acceptable,

reliable service. Indeed, this may be one way in which climate change contributes to the utility "death spiral." In the deenergization case, frequent outages may degrade the utility's quality of service, resulting in load defection from customers who can procure alternatives in the form of distributed resources (e.g., rooftop solar and home battery systems). Remaining customers (who are typically more financially constrained) are left paying higher rates, which encourages further defections

2. *Mandating Preventative Investment for Access to Cost-Recovery Mechanisms*

   A clear strength of the California legislation is that preventative measures are a prerequisite to access the wildfire insurance fund. The bill requires that utilities maintain a current safety certification based upon the wildfire advisory board's review of multiannual wildfire safety plans. In the event of a wildfire affecting a particular IOU, the onus will be on the utility to demonstrate that it acted reasonably in order to access the state's insurance fund. However, any utility holding a safety certification will be considered to have acted reasonably unless another party can raise "serious doubt" about the company's prudency—a baseline for prudent management outlined by the Federal Energy Regulatory Commission.[41] While the ability for parties to raise doubts places some burden on utilities to defend their conduct, the introduction of this standard is seen by many as providing more protection for utilities than was previously the case.

   Some regulators have already implemented requirements mandating preventative investments. In June 2019, for example, Florida governor Ron DeSantis signed a law requiring the state's utilities to submit storm protection plans covering a 10-year planning period. Storm protection plans approved by the public utility commission may then be funded by a dedicated on-bill charge, separate from base rates. Unlike California's proposed legislation, the new Florida law allows utilities to earn a return on equity invested in approved storm planning activities.[42] New York state has also implemented storm recovery requirements under which the Public Services Commission (PSC) can fine utilities for failure to maintain service following a storm.[43] However, while the program is a progressive step toward performance-based utility regulation, it is not directly aimed at reducing the costs of climate-driven damage to utility infrastructure. Establishing a link between preventative measures and cost recovery, as the California bill does, is a sensible requirement that appropriately incentivizes utilities to take necessary steps to avoid or mitigate damages. The requirement should be good news for both shareholders and ratepayers, as preventative investments in the near term should prevent considerably higher expense from future fires.

3. *Defining Utility Financial Exposure to Reduce Investor Uncertainty*

   The investment community had expressed significant concern with the original California framework, given the potential for the state's investor-owned utilities to face uncapped wildfire liabilities, even when found to have operated prudently. While this risk had been present for quite some time, the severity of the 2017 and 2018 wildfires underscored the large magnitude of the risk and brought the issue to the forefront of investor consciousness. It also attracted the attention of the credit rating agencies, with S&P threatening to downgrade all of the state's utilities to junk status if a new

regulatory framework were not adopted.[44]

The new legislation does not eliminate risk to shareholders, but it does more clearly define the magnitude of utilities' financial exposure to wildfires via the following framework:

- If a utility is found to have acted prudently, it can pay out wildfire damage claims using money from the $21 billion wildfire fund and is not required to replenish the fund.
- If a utility is found to have acted imprudently, it may still use money from the fund to pay out wildfire claims, however it must then replenish the fund up to a cap calculated as 20 percent of that utility's equity transmission and distribution rate base. This amount will vary for each of the IOUs, but PG&E's cap equates to approximately $2.4 billion.[45]
- If a utility is found to have operated in a "conscious or willful disregard of the rights and safety of others," then there is no cap on the amount it may be required to reimburse the fund.
- If a utility is "the subject of an insolvency proceeding," the company may only use the fund to pay 40 percent of its claims.

Relative to the previous regulatory framework, this provision is beneficial for investors and will help ensure that utilities have access to low-cost capital needed to make resiliency and renewables investments at reasonable terms.

It should be noted that paragraph 2, above, which caps investor liability even in cases of imprudence, is not without controversy. This limited liability framework represents a risk transfer from investors to ratepayers and in isolation would lessen the utilities' incentive to make meaningful investments to reduce wildfire risk. There are, however, other aspects of the California legislation that incentivize utilities to proactively address wildfire risk, so it does not seem like the financial liability cap is likely to create a moral hazard.[46]

4. *Providing Liquidity and Enabling Utilities to Provide Essential Services When Facing Large Disasters*

Although it is vitally important to create accountability for mismanagement and inattention to the serious risks created by wildfires and other climate-related incidents, bankrupting the nation's utilities is in no one's best interest. Higher financing costs lead to higher electric bills paid by ratepayers, threaten recovery for victims, reduce states' abilities to make resiliency and renewable investments, and create uncertainty for employees and contractors.[47] Unlike existing reserve funds set aside for disaster cost recovery, the scale of funding in the California legislation is intended to ensure liquidity in the case of large potential liabilities. If indeed climate change promises to bring larger, more frequent extreme weather disasters, then planning to keep utilities financially stable through such events seems prudent (where companies have acted reasonably). While some regulators have established performance-based requirements for utilities to minimize downtime after storms, these requirements relate to immediate

operational performance. Securing reliable service in the longer term will be helped, in part, by keeping utilities solvent during periods of crisis.

Although largely a positive step forward, the California legislation falls short in certain respects, and these potential weaknesses may also be informative to policy makers and regulators in other states.

5. *Setting Aside Large Reserves for Future Damages Will Result in Higher Electricity Rates*

   The creation of the wildfire fund requires ratepayers to contribute $10.5 billion. These funds will be raised by an extension of a "Department of Water Resources" charge that customers in California are already paying. While this will not cause rates to rise in absolute terms, this charge was originally set to expire in 2021, so AB 1054 will lead to higher rates than would otherwise have been in place. As University of California, Berkeley economist Meredith Fowlie points out, California's retail rates are already high and have been rising faster than inflation since 2013.[48] However, it is difficult to know what the ratepayer impact would have been without the new legislative framework. Absent a comprehensive policy response to the wildfire risk, California IOUs would likely have faced credit rating downgrades, increasing their cost of capital. This higher cost of capital would then have been passed on to ratepayers. The Utility Reform Network (TURN), a large California consumer advocacy group, did ultimately express support for the bill, although its support appeared tepid, with the organization stating that it "made a political calculation that AB 1054 was the best alternative on the table."[49]

   Across the country, natural disasters worsened by climate change will increasingly be the norm. In addition to retrospective cost recovery, investment in preventative measures requires that electricity rates increase in the short term to prevent higher damages in the long term.[50] In jurisdictions where such preventative investments have been approved, consumer groups have often opposed resulting rate hikes.[51] The political and social effects of raising customer rates now to mitigate future costs will continue to be a defining tension in the development of regulatory policy to address utility climate risk. Proactive planning before climate damages occur can allow regulators to carefully develop frameworks that minimize rate increases rather than making reactive policy in a politically charged environment.

6. *Disallowing a Return on Safety-Related Spending Does Not Incentivize Investment*

   California policy makers were faced with a difficult set of political and economic trade-offs as they attempted to allocate the risks and costs of unprecedented wildfires exacerbated by climate change. And they deserve credit for moving proactively to address this situation. However, if the legislation's goal is to lower the risk of future disasters, it is unfortunate that the bill explicitly prohibits a return on equity for the first $5 billion of safety-related investments executed by the state's utilities. While California utilities have additional incentives to pursue climate damage prevention, regulators in other states could more effectively incentivize timely investment in resiliency, hardening, and safety-related projects by providing a financial benefit. Investor-owned utilities have a duty to their shareholders in addition to their duty to serve and ultimately will

allocate capital with this in mind. Rather than eliminating a reasonable return on these desirable investments, the state could have authorized an attractive return in order to incentivize the utility companies to prioritize their capital investments toward these types of projects and to even aggressively invest beyond the $5 billion target. The FERC has in the past used ROE "adders" to incentivize investment in certain high-priority transmission projects; a similar approach could be warranted here. Alternatively, the commission could consider implementing a fast-tracked "rider" recovery mechanism that allows the utilities to earn an accelerated and de-risked cash return on designated safety or resiliency investments. If the government wants to penalize the utilities for wildfire mismanagement, there are better options available that don't distort the incentive for utilities to make much-needed safety and resiliency investments.

7. *Potential Insufficiency of Funds Creates Uncertainty about Future Cost Allocation*

   Hopefully, the robust wildfire mitigation measures enacted in the recent legislation will reduce the frequency and severity of the state's wildfires relative to recent history. However, there is a mix of opinion within the financial community as to whether the $21 billion fund may prove adequate if current trends persist. PG&E has estimated that its exposure to the 2018 Camp Fire and the 2017 Northern California fires could be in excess of $30 billion—a figure that does not include potential punitive damages, fines, and penalties or damages related to future claims.[52] Moreover, this figure excludes a variety of fires that occurred over the past two years in other parts of California outside of PG&E's service territory. Utilities do carry large amounts of insurance coverage (e.g., PG&E held $1.4 billion in insurance for wildfires),[53] and as noted, they must shoulder costs equaling 20 percent of their equity transmission and distribution rate base before accessing the fund in cases of imprudency. It is also possible that the fund may seek some amount of reinsurance to increase the effective size of the fund. However, even if these factors increase the effective size of the fund to greater than $30 billion, it is possible that the fund could be exhausted relatively quickly in the event of severe fires. Should the wildfire fund be depleted, it is unclear how future contributions would be handled, but both shareholders and ratepayers can expect to feel more economic pain.

8. *Failing to Reform Inverse Condemnation Perpetuates Risks for Companies and Ratepayers*

   While PG&E may have been held liable for the 2018 Camp Fire even without inverse condemnation, this uncommon legal principle is not constructive. The governor's strike force initially listed "Changing Strict Liability to a Fault-Based Standard" as a potential option in its April 2019 report; unfortunately this was not enacted in the final legislation. Holding a utility responsible for massive property damages when the company is determined to have operated prudently and in good faith results in several unintended consequences:

   - It creates liquidity and other financial difficulties for IOUs even if they are ultimately allowed to recover the costs. This is because cost recovery often takes years and creates considerable uncertainty that is reflected in their share prices and borrowing costs.

- It leads to higher utility rates than would otherwise have been in place by shifting the burden of wildfire liabilities to utility companies even when they are found to have operated prudently. Since customer rate levels often act as an indirect "governor" on utility capital investment, inverse condemnation crowds out other essential grid modernization and renewables investments.
- It causes a significant risk transfer from insurance companies and uninsured property owners onto utilities and ratepayers. This implicit subsidy has the unintended consequence of encouraging even greater development along the wildland-urban interface, further exacerbating the wildfire problem.

CONCLUSION

If the first climate change bankruptcy is indicative of a new reality, it is not that utilities are going to go bankrupt overnight. Rather, climate disasters will increasingly add financial stress to all utility-sector stakeholders as costs accumulate from both acute events and damaging extreme weather impacts.

In most cases, when competitive markets identify a risk, they allocate that risk to companies in the form of increased capital costs or even withholding of capital where risks are extreme or existential. In a climate context, higher capital costs provide a market-based incentive for a company to mitigate its climate exposure. Some companies can even shift their business model or exit the market entirely.

It may be desirable for companies in other carbon-intensive sectors to face higher capital costs and to consider altering their business models. In the utility sector, however, it is not clear this would be beneficial. If this were to occur, it could disrupt electricity delivery, raise customer rates, and prevent utilities from making critical grid modernization and renewables investments. Neither is it appropriate for utilities and their shareholders to be immune from costs incurred due to underinvestment in climate mitigation. It is this balance between accountability and preservation of financial stability that is specific to managing climate risk in an industry that provides a public good on a commercial basis.

Permanently higher electricity bills may be an inevitable consequence of climate change. As the California wildfire situation demonstrates, the cost of climate damages is already stretching electricity customers; future demands may be overwhelming. Large-scale investment in preventative measures is required now to avoid even more dramatic damage later. One estimate puts the current investment shortfall in climate risk in the utility sector at $107 billion by 2020.[54]

Overall, the current cost-recovery system is not designed to encourage investment on the scale that is required to comprehensively address climate risk. California's recent legislation, which allocates these costs among different stakeholder groups, is a first test case of how society will apportion the costs of climate change. Adapting the regulatory bargain for a climate-exposed future will require lawmakers, regulators, and shareholders to develop new approaches and new incentive structures to ensure an accountable, robust utility sector. Moreover, while climate change is already presenting real financial challenges to utilities, it will not be the only sector to face large climate-driven costs. Other corporate actors can look to the utility experience to better understand how policy makers, investors, and companies will respond to the growing financial threat from climate change.

APPENDIX

Publication	Study	Author(s)	Date Pub.	Type of Study	Abstract
SSRN	*Do Investors Care about Carbon Risk?*	Patrick Bolton, Marcin T. Kacperczyk	7/2019	Academic	This paper explores whether carbon emissions affect the cross-section of U.S. stock returns. We find that stocks of firms with higher CO2 emission intensity earn higher returns, after controlling for size, book-to-market, momentum, and other factors that predict returns. We cannot explain this carbon premium through differences in unexpected profitability or other known risk factors. There is a striking and robust difference in the carbon premia for direct (scope 1 & 2) emissions and indirect (scope 3) emissions. While the former can be explained by industry factors, the latter cannot. We also find that institutional investors implement exclusionary screening based on scope 1 & 2 but not scope 3 emissions. These results are consistent with an explanation based on local thinking or sparse modeling of carbon emissions. Although investors do appear to be aware of risks associated with carbon emissions, they do not precisely map the source of these risks across industries and firms.
Financial Analysts Journal	*Hedging Climate Risk*	Mats Andersson, Patrick Bolton, Frédéric Samama	9/2014	Academic	We present a simple dynamic investment strategy that allows long-term passive investors to hedge climate risk without sacrificing financial returns. We illustrate how the tracking error can be virtually eliminated even for a low-carbon index with 50% less carbon footprint than its benchmark. By investing in such a decarbonized index, investors in effect are holding a "free option on carbon." As long as climate change mitigation actions are pending, the low-carbon index obtains the same return as the benchmark index; but once carbon dioxide emissions are priced, or expected to be priced, the low-carbon index should start to outperform the benchmark.
Journal of Econometrics	*Climate Risks and Market Efficiency*	Harrison Hong, Frank Weika Li, Jiangmin Xu	5/2016	Academic	Climate science finds that the trend towards higher global temperatures exacerbates the risks of droughts. We investigate whether the prices of food stocks efficiently discount these risks. Using data from thirty-one countries with publicly-traded food companies, we rank these countries each year based on their long-term trends toward droughts using the Palmer Drought Severity Index. A poor trend ranking for a country forecasts relatively poor profit growth for food companies in that country. It also forecasts relatively poor food stock returns in that country. This return predictability is consistent with food stock prices underreacting to climate change risks

SSRN	*Hedging Climate Change News*	Robert Engle, Stefano Giglio, Heebum Lee, Bryan Kelly, Johannes Stroebel	5/2019	Academic	We propose and implement a procedure to dynamically hedge climate change risk. We extract innovations from climate news series that we construct through textual analysis of newspapers. We then use a mimicking portfolio approach to build climate change hedge portfolios. We discipline the exercise by using third-party ESG scores of firms to model their climate risk exposures. We show that this approach yields parsimonious and industry-balanced portfolios that perform well in hedging innovations in climate news both in sample and out of sample. We discuss multiple directions for future research on financial approaches to managing climate risk.
Journal of Business Finance & Accounting	*Climate Change and Asset Prices: Are Corporate Carbon Disclosure and Performance Priced Appropriately?*	Andrea Liesen, Frank Figge, Andreas Hoepner, Dennis M. Patten	8/2016	Academic	This paper empirically assesses the relevance of information on corporate climate change disclosure and performance to asset prices, and discusses whether this information is priced appropriately. Findings indicate that corporate disclosures of quantitative greenhouse gas (GHG) emissions and, to a lesser extent, carbon performance are value relevant. We use hand-collected information on quantitative GHG emissions for 433 European companies and build portfolios based on GHG disclosure and performance. We regress portfolios on a standard four factor model extended for industry effects over the years 2005 to 2009. Results show that investors achieved abnormal risk-adjusted returns of up to 13.05% annually by exploiting inefficiently priced positive effects of (complete) GHG emissions disclosure and good corporate climate change performance in terms of GHG efficiency. Results imply that, firstly, information costs involved in carbon disclosure and management do not present a burden on corporate financial resources. Secondly, investors should not neglect carbon disclosure and performance when making investment decisions. Thirdly, during the period analysed, financial markets were inefficient in pricing publicly available information on carbon disclosure and performance. Mandatory and standardised information on carbon performance would consequently not only increase market efficiency but result in better allocation of capital within the real economy.
Journal of Financial Economics	*An Inconvenient Cost: The Effects of Climate Change on Municipal Bonds*	Marcus Painter	5/2018	Academic	Counties more likely to be affected by climate change pay more in underwriting fees and initial yields to issue long-term municipal bonds compared to counties unlikely to be affected by climate change. This difference disappears when comparing short-term municipal bonds, implying the market prices climate change risks for long-term securities only. Higher issuance costs for climate risk counties are driven by bonds with lower credit ratings. Investor attention is a driving factor, as the difference in issuance costs on bonds issued by climate and non-climate affected counties increases after the release of the 2006 Stern Review on climate change.

Business & Society Journal	*Climate Change and Financial Market Efficiency*	Andrea Liesen	11/2014	Academic	The dissertation examines the informational efficiency of financial markets to price the systematic risk stemming from climate change for European companies. The abstract provides an overview of the underlying theory, introduces the development of hypotheses, the method applied, and data gathered, as well as selected implications of results. The reflection commentary discusses the author's views of the research process as a junior scholar.
Swiss Finance Institute	*The Importance of Climate Risks for Institutional Investors*	Philipp Krueger, Zacharias Sautner, Laura T. Starks	12/2018	Academic	According to our survey regarding climate-risk perceptions, institutional investors believe these risks have financial implications for their portfolio firms and that the risks have already begun to materialize, particularly regulatory risks. Many of the investors, especially the long-term, larger and ESG-oriented investors, consider risk management and engagement, rather than divestment, to be the better approach for addressing climate risks. Although the investors believe that some equity valuations do not fully reflect climate risks, their perceived overvaluations are not large. In addition, a widespread view exists that climate-risk disclosure needs improvement.
Review of Financial Studies	*Does Climate Change Affect Real Estate Prices? Only If You Believe in it*	Markus Baldauf, Lorenzo Garlappi, Constantine Yannelis	11/2018	Academic	Scientists agree that climate change will have a significant impact on U.S. coastal regions, yet beliefs among the general population on its occurrence and effects are divided. In this paper we study, both theoretically and empirically, whether real estate valuations reflect these differences in beliefs. We develop a model of housing choice in which agents derive utility from ownership in a neighborhood of similar agents. In equilibrium, agents endogenously sort by belief into geographically distinct neighborhoods. In our empirical analysis, we construct a comprehensive dataset on home transaction prices in the U.S. that maps individual homes to future inundation projections and survey data on beliefs of U.S. population about climate change. Our analysis shows that houses projected to be underwater in "believer" neighborhoods tend to sell at a discount compared to houses in "denier'' neighborhoods. This result is robust to a host of empirical specifications that account for variation in climate change awareness over time, salience of flood risk, and house supply effects. Our results suggest that heterogeneity in beliefs about long-run climate change risks are reflected in U.S. real estate market prices.

Review of Financial Studies	*Do Fund Managers Misestimate Climatic Disaster Risk?*	Shashwat Alok, Nitin Kumar, Russ Wermers	7/2019	Academic	We examine whether professional money managers overreact to large climatic disasters. We find that managers within a major disaster region underweight disaster-zone stocks to a much greater degree than distant managers, and that this aversion to disaster-zone stocks is related to a salience bias that decreases over time and distance from the disaster – rather than to superior information possessed by close managers. This overreaction can be costly to fund investors for some especially salient disasters – hurricanes and tornadoes: a long-short strategy that exploits the overreaction generates a significant DGTW-adjusted return over the following two years.
BlackRock Sustainable Investing	*Climate Risk in the US Electric Utility Sector: A case study*	Andre Bertolotti, Debarshi Basu, Kenza Akallal and Brian Deese	3/2019	Industry	By measuring climate related risks through the study of physical risks posed by extreme weather, we test our hypothesis that these risks are already embedded into security prices. Through event studies of the US Utility sector, we find that prices anomalies in the range of 1.5% and option volatility shocks of 6% exist in connection with hurricanes while for wildfires, prices change by 1% and option volatilities surge by about 4% in the 30-day period following an event. We propose that efficient markets would not exhibit such a behavior because investors would quickly incorporate climate risks into security prices. Yet, we repeatedly find that price inefficiencies persist around extreme weather events, suggesting that investors continue to overlook this type of risk.
BlackRock Investment Institute	*Getting Physical: Assessing Climate Risks*	Ashley Schulten, Andre Bertolotti, Peter Hayes, Amit Madaan	4/2019	Industry	BlackRock's collaboration with Rhodium Group combines our asset-level expertise with the latest climate science and big-data capabilities. The result — generating some 160 terabytes of data — is a granular picture of investment-relevant physical climate risks. We can now assess direct physical risks to assets on a local level — today and under different future climate scenarios. We can also estimate knock-on effects, such as the impact on energy demand, labor productivity and economic activity. These tools give us unique insight into the severity, dispersion and trajectory of climate-related risks. This helps us assess whether the risks are adequately priced by markets. Our early findings suggest investors must rethink their assessment of vulnerabilities. Weather events such as hurricanes and wildfires are underpriced in financial assets, including U.S. utility equities. A rising share of municipal bond issuance is set to come from regions facing climate-related economic losses. And many high-risk commercial properties are outside official flood zones.

Mercer Corporate Report	*Investing in a Time of Climate Change - The Sequel*	Mercer	4/2019	Industry	The Sequel is intended to help investors understand how climate change can influence their investment performance in both the short and long term and what steps they should take to protect and position portfolio assets. Given climate related physical damages under higher-warming scenarios, we encourage investors to adopt a "Future Maker" approach, a term coined in the 2015 Report. Advocating for and creating the investment conditions that support a "well-below 2-C scenario" outcome through investment decisions and engagement activities is most likely to provide the economic and investment environment necessary to pay pensions, endowment grants and insurance claims over the timeframes required by beneficiaries.
Mercer Corporate Report	*Trillion Dollar Transformation – Climate Change Investment Risk Management for US Public Defined Benefit Plan Trustee*	Mercer / Center for International Environmental Law	10/2016	Industry	The purpose of this paper is to provide an overview of climate change investment risks and opportunities for US public pension trustees, and introduce both quantitative and governance frameworks that trustees can use to approach climate change as an investment risk (as opposed to a nebulous uncertainty) and inform related tangible actions. This paper is a companion piece to the Center for International Environmental Law's concurrently released report Trillion Dollar Transformation: Fiduciary Duty, Divestment, and Fossil Fuels in an Era of Climate Risk.
The Institutional Investors Group on Climate Change (IIGCC)	*Navigating Climate Scenario Analysis*	Vicki Bakhsh et al.	11/2018	Industry	This guide aims to serve as a 'how-to guide' for institutional investors (asset owners and asset managers), who are beginning to construct and conduct scenario analysis. Building on previous work, including recent reports from the IIGCC4 and UN Principles for Responsible Investment (PRI)5, our aim is to go deeper into the options available for investors looking to undertake this type of analysis, with a focus on how to make it relevant to investment and ownership decisions. Ultimately, we believe scenario analysis can support a culture change within the investment community – where investment decision-makers at all levels take into account the profound systemic and broader macroeconomic effects of climate change as a normal part of their strategic thinking and investment analysis.
BlackRock Investment Institute	*Adapting Portfolios to Climate Change*	Philipp Hildebrand et al.	9/2016	Industry	Investors can no longer ignore climate change. Some may question the science, but all are faced with a swelling tide of climate-related regulations and technological disruption. We show how to mitigate climate risks, exploit opportunities or have a positive impact.

UBS Asset Management	*A Climate primer - an investor's introduction to climate change*	Michael Baldinger, Francis Condon	12/2018	Industry	Climate change is one of the most pressing concerns which investors currently face. And for investee companies, climate transition is a material consideration. Nonetheless, there are means by which investors, even those who are new to investing for climate change, can approach the topic and strategies already exist which allow them to manage their exposure to climate change within their chosen risk return profile. Finally, both asset managers and asset owners have the capability to drive positive long-term change by engaging with companies to influence their business models and activities as they impact on climate transition.
University of Cambridge - Institute for Sustainability Leadership	*Unhedgeable risk: How climate change sentiment impacts investment*	Dr Andrew Coburn et al.	11/2015	Interdisci-plinary	Short-term shifts in market sentiment induced by awareness of future, as yet unrealised, climate risks could lead to economic shocks, causing substantial losses in financial portfolio value within timescales that are relevant to all investors. This research shows that changing asset allocations among various asset classes and regions, combined with investing in sectors exhibiting low climate risk, can offset only half of the negative impacts on financial portfolios brought about by climate change. Climate change thus entails "unhedgeable risk" for investment portfolios.
Society of Actuaries	*Managing Climate and Carbon Risk in Investment Portfolios*	Ken Seng Tan, Tony S. Wirjanto, Mingyu Fang	2/2018	Interdisci-plinary	This research focuses on analyzing and managing climate change and carbon risk in the equity investment portfolios of insurance company and pension fund assets. The following findings and contributions are elaborated in this final report: There is a general lack of attention devoted to climate change and carbon risk from an investment perspective, and existing methods for managing the risk are heavily based on divestment from emission-heavy industries and investment in green instruments; Carbon and climate change risks have not been fully recognized and priced by the stock markets in Europe and North America;Drawing from findings from this research as well as established methods in existing studies, we propose a framework for constructing an optimal portfolio with effectively mitigated climate change and carbon risk.

NOTES

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24. Using Bloomberg's default CDSW valuation assumptions, five-year CDS prices imply default probabilities of just 4–8 percent for a randomly selected group of 10 regulated utility companies.
25. While beyond the scope of this paper, this premium may also reflect other factors such as

investors shifting portfolio allocations toward more recession-defensive sectors, including utility shares.

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27. Causing a climate event, in this case, refers to utility equipment actually sparking wildfires, which is not possible in the context of hurricanes or flooding, for example. A more expansive definition of climate damage culpability could arise in the future, as is evident in legal proceedings against fossil fuel energy companies (including utilities). For additional information, see Jennifer Hijazi, "Climate Liability Is on the Rise. Here's What It Looks Like," E&E News, August 5, 2019, https://www.eenews.net/climatewire/2019/08/05/stories/1060850731.

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GOING CONCERNS AND ENVIRONMENTAL CONCERNS: MITIGATING CLIMATE CHANGE THROUGH BANKRUPTCY REFORM

ALEXANDER GOUZOULES

GOING CONCERNS AND ENVIRONMENTAL CONCERNS: MITIGATING CLIMATE CHANGE THROUGH BANKRUPTCY REFORM

ALEXANDER GOUZOULES*

Abstract: This Article examines how legislative reforms to the Bankruptcy Code could mitigate the effects of climate change, speed the adoption of renewable energy, and contribute to the United States' compliance with the Paris Agreement of 2015. This Article analyzes the benefits derived by the fossil fuel industry from Chapter 11 of the Bankruptcy Code, which allows firms that extract fossil fuels to survive boom-and-bust cycles caused by volatile oil and gas prices. Through reorganization proceedings, insolvent polluters are preserved as going concerns during price collapses, only to resume and expand production as prices recover. This Article proposes novel legislative reforms to the Bankruptcy Code that would require insolvent fossil fuel producers to liquidate under Chapter 7 rather than reorganize under Chapter 11. These proposed reforms would also mandate the appointment of an environmental trustee during these liquidation proceedings, whose considerations would focus on the public interest. The public interest would weigh in favor of reserving certain assets for climate remediation, rather than selling them to other extractive firms for the benefit of creditors. In anticipation of the objection that climate policy is a non-bankruptcy matter that should be resolved outside of bankruptcy, this Article explores models for these proposals in existing insolvency law. Under the Securities Investor Protection Act and accompanying bankruptcy provisions, stockbrokers are required to liquidate rather than reorganize to protect the investing public. In railroad bankruptcies, special trustees and judicial consideration of the public interest have long been required, primarily due to the historical significance of railroads in the U.S. economy. Finally, the bankruptcy system has reorganized entities responsible for mass torts into those able to mitigate the harms they once imposed. This Article advances legislative reforms to the Bankruptcy Code that would enable it to address the key societal goal of combatting climate change by bringing the treatment of insolvent fossil fuel firms more in-line with the Code's treatment of entities in the critical industries identified above.

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INTRODUCTION

This Article was drafted during a catastrophic summer. Research began while the author was displaced from New Orleans by Hurricane Ida, a storm that grew to monstrous proportions fueled by the warming waters of the Caribbean.[1] Ida's rampage, which caused flooding deaths as far from the Gulf as New York City,[2] closed a summer that also saw temperatures reach a staggering 112 degrees Fahrenheit in Portland, Oregon.[3] It was a season punctuated by devastating wildfires in Greece, Algeria, Turkey, Canada, and the United States,[4] as well as unusually intense flash flooding in Germany and China.[5] In the American west, a years-long drought produced an unprecedented shortage of water from the Colorado River, triggering a federal reduction of allowances for several states.[6] Catastrophes like these are exacerbated by a warming climate,[7] a trend induced by an increase in atmospheric greenhouse gas concentrations that is "unequivocally" linked to human activity.[8]

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[1] *E.g.*, Sarah Kaplan, *How Climate Change Helped Make Hurricane Ida One of Louisiana's Worst*, WASH. POST (Aug. 30, 2021), https://www.washingtonpost.com/climate-environment/2021/08/29/how-climate-change-helped-make-hurricane-ida-one-louisianas-worst/ [https://perma.cc/24RW-ZWCY].

[2] Andy Newman, *43 Die as Deadliest Storm Since Sandy Devastates the Northeast*, N.Y. TIMES, https://www.nytimes.com/2021/09/02/nyregion/ida-flooding-nyc.html [perma.cc/EQ9S-W9TX] (Sept. 3, 2021).

[3] Neil Vigdor, *Pacific Northwest Heat Wave Shatters Temperature Records*, N.Y. TIMES, https://www.nytimes.com/2021/06/27/us/heat-wave-seattle-portland.html [https://perma.cc/N4JP-U3EH] (June 29, 2021).

[4] Niki Kitsantonis, *After a Long Battle, Firefighters Contain Some Wildfires in Greece*, N.Y. TIMES, https://www.nytimes.com/2021/08/12/world/europe/greece-fires-update.html [https://perma.cc/K5A6-KEUT] (Oct. 29, 2021); Doyle McManus, *California and the West Aren't Alone; Canada's Northern Forests Are on Fire, Too*, L.A. TIMES (Aug. 8, 2021), https://www.latimes.com/politics/story/2021-08-08/california-west-not-alone-canadas-northern-forests-on-fire-too [https://perma.cc/DS8X-Q3W7].

[5] Max Rust, *Climate-Change Report Points to Rise of Flash Flooding*, WALL ST. J. (Aug. 10, 2021), https://www.wsj.com/articles/climate-change-report-points-to-rise-of-flash-flooding-11628609644 [https://perma.cc/8YVY-4Q97].

[6] Jim Carlton, *Colorado River Water Shortage Forces First-Ever Cutback to Southwest States*, WALL ST. J. (Aug. 16, 2021), https://www.wsj.com/articles/drought-forces-first-ever-colorado-river-water-cutback-to-southwest-states-11629145001 [perma.cc/YBM6-TGKS].

[7] *E.g.*, Thomas Knutson, Suzana J. Camargo, Johnny C.L. Chan, Kerry Emanuel et al., *Tropical Cyclones and Climate Change Assessment: Part I: Detection and Attribution*, 100 BULL. AM. METEOROLOGICAL SOC'Y 1987, 1987, 2001 (2019); Michael Goss, Daniel L. Swain, John T. Abatzoglou, Ali Sarhadi et al., Letter, *Climate Change Is Increasing the Likelihood of Extreme Autumn Wildfire Conditions Across California*, ENV'T RSCH. LETTERS, no. 9, 2020, at 1, 2.

[8] Richard P. Allan, Paola A. Arias, Sophie Berger, Josep G. Canadell et al., *2021 Summary for Policymakers*, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE [IPCC] 4 (2021), https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf [https://perma.cc/4K97-GC8E]; *see also* Massachusetts v. EPA, 549 U.S. 497, 508–09 (2007) (discussing findings from Congress and other international institutions that the release of greenhouse gases by human activity is contributing to changes in Earth's temperature); Jody Freeman & Andrew Guzman, Essay, *Climate Change and*

Though their commitments remain uncertain, national governments have pledged to curb greenhouse gas emissions to mitigate ongoing environmental degradation.[9] Most nations vowed in the Paris Agreement of 2015 to act to prevent a two-degree Celsius increase and to target an increase of no greater than 1.5 degrees.[10] In December 2021, President Biden set various targets for federal agencies and procurement processes in order to make the federal government a model for a carbonless electricity sector by 2035.[11] At least twenty-eight other countries have pledged to reach carbon neutrality by the middle of the twenty-first century.[12]

To realize these critical goals, the world must achieve net zero human-caused greenhouse gas emissions by around 2050.[13] Unfortunately, the planet remains on track for at least a three-degree Celsius increase,[14] and the consequences of this policy failure would be devastating.[15] Economic losses in this dire scenario could reach five to ten percent of global GDP.[16] Social and environmental losses would be worse. Even our transformation of the atmosphere to date—a "mere" one-degree Celsius increase in average global temperatures since the pre-industrial period[17]—has already increased precipitation over land, altered the track of storms, driven up sea levels, melted glaciers, and acidified

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U.S. Interests, 109 COLUM. L. REV. 1531, 1544–45 (2009) (discussing the "predominant scientific consensus" that human behavior has been the primary factor contributing to climate change).

[9] *See generally* Paris Agreement of the United Nations Framework Convention on Climate Change, Dec. 15, 2015, T.I.A.S. No. 16-1104 (committing parties to the agreement to mitigate climate change); *The Paris Agreement*, UNITED NATIONS, https://www.un.org/en/climatechange/paris-agreement [https://perma.cc/T4YL-VL89] (stating that 193 parties, including the European Union, signed the Paris Agreement, whereby parties agree to decrease greenhouse gas emissions in an effort to keep global temperature rise to well below two degrees Celsius over the next one hundred years).

[10] Paris Agreement of the United Nations Framework Convention on Climate Change, *supra* note 9, art. 2; *see The Paris Agreement*, *supra* note 9; *see also* United States v. California, No. 19-cv-02142, 2020 WL 4043034, at *3 (E.D. Cal. July 17, 2020) (stating the details of the Paris Agreement).

[11] *See* Exec. Order No. 14,057, 86 Fed. Reg. 70935 (Dec. 8, 2021).

[12] Zou Caineng, Xiong Bo, Xue Huaqing, Zheng Dewen et al., *The Role of New Energy in Carbon Neutral*, 48 PETROL. EXPL. & DEV. 480, 481–82 (2021); *see also* Smriti Mallapaty, *How China Could Be Carbon Neutral by Mid-Century*, 586 NATURE 482, 482–83 (2020) (discussing the proposed ways China can achieve its pledge "to become carbon neutral by 2060").

[13] RAYMOND MURPHY, THE FOSSIL-FUELLED CLIMATE CRISIS: FORESIGHT OR DISCOUNTING DANGER? 41 (2021).

[14] *Id.* at 4.

[15] *See, e.g.*, Freeman & Guzman, *supra* note 8, at 1547–63 (critiquing the leading models' estimates of climate change's impact on the United States' GDP and modifying the current predictive models to suggest notably worse impacts).

[16] *Id.* at 1548, 1555 (citing WILLIAM D. NORDHAUS & JOSEPH BOYER, WARMING THE WORLD 95–96 figs.4.3 & 4.4 (2000)). *See generally* DEMOCRATIC STAFF OF JOINT ECON. COMM., 115TH CONG., FAILING TO ADDRESS CLIMATE CHANGE THREATENS THE ECONOMY (2018) (assessing the likely economic costs of continued climate change).

[17] MURPHY, *supra* note 13, at 4.

the warming oceans.[18] Millions stand to be displaced by coastal land loss, flooding, and drought,[19] while extinctions have dramatically accelerated, now taking place at 100–10,000 times the background rate.[20]

Effective policy solutions are desperately needed, and thus far, the legal system's contributions have been underwhelming. In 2020, in *Juliana v. United States*, the U.S. Court of Appeals for the Ninth Circuit acknowledged that the federal government has encouraged fossil fuel utilization despite the government's awareness of the resulting effects on climate change, potentially accelerating environmental devastation.[21] Notwithstanding this recognition, the Ninth Circuit held that the judiciary lacked power to order the government to reduce fossil fuel emissions.[22] The federal government continues to lease public-owned land to producers for extraction,[23] extend its eminent domain power to private companies for the construction of pipelines,[24] and provide billions of

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[18] Allan et al., *supra* note 8, at 5.

[19] Freeman & Guzman, *supra* note 8, at 1546 (citing Richard B. Alley, Terje Berntsen, Nathaniel L. Bindoff, Zhenlin Chen et al., *Summary for Policymakers: A Report of Working Group I of the Intergovernmental Panel on Climate Change*, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE [IPCC] 12 (2007), https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg1-spm-1.pdf [https://perma.cc/3U2A-ZE53]).

[20] *See* Donald A. Levin, *Plant Speciation in the Age of Climate Change*, 124 ANNALS BOTANY 769, 769 (2019) (reporting that up to one third of all plant species are predicted to die by 2100, which represents an extinction rate that "exceeds the background rate of extinction by 1,000 to 10,000 times"); Gerardo Ceballos, Paul R. Ehrlich, Anthony D. Barnosky, Andrés García et al., *Accelerated Modern Human-Induced Species Losses: Entering the Sixth Mass Extinction*, SCI. ADVANCES, June 19, 2015, at 1, 1 (using conservative assumptions to estimate that the average vertebrate extinction rate is "up to 100 times higher than the background rate"); Jan Zalasiewicz, Mark Williams, Will Steffen & Paul Crutzen, *The New World of the Anthropocene*, 44 ENV'T SCI. & TECH. 2228, 2229 (2010) (arguing that extinction rates are currently estimated to be "100–1000 times greater than the background level" and are projected to continue to increase significantly by the end of the century); *see also* Karrigan Bork, *Governing Nature:* Bambi *Law in a* Wall-E *World*, 62 B.C. L. REV. 155, 214 (2021) (arguing that "[the] extinction rate is one or two orders of magnitude higher than the average rate over the last ten million years"). The background rate refers to the rate of extinction on the planet before humans started contributing to rate of extinction. *See* Zalasiewicz et al., *supra*, at 2229.

[21] 947 F.3d 1159, 1164 (9th Cir. 2020).

[22] *See id*. at 1164–65 (holding that federal courts do not have the power to issue an order "requiring the government to develop a plan to 'phase out fuel emissions'" (quoting Complaint for Declaratory and Injunctive Relief at 95, Juliana v. United States, 217 F. Supp. 3d 1224 (D. Or. 2015) (15-cv-01517-TC))).

[23] *See, e.g.*, WildEarth Guardians v. U.S. Bureau of Land Mgmt., 870 F.3d 1222, 1226 (10th Cir. 2017) (adjudicating a dispute where plaintiffs challenged the United States Bureau of Land Management's decision to approve the issuance of new coal leases in Wyoming).

[24] *See* 15 U.S.C. § 717f(h) (giving private "holder[s] of a certificate of public convenience and necessity" eminent domain power when necessary to construct a pipeline carrying natural gas); Mountain Valley Pipeline, LLC v. 6.56 Acres of Land, 915 F.3d 197, 208–09 (4th Cir. 2019) (recognizing a pipeline company's access to easements, which the company obtained through eminent domain powers granted by the Federal Energy Regulatory Commission). Eminent domain power is a government's power to take possession of privately owned land to use it for public purposes. *Eminent Domain*, BLACK'S LAW DICTIONARY (11th ed. 2019).

dollars each year in subsidies to fossil fuel companies.[25] The Endangered Species Act has not been updated to address what is by far today's most significant threat to biodiversity.[26] Attempts to hold greenhouse gas emitters accountable through litigation have achieved, at best, only modest success.[27]

Rather than making real progress, the United States has moved backwards. Reliance on natural gas, which accounted for 94% of new U.S. electric capacity developed from 1999–2004, becomes more environmentally destructive than coal power if the hydro-fracking process causes 3% or more of the methane to leak into the air.[28] Preliminary data estimates methane gas leak rates of 3.6%–7.9%, while leakage rates in some basins reached 9%.[29] In Massachusetts alone, 20,000 known leaks in the pipeline network account for eight to twelve billion cubic feet of methane entering the atmosphere each year.[30] Yet regulators have continued to approve the construction of new gas pipelines while declining to seriously consider arguments against their public utility.[31]

Perhaps most significantly, at the conclusion of the 2021 term, in *West Virginia v. EPA*, the U.S. Supreme Court rejected the contention that provisions in the Clean Air Act empower the EPA to limit greenhouse gas emissions to quantities that would expedite the nation's shift away from coal power.[32] The dissenting justices charged the majority of depriving the EPA of the power to answer to "the most pressing environmental challenge of our time."[33] Across

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[25] Lucas W. Davis, *The Economic Cost of Global Fuel Subsidies*, 104 AM. ECON. REV. 581, 581 n.1 (2014).

[26] *See generally* Kalyani Robbins, *The Biodiversity Paradigm Shift: Adapting the Endangered Species Act to Climate Change*, 27 FORDHAM ENV'T L. REV. 57, 61 (2015) (exploring the need for the Endangered Species Act to adapt to climate change's effect on biodiversity and proposing amendments that take a "proactive strateg[y] for endangered species management").

[27] *See* David Markell & J.B. Ruhl, *An Empirical Assessment of Climate Change in the Courts: A New Jurisprudence or Business as Usual?*, 64 FLA. L. REV. 15, 80–84 (2012) (discussing the "moderate" success that regulatory agencies have had in the courts with regard to authority over the drivers of climate change); Katrina Fischer Kuh, *The Legitimacy of Judicial Climate Engagement*, 46 ECOLOGY L.Q. 731, 734–44 (2019) (assessing the courts' reluctancy to engage in climate policy issues across different categories of climate litigation).

[28] STEVEN FERREY, LAW OF INDEPENDENT POWER, § 6:24 *Natural Gas*, Westlaw (database updated July 2022) (citing Bill McKibben, *Global Warming's Terrifying New Chemistry*, THE NATION (Mar. 23, 2016), https://www.thenation.com/article/archive/global-warming-terrifying-new-chemistry/ [https://perma.cc/Q294-MRHT]).

[29] *Id.*

[30] *Id.* (citation omitted).

[31] *See* Env't Def. Fund v. Fed. Energy Regul. Comm'n, 2 F.4th 953, 959–60 (D.C. Cir. 2021) (holding that the Federal Energy Regulatory Commission failed to consider nonfrivolous arguments which challenged the wisdom of the Commission's preferred outcome in granting a pipeline certificate).

[32] 142 S. Ct. 2587, 2615–16 (2022).

[33] *Id.* at 2626, 2641 (Kagan, J., dissenting) (quoting Massachusetts v. EPA, 549 U.S. 497, 505 (2007)).

the board, the legal system has an unfulfilled moral obligation to society and the planet.

With the goal of animating discussion of possible solutions (and particularly ones that do not rely entirely on the beleaguered administrative state), this Article explores how legislative reforms to the Bankruptcy Code could contribute to a highly overdue transformation of our energy sector.[34] As written, Chapter 11 of the Code encourages eligible debtors to reorganize themselves, a policy choice motivated by the assumption that insolvent firms are more valuable when preserved as going concerns rather than liquidated.[35] For fossil fuel companies, which are exposed to volatile prices[36] and characterized by boom-and-bust cycles,[37] Chapter 11 allows firms to survive insolvency during price declines and exit bankruptcy in time to profit from price spikes.[38] The wave of bankruptcies caused by the recent price collapse in 2020 followed by recoveries driven by price increases in 2021 amply demonstrate this trend.[39] This inherent volatility, which would otherwise constitute a significant market disadvantage of fossil fuels compared to renewables is smoothed out by the bankruptcy system, which benefits carbon-intensive industries and inhibits the needed transition to alternative sources.

This Article suggests that Congress should reexamine Chapter 11's underlying assumptions in situations where the debtor corporation's continued operation as a going concern would significantly contribute to greenhouse gas emissions, thereby impeding the public's interest in climate-change mitigation. It proposes specific, novel legislative reforms that would require bankrupt fossil fuel firms to liquidate rather than reorganize, while also mandating consideration of the public interest by a specially selected trustee during the liquidation proceedings. Together, these proposals would wind down—rather than reorganize—insolvent polluters, directing at least some assets toward climate remediation. By removing a bankruptcy support that helps prop up fossil fuel

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[34] This Article occasionally refers to the Bankruptcy Code as the "Code."

[35] Michael Bradley & Michael Rosenzweig, *The Untenable Case for Chapter 11*, 101 YALE L.J. 1043, 1043–44 (1992). A going concern exists where a firm continues operating indefinitely, without the prospect of liquidation in the future. Frank A. Corcell, *Going Concern*, 90 COM. L.J. 222, 222 (1985).

[36] *See, e.g.*, Christiane Baumeister & Lutz Kilian, *Forty Years of Oil Price Fluctuations: Why the Price of Oil May Still Surprise Us*, 30 J. ECON. PERSPS. 139, 140 (2016).

[37] *See* Shanti Gamper-Rabindran, *Conclusion: How and Why Countries Decide on Shale, and How They Can Make Better Decisions*, *in* THE SHALE DILEMMA: A GLOBAL PERSPECTIVE ON FRACKING AND SHALE DEVELOPMENT 387–88 (Shanti Gamper-Rabindran ed., 2018).

[38] *See infra* Figure 1 (displaying the top ten largest oil and gas company Chapter 11 bankruptcies in the first three quarters of 2020 and the firms' subsequent emergence from bankruptcy when energy prices recovered).

[39] *Id.*

firms during market downturns, these reforms would spur the adoption of less volatile, renewable power sources.[40]

Although this proposal might initially appear to be a radical departure from the underlying logic and principles of the bankruptcy system, it draws inspiration from existing and uncontroversial provisions of the Code. Stockbrokers and commodity traders are already required to liquidate in Chapter 7 rather than reorganize in Chapter 11—a policy choice primarily made to protect the investing public.[41] Further, mandatory consideration of public concerns in certain bankruptcy proceedings is a concept drawn from the historic and long-recognized special treatment of the railroad industry.[42] In railroad reorganization cases, trustees are required to consider, in addition to the narrow interests of the debtor, creditors, and equity holders, the public interest.[43] This doctrine is a product of the special significance and unique economic role that the railroad industry enjoyed in earlier eras.[44] The railroad industry received special treatment from the courts when facing financial distress, and today's powerful energy companies arguably enjoy the same status.[45] Because eminent domain—a quintessential state power—facilitated the construction of both the railroad lines and the pipeline network, the consideration of public concerns in railroad reorganizations is a particularly apt model for legislation involving the fossil fuel industry.[46] A final comparator in existing law is found in mass tort

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[40] *See* Daniel Raimi, Ronald Minsk, Jake Higdon & Alan Krupnick, COLUM. SCH. INT'L & PUB. AFFS., ECONOMIC VOLATILITY IN OIL PRODUCING REGIONS: IMPACTS AND FEDERAL POLICY OPTIONS 12–13 (2019) (discussing the implications of the oil and gas industry's particular vulnerability to price fluctuations).

[41] 11 U.S.C. § 109(d) (excluding stockbrokers and commodity brokers from eligibility to become a debtor under Chapter 11); *see* Toibb v. Radloff, 501 U.S. 157, 161 (1991) (describing Congress's deliberate exclusion of certain categories of debtors from Chapter 11); *In re* Schave, 91 B.R. 110, 112 (Bankr. D. Colo. 1988) (explaining that the Securities Investor Protection Act was passed to "protect public customers" from failing broker-dealers).

[42] *See* 11 U.S.C. § 1165 (requiring that "the court and the trustee . . . consider the public interest in addition to the interests of the debtor, creditors, and equity security holders"); *see also* Barton v. Barbour, 104 U.S. 126, 134–36 (1881) (holding that the unique impact of the railroad industry on society compels courts to handle "the settlement of [a railroad company's] affairs and the disposition of its assets" in a new way whereby operations continue in order to avoid public injury); New Haven Inclusion Cases, 399 U.S. 392, 460 (1970) (explaining that a railroad company in a dire financial position was supported purely for the public interest).

[43] 11 U.S.C. § 1165; S. REP. NO. 95-989, at 12 (1978), *as reprinted in* 1978 U.S.C.A.A.N. 5787, 5798.

[44] *See Barbour*, 104 U.S. at 135 (discussing how the unique characteristics of the railroad industry, including being "constructed more for the public good to be subserved, than for private gain" and being "a matter of public concern," call for special treatment when such a company is insolvent).

[45] *See id.* (discussing the special treatment of the railroad industry).

[46] *Compare* Tony Freyer, *Reassessing the Impact of Eminent Domain in Early American Economic Development*, 1981 WIS. L. REV. 1263, 1263–64 (highlighting the "vital" impact that eminent domain played in helping railroad companies industrialize the nation), *with* Mountain Valley Pipeline,

cases, where major tortfeasors have been reorganized into "[p]ublic [b]enefit [c]orporations," redeploying existing assets to benefit victims.[47]

As explained below, these proposed reforms would reduce the number of assets deployed toward the production of greenhouse gases, without altering the non-bankruptcy rights of creditors and shareholders of fossil fuel firms. Nor would these reforms implicate the Takings Clause[48] to the extent that other governmental attempts to wind down polluting industries might do so.[49] Finally, these reforms would offer a market-friendly approach to climate mitigation, as the only impacted firms would be those that have already failed and reached a state of insolvency.[50]

Part I of this Article discusses the structure of Chapter 11, focusing on bankruptcy principles and the general rationale behind preserving failed businesses as going concerns.[51] Part II reviews recent reorganizations by fossil fuel extraction firms, arguing that Chapter 11 provides significant benefits to the industry given its tendency to experience boom-and-bust cycles.[52] Part III then introduces models from current bankruptcy law that can guide future legislation focused on specific industries.[53] This Part focuses on the Bankruptcy Code's special treatment of the railroad industry and argues why such treatment has relevant implications for today's fossil fuel companies. Next, Part IV

LLC v. 6.56 Acres of Land, 915 F.3d 197, 208–09 (4th Cir. 2019) (highlighting the need for pipeline networks to access private land through eminent domain where private negotiation fails).

[47] *See* Lindsey D. Simon, *Bankruptcy Grifters*, 131 YALE L.J. 1154, 1188–89 (2022) (describing the "settlement agreement in principle" between Purdue Pharma, a major contributor to the opioid crisis who filed for Chapter 11 bankruptcy in the wake of mass tort litigation, and numerous multidistrict litigation plaintiffs, whereby Purdue converts into a "Public Benefit Corporation" that raises funds for claimants (citations omitted)).

[48] U.S. CONST. amend. V ("[N]or shall private property be taken for public use, without just compensation."); *see* Roger Clegg, *Reclaiming the Text of the Takings Clause*, 46 S.C. L. REV. 531, 562–63 (1995) (arguing that the Takings Clause does not apply to the case of the government establishing bankruptcy laws); *In re* Thaw, 769 F.3d 366, 370 (5th Cir. 2014) (inferring that "prospective application of a bankruptcy rule would avoid a takings problem").

[49] *See, e.g.*, Christopher Serkin & Michael P. Vandenbergh, *Prospective Grandfathering: Anticipating the Energy Transition Problem*, 102 MINN. L. REV. 1019, 1036–37 (2018) (predicting that the natural gas industry would turn to the Takings Clause to protect its investment in the event the regulators were to prohibit or significantly limit the use of natural gas); Michael Stone, Note, *Fossil Fuels, Takings, and Rawlsian Justice*, 13 WASH. U. JURIS. REV. 147, 147–48 (2020) (exploring the potential expense that the government would face if regulations of the fossil fuel industry were subject to the Fifth Amendment's Taking Clause); *cf.* David A. Super, *From the Greenhouse to the Poorhouse: Carbon-Emissions Control and the Rules of Legislative Joinder*, 158 U. PA. L. REV. 1093, 1117 (2010) (discussing policy proposals whereby restrictions on greenhouse gases are phased in so emitters receive relief comparable to what would be owed under the Takings Clause).

[50] *See infra* notes 370–372 and accompany text (explaining the benefits of a market-based solution to the climate crisis).

[51] *See infra* notes 60–89 and accompanying text.

[52] *See infra* notes 90–146 and accompanying text.

[53] *See infra* notes 147–291 and accompanying text.

of this Article proposes and advocates for specific amendments to the Bankruptcy Code that would address situations where the public interest weighs against judicial intervention to preserve the operations of fossil fuel producers.[54] Finally, Part V anticipates and addresses potential concerns and counterarguments to the proposed amendments.[55]

The reforms proposed in this Article are novel and significant. The urgent need to address the climate crisis is indisputable from a scientific perspective.[56] To date, Congress has introduced several bills aimed at addressing this emergency,[57] and some individuals have suggested that bankruptcies in the energy sector may contribute to achieving climate goals.[58] But this author is unaware of any legislative proposals that incorporate bankruptcy reform as a tool to: (1) fight the climate crisis; (2) bring America into compliance with its Paris Agreement obligations; and (3) help America achieve the targets set by recent executive orders.[59] This Article contributes to the ongoing effort to reform the legal system to address climate change by advancing a case that Bankruptcy Code revisions have a role to play in averting the worst-case scenarios of ecological disaster. In doing so, this Article also adds to the existing scholarly debate on the proper purpose, goals, and scope of the bankruptcy system.

I. Principles of Corporate Reorganization

Before engaging with the specific problems caused by corporate reorganizations in the fossil fuel sector, this Part briefly identifies the general principles underlying the law of business reorganizations. Not meant to be exhaustive, this Part introduces non-bankruptcy specialists to the Code's general policy of

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[54] *See infra* notes 292–325 and accompanying text.

[55] *See infra* notes 326–391 and accompanying text.

[56] *See* Allan et al., *supra* note 8, at 4 (finding that human-induced climate change has produced "[w]idespread and rapid changes" in our climate).

[57] *E.g.*, Regional Greenhouse Gas Reduction Act of 2021, S. 1038, 117th Cong. (2021); Climate Solutions Act of 2021, H.R. 6351, 117th Cong. (2021).

[58] *See* Jain Family Institute, *Social Wealth Seminar with Saule Omarova on a National Investment Authority*, YouTube (Mar. 3, 2021), https://www.youtube.com/watch?v=WkP0Esyfh54 [https://perma.cc/2SRW-X5PT] (discussing how a trend of bankruptcies by traditional energy companies could help fight the climate crisis); *see also* Editorial Board, *'We Want Them to Go Bankrupt,'* Wall St. J. (Nov. 15, 2021), https://www.wsj.com/articles/we-want-them-to-go-bankrupt-saule-omarova-comptroller-biden-nominee-11636668294 [https://perma.cc/4DW8-PTZX] (reporting on President Biden's nominee for Comptroller of the Currency, Saule Omarova, and her interview with the Jain Family Institute in which Omarova suggested allowing traditional energy companies to go bankrupt as a policy solution to the climate crisis).

[59] *See* Exec. Order No. 14,057, 86 Fed. Reg. 70935 (Dec. 8, 2021) (setting climate-related goals for federal agencies).

preserving and reorganizing insolvent firms before turning to discussion of a specific industry.

Laws governing remedies against insolvent debtors were historically created to manage the chaos that inevitably ensues when large groups of creditors swarm over a failing debtor's dwindling pool of assets,[60] as well as serving a quasi-criminal function of punishing insolvent debtors.[61] Over time, these procedures developed into a regularized system that preserved wealth for all stakeholders by minimizing the value destruction associated with fire-sale liquidations.[62] During the course of this evolution, bankruptcy objectives expanded from the ancient and simple goal of "reduc[ing] violence and other externality-producing behavior accompanying self-help"[63] to more sophisticated and abstracted objectives, such as maximizing economic value[64] and providing a "fresh start" to the "honest but unfortunate debtor."[65] In 1954, in *Atlantic Coast Line Railroad Co. v. St. Joe Paper Co.*, the U.S. Court of Appeals for the Fifth Circuit explained in a per curiam opinion that bankruptcy laws evolved from an unforgiving creditor-protection system into one based in "humanity as well as justice," working to help debtors while safeguarding creditors' rights.[66]

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[60] Robert C. Clark, *The Interdisciplinary Study of Legal Evolution*, 90 YALE L.J. 1238, 1251 (1981); *see also* Marcia S. Krieger, *"The Bankruptcy Court Is a Court of Equity": What Does That Mean?*, 50 S.C. L. REV. 275, 295 (1999) (explaining that bankruptcy law has historically always aimed to achieve both "social and economic objectives").

[61] *See* BRUCE H. MANN, REPUBLIC OF DEBTORS: BANKRUPTCY IN THE AGE OF AMERICAN INDEPENDENCE 78–108 (2002) (describing colonial-era debtors' prisons); G. Stanley Joslin, *The Philosophy of Bankruptcy—A Re-examination*, 17 U. FLA. L. REV. 189, 192 (1964) (describing early bankruptcy law as "quasi-criminal" (citing 2 HALSBURY'S LAWS OF ENGLAND 251 (3d ed. 1953))).

[62] *See* Clark, *supra* note 60, at 1251–54; Joseph F. Rice & Nancy Worth Davis, *The Future of Mass Tort Claims: Comparison of Settlement Class Action to Bankruptcy Treatment of Mass Tort Claims,* 50 S.C. L. REV. 405, 426–27 (1999).

[63] Clark, *supra* note 60, at 1251.

[64] *Id.* at 1251–54.

[65] Grogan v. Garner, 498 U.S. 279, 286–87 (1991) (quoting Local Loan Co. v. Hunt, 292 U.S. 234, 244 (1934)), *superseded by statute*, Sarbanes Oxley Act of 2002, Pub. L. No. 107-204, 116 Stat. 745; *see also* Perez v. Campbell, 402 U.S. 637, 649 (1971) (describing federal bankruptcy law as a means for providing debtors with "a new start"), *superseded by statute*, Bankruptcy Reform Act of 1978, 95 Pub. L. No. 598, 92 Stat. 2549; Williams v. U.S. Fid. & Guar. Co., 236 U.S. 549, 554–55 (1915) (stating that the purpose of bankruptcy laws is to allow debtors to "start afresh free from the obligations and responsibilities consequent upon business misfortunes" (first citing Wetmore v. Markoe, 196 U.S. 68, 77 (1904); then citing Zavelo v. Reeves, 227 U.S. 625, 629 (1913); and then citing Burlingham v. Crouse, 228 U.S. 459, 473 (1913))); THOMAS H. JACKSON, THE LOGIC AND LIMITS OF BANKRUPTCY LAW 4 (1986) (arguing that bankruptcy law accomplishes two goals: (1) providing a clean financial slate to debtors and (2) giving creditors a forum to resolve competing claims to the debtor's assets).

[66] 216 F.2d 832, 836 (5th Cir. 1954) (per curiam). Bankruptcy scholars have analyzed the bankruptcy system's attempts to, and at times failure to, advance social goals with respect to individual debtors. *See* KAREN GROSS, FAILURE AND FORGIVENESS: REBALANCING THE BANKRUPTCY SYSTEM 25–29 (1997) (discussing the bankruptcy system's disparate treatment of individuals and corporations and highlighting the types of debts that individual debtors are unable to discharge in bankruptcy);

The modern Bankruptcy Code thus allows individual debtors a chance to pursue new endeavors, unburdened by the woes that accompany previously-incurred and unsustainable debt.[67]

But the fresh-start principle can be coherently expressed in these humanitarian terms only when applied to individuals.[68] An insolvent corporate debtor that has failed to meet its commercial obligations to creditors has no ethical claim to be freed from the consequences of past business decisions, and the individuals who made those decisions—the firm's officers and directors—are already largely shielded from those consequences through limited liability under corporate law.[69] Why, then, are insolvent corporations afforded second chances by Chapter 11, rather than simply wound down and liquidated for the benefit of the creditors they have failed to fully repay?

Corporate reorganizations through Chapter 11 primarily exist for utilitarian rather than prosocial or charitable reasons. Lawmakers assumed that firms are worth more to stakeholders, including creditors and employees, as operating businesses than as collections of sellable assets.[70] Put in specific economic terms, Chapter 11 reflects a presumption that a firm's assets kept together (the firm's "going-concern value") are worth more than they would be if broken apart and sold separately at auction (its "liquidation value").[71] This assumption was explicitly acknowledged upon the introduction of the Bankruptcy Reform Act of 1978,[72] when representatives spoke of rescuing struggling businesses.[73]

Anthony T. Kronman, *Paternalism and the Law of Contracts*, 92 YALE L.J. 763, 785–86 (1983) (arguing that bankruptcy law helps "counteract the self-hatred" and "restore . . . [the debtor's] confidence" following financial decisions the debtor now regrets).

[67] *Local Loan Co.*, 292 U.S. at 244 (collecting cases demonstrating the purpose of the Bankruptcy Code); *see also* H.R. REP. NO. 95-595, at 116 (1977), *as reprinted in* 1977 U.S.C.C.A.N. 5963, 6076–77 (discussing the legislative attitude toward the need for bankruptcy reform in 1977, prior to the passing of the Bankruptcy Reform Act of 1978); *Williams*, 236 U.S. at 554–55 (discussing the financial freedom that individual debtors receive following discharge of debt following a bankruptcy).

[68] *See* JACKSON, *supra* note 65, at 225 (discussing the fresh start offered to individuals by the discharge of debts through bankruptcy).

[69] GROSS, *supra* note 66, at 27.

[70] JACKSON, *supra* note 65, at 2–3, 24–25; *see* Douglas G. Baird & Robert K. Rasmussen, *The End of Bankruptcy*, 55 STAN. L. REV. 751, 758 (2002) (explaining the concept of "going-concern surplus," which is the excess value of a firm's assets produced from keeping those assets together within the firm).

[71] JACKSON, *supra* note 65, at 14; *see* Barry E. Adler, *Priority in Going-Concern Surplus*, 2015 U. ILL. L. REV. 811, 812–13 (evaluating whether the difference between the going-concern value and liquidation value should be returned solely to senior secured creditors).

[72] *See generally* Bankruptcy Reform Act of 1978, 11 U.S.C. §§ 1101–1174 (codifying the Bankruptcy Reform Act of 1978).

[73] 124 CONG. REC. 32392 (1978) (statement of Rep. William D. Edwards) (describing the bill as a way to "save troubled businesses" by "encourag[ing] business reorganizations"); *see* 123 CONG. REC. 35444 (1977) (statement of Rep. Peter W. Rodino) (describing parts of the bill as a means for distressed businesses to reorganize in an attempt to protect both investors and employees).

A report by the U.S. House of Representatives Committee on the Judiciary supported this claim and thus reasoned that it is "more economically efficient to reorganize than to liquidate."[74]

Chapter 11 was thus tailored to incentivize corporate management to reorganize and preserve financially troubled firms that might otherwise be liquidated.[75] Chapter 11 ordinarily turns the corporate filer into a *debtor-in-possession*, which allows existing management to maintain control of day-to-day operations and assume the rights and duties that would otherwise fall upon an outside trustee.[76] During Chapter 11 proceedings, the insolvent firm typically gains access to debtor-in-possession financing ("DIP financing"), which is the ability to raise money (with court approval) by issuing debt that enjoys a higher repayment priority than pre-petition unsecured debt.[77] DIP financing allows a firm to attract post-petition money that creditors would otherwise be unlikely to lend.[78] While proceedings are ongoing, the debtor-in-possession also enjoys the breathing-room provided by bankruptcy's automatic stay of all creditor claims,[79] as well as important avoiding powers.[80]

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[74] H.R. REP. NO. 95-595, at 220 (1977), *as reprinted in* 1977 U.S.C.C.A.N. 5963, 6179 (asserting that assets "used for production in the industry for which they were designed are more valuable than those same assets sold for scrap"); *see also* United States v. Whiting Pools, Inc., 462 U.S. 198, 203 (1983) (explaining that Congress "presumed that the assets of the debtor would be more valuable if used to rehabilitate the business" when encouraging the reorganization of distressed businesses). In 1983, in *NLRB v. Bildisco & Bildisco*, then-Justice Rehnquist stated that the "fundamental purpose of reorganization" under the 1978 Act "is to prevent a debtor from going into liquidation, with an attendant loss of jobs and possible misuse of economic resources." 465 U.S. 513, 528 (1984) (citing H.R. REP. NO. 95-595, at 220), *superseded by statute*, Bankruptcy Amendments and Federal Judgeship Act of 1984, Pub. L. No. 98-353, 98 Stat. 333.

[75] *See* H.R. REP. NO. 95-595, at 220.

[76] *See* 11 U.S.C. §§ 1101(1), 1107 (defining "debtor in possession" as a debtor qualified to serve as trustee, and giving the debtor in possession most of the same rights that a trustee possesses); *In re* Williams, 190 B.R. 728, 736 (D.R.I. 1996) (holding that "[s]ubject to certain limitations . . . a debtor in possession has all of the titles and powers of a trustee" (citing 11 U.S.C. § 1107)); H.R. REP. NO. 95-595, at 220–21, *as reprinted in* 1977 U.S.C.C.A.N. 5963, 6179–80 (discussing the differences between assigning a trustee to a debtor and allowing the debtor to retain possession during the reorganization proceedings); GROSS, *supra* note 66, at 31–32 (analyzing the reasons behind Chapter 11's unique structure that allows management of the debtor to maintain control of the business, albeit under strict supervision from a court and the Department of Justice, during the reorganization process).

[77] George G. Triantis, *A Theory of the Regulation of Debtor-in-Possession Financing*, 46 VAND. L. REV. 901, 901–02 (1993).

[78] *See id.* at 905 (explaining that such new post-petition debt receives higher priority than pre-petition unsecured debt and also noting that, if the debt is issued "[i]n the ordinary course of business," then such debt will receive the priority of an administrative expense (first citing 11 U.S.C. § 364(a); then quoting *id.* § 503(b)(1)(A); and then citing *id.* § 726(b))).

[79] 11 U.S.C. § 362(a).

[80] GROSS, *supra* note 66, at 49–55. Avoiding powers are means by which a trustee or debtor in possession grows the debtor's asset pool by either (1) clawing back "preferential" payments made to creditors within ninety days before the debtor filed its bankruptcy petition, (2) recovering fraudulent

The ultimate goal of these proceedings is to formulate and confirm a plan that will allow the debtor to emerge from bankruptcy.[81] The reorganization plan outlines how the debtor will reemerge out of bankruptcy, including specifics about the repayments of creditors, how much interest equity shareholders will retain in the reorganized firm (if any), and whether the reorganized firm will be altered by shedding unprofitable or undesirable lines of business.[82] The Code affords the debtor-in-possession significant opportunities to influence the plan and answer these questions, including an exclusive right to propose a plan for the first 120 days after filing the bankruptcy petition.[83] If a court determines that nonconsenters were treated fairly, the Code allows a court to confirm a plan even over the objection of some of the insolvent firm's creditors in what is known as a "cramdown" process.[84] This addresses the obstacles that "holdouts" may cause when a debtor attempts a consensual reorganization outside of the bankruptcy system.[85]

These powerful tools provide strong incentives for insolvent firms to restructure through Chapter 11 rather than liquidate or attempt to reorganize outside of bankruptcy. Scholars have debated, however, whether Chapter 11 has accomplished everything its drafters set out to do, and whether these goals are sound ones in the first place.[86] Further, bankruptcy reorganizations are argua-

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transfers made by the debtor before the debtor filed its bankruptcy petition, or (3) subordinating unperfected secured creditors. *Id.*

[81] H.R. REP. NO. 95-595, at 221, *as reprinted in* 1977 U.S.C.C.A.N. 5963, 6180.

[82] *Id*.

[83] 11 U.S.C. § 1121(c)(2).

[84] H.R. REP. NO. 95-595, at 224, 413, *as reprinted in* 1977 U.S.C.C.A.N. 5963, 6183–84, 6369; *see* Bank of Am. Nat'l Tr. & Sav. Ass'n v. 203 N. LaSalle St. P'ship, 526 U.S. 434, 440–42 (1999) (adjudicating a dispute where a creditor-bank voted against the confirmation of the plan and the debtor attempted to confirm the plan using the "judicial 'cramdown' process" (citing 11 U.S.C. § 1129(b))); *see also* James Steven Rogers, *The Impairment of Secured Creditors' Rights in Reorganization: A Study of the Relationship Between the Fifth Amendment and the Bankruptcy Clause*, 96 HARV. L. REV. 973, 976 n.12 (1983) (explaining that a plan may be approved, "over the objections of creditors, only if it complies with the 'absolute priority rule'").

[85] J. Bradley Johnston, *The Bankruptcy Bargain*, 65 AM. BANKR. L.J. 213, 239–40, 276–78 (1991). Holdouts are creditors who refuse to agree to a restructuring plan negotiated between the debtor and other creditors outside of bankruptcy proceedings, where unanimous consent from creditors is required. *See* David A. Skeel, Jr., *Distorted Choice in Corporate Bankruptcy*, 130 YALE. L.J. 366, 396–97 (2020).

[86] *Compare* Edith H. Jones, *Chapter 11: A Death Penalty for Debtor and Creditor Interests*, 77 CORNELL L. REV. 1088, 1088–89 (1992) (making the argument in an academic debate with then-professor and now-Senator Elizabeth Warren that Chapter 11 does not achieve its objectives of promoting business reorganization because most entities ultimately liquidate after spending time in Chapter 11 proceedings), *and* Baird & Rasmussen, *supra* note 70, at 753 (concluding that the "era has come to an end" where Chapter 11 reorganizations "provid[e] a collective forum" for creditors and debtors to come to an agreement about how the firm can continue operations without needing to liquidate), *with* Robert M. Lawless & Elizabeth Warren, *The Myth of the Disappearing Business Bankruptcy*, 93 CALIF. L. REV. 743, 745–49 (2005) (questioning statistics that report a sharp decline in

bly less effective in some sectors, such as the financial industry.[87] But as some commentators have argued, the creation of Chapter 11 generally transformed corporate bankruptcy from "the last gasp of a dying company" to "just another financial management tool."[88]

Thus, at this stage of its development, the Bankruptcy Code is drafted to further prosocial and humanitarian concerns in its treatment of individual debtors, while furthering utilitarian concerns and macroeconomic goals in its treatment of corporate debtors.[89] Whether the Code's treatment of corporate debtors *genuinely* serves macroeconomic goals depends in part on its drafters' assumption that all insolvent firms tend to retain and create more value as going concerns. The remainder of this Article challenges that assumption when

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business bankruptcies, and analyzing their own data to show that previous estimates undercount the presence and importance of business bankruptcies, particularly small-business bankruptcies); *see also* Albert Togut & Samantha J. Rothman, *Chapter 11: Out of Balance*, 33 AM. BANKR. INST. J. 14, 14 (2014) (explaining that amendments to the Bankruptcy Code, pushed by creditor lobbyists, "have diminished the Code's rehabilitative power" (citing Baird & Rasmussen, *supra* note 70, at 751)).

[87] Chapter 11 may have dwindling significance specifically in the financial sector for at least three reasons. First, Chapter 11's importance in the financial sector was minimized by the rise of special-purposes entities (SPEs) designed to shield asset securitizations from bankruptcy proceedings. *See* Stephen J. Lubben, *Beyond True Sales: Securitization and Chapter 11*, 1 N.Y.U. J.L. & BUS. 89, 94–96 (2004) (explaining the common practice by financial firms of securitizing a group of assets and transferring those assets to a special purpose vehicle subsidiary, which is treated as a separate entity and does not receive protection when the originator files for Chapter 11); Kenneth C. Kettering, *Securitization and Its Discontents: The Dynamics of Financial Product Development*, 29 CARDOZO L. REV. 1553, 1564–65 (2008) (stating that SPEs are "bankruptcy remote" and designed to reduce exposure to bankruptcy proceedings in the event the originator files for bankruptcy). Second, Chapter 11's importance in the financial sector was minimized after Lehman Brothers' failure to reorganize drove policymakers toward the fateful bailout of AIG. *See* Jonathan G. Katz, *Who Benefited from the Bailout?*, 95 MINN. L. REV. 1568, 1573–79 (2011) (detailing the AIG bailout). Third, the financial industry also achieved, through the Bankruptcy Abuse Prevention and Consumer Protection Act of 2005, a broad exemption from key provisions of Chapter 11 for holders of certain derivatives. Pub. L. No. 109-8 § 907, 119 Stat. 170; *see* Franklin R. Edwards & Edward R. Morrison, *Derivatives and the Bankruptcy Code: Why the Special Treatment?*, 22 YALE J. ON REG. 91, 97 (2005) (discussing the exemptions from the bankruptcy stay for various derivative products under the then-proposed legislation that was ultimately passed as the Bankruptcy Abuse Prevention and Consumer Protection Act of 2005).

[88] Bradley & Rosenzweig, *supra* note 35, at 1047 n.20; *see also* David A. Skeel, Jr., *Vern Countryman and the Path of Progressive (and Populist) Bankruptcy Scholarship*, 113 HARV. L. REV. 1075, 1097 (2000) (discussing the use of Chapter 11 by firms that were not necessarily in financial distress to achieve separate business objectives). The outer bounds of an entity's ability to use Chapter 11 as a management tool are partially set by the requirement that an entity may only file in "good faith" and for "a valid bankruptcy purpose." *In re* Nat'l Rifle Ass'n of Am., 628 B.R. 262, 270–71 (Bankr. N.D. Tex. 2021) (citing *In re* SGL Carbon Corp., 200 F.3d 154, 165 (3d Cir. 1999)).

[89] *Compare* Elizabeth Warren, *Bankruptcy Policy* (asserting that bankruptcy has numerous (and sometimes competing) policy objectives), *in* CORPORATE BANKRUPTCY: ECONOMIC AND LEGAL PERSPECTIVES 73, 73–94 (Jagdeep S. Bhandari & Lawrence A. Weiss eds., 1996), *with* Douglas G. Baird, *Loss Distribution, Forum Shopping, and Bankruptcy: A Reply to Warren* (asserting that the primary and overarching goal of bankruptcy law is to resolve the issues that arise when a company defaults to multiple creditors), *in* CORPORATE BANKRUPTCY, *supra*, at 95, 95–98.

applied to fossil fuel companies, arguing that liquidation and the incorporation of a public interest standard in the treatment of these firms would better serve society and the economy in a time of climate crisis.

II. Reorganizations of Fossil Fuel Producers

This Part discusses how fossil fuel producers make frequent use of Chapter 11, reorganizing and continuing as going concerns after events of insolvency. Fossil fuel prices—and oil prices in particular—are unpredictable and volatile, affected by exogenous factors that include political developments in unstable producing countries, conflict, technological advancements, the discovery of new fields, changes in the business cycle, shifting demand for aboveground storage, and variations in government subsidies.[90] Some industry observers have gone so far as to state that "[t]he boom-and-bust cycle epitomizes the oil and gas industry."[91] Although this Part primarily focuses on oil, natural gas exhibits volatility as well,[92] with prices swinging, for example, from $14 per million British thermal units in the summer of 2008 to less than $4 in early 2009.[93] And, ironically, given the climate change implication, occurrences of unseasonably warm winters can cause natural gas prices to fall by as much as forty percent.[94]

From 1983 to 2011, the global nominal oil price ranged from a high of $145.70 to a low of $8.70 per barrel.[95] Since then, oil prices have exhibited

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[90] Baumeister & Kilian, *supra* note 36, at 140–47; Jun E. Rentschler, *Oil Price Volatility, Economic Growth and the Hedging Role of Renewable Energy* 2, 14 (The World Bank Sustainable Dev. Network: Office of the Chief Economist, Pol'y Rsch. Working Paper No. 6603, 2013); Sorell E. Negro, *Man Camps, Boomtowns, and the Boom-and-Bust Cycle*, *in* Beyond the Fracking Wars: A Guide for Lawyers, Public Officials, Planners, and Citizens 194–95 (Erica Levine Powers & Beth E. Kinne eds., 2013); *see also* Edward B. Rock & Daniel L. Rubinfeld, *Common Ownership and Coordinated Effects*, 83 Antitrust L.J. 201, 237 (2020) (noting that "the stock price of oil companies is much more sensitive to the price of oil than to the performance of top managers"); Joe Wallace & Georgi Kantchev, *Natural-Gas Prices Soar in Europe After Russia Sanctions Energy Companies*, Wall St. J., https://www.wsj.com/articles/natural-gas-prices-jump-in-europe-after-russia-sanctions-energy-companies-11652354653 [https://perma.cc/8ZLB-FBJM] (May 12, 2022) (describing the impact on gas prices resulting from Russia's 2022 invasion of Ukraine).

[91] Marc Zenner, Frank Schneider & Allie Schwartz, *Financial Strategies for Oil and Gas Cos. During the Slump*, Law360 (June 2, 2020), https://www.law360.com/articles/1277921/financial-strategies-for-oil-and-gas-cos-during-the-slump [https://perma.cc/K2TZ-4CVC].

[92] *See* Ferrey, *supra* note 28, § 6:24 *Natural Gas* tbl.1 (plotting the fluctuations in natural gas prices in the United States, Europe, and Japan between 2002 and 2011).

[93] John W. Rowe, *Nuclear Power in a Carbon-Constrained World*, 138 Daedalus 81, 85 (2009).

[94] Ryan Dezember, *Balmy Forecasts Send Natural Gas Prices Plunging*, Wall St. J., https://www.wsj.com/articles/balmy-forecasts-send-natural-gas-prices-plunging-11638810505 [https://perma.cc/F7M4-4XB9] (Dec. 6, 2021).

[95] Rentschler, *supra* note 90, at 4; *see also* Zenner et al., *supra* note 91 (noting that "[o]il prices have declined 40% or more 10 times since 1983").

even more volatility. From June 2014 to January 2015, the Brent price per barrel of oil[96] dropped from $112 to $47.[97] Prices rose again, but by 2020 competition between Saudi Arabia and Russia, combined with the onset of the COVID-19 pandemic, drove prices down by a shocking sixty-seven percent, reaching a low of $20.30 per barrel.[98] By October 2021, the pendulum swung yet again, and prices rebounded from pandemic lows to $85 per barrel.[99] Russia's invasion of Ukraine the following year drove prices to a high of $139 a barrel.[100] To hedge against these wild swings, producers often purchase derivatives contracts and other financial instruments,[101] but these transactions create new risks themselves[102] and reduce the upside a firm might otherwise receive from sudden price increases.[103] Furthermore, whether producers can accurately predict future price movements remains unclear, and this uncertainty increases the risk of hedging transactions.[104]

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[96] For most of the post-2000 period, the spread between the Brent price and the West Texas Intermediate (WTI) price was negligible, and the prices' fluctuations have a positive correlation. Ali Abboud & Michael R. Betz, *The Local Economic Impacts of the Oil and Gas Industry: Boom, Bust and Resilience to Shocks*, ENERGY ECON., July 2021, at 1, 2–3.

[97] Baumeister & Kilian, *supra* note 36, at 148.

[98] PAUL TIYAMBE ZELEZA, AFRICA AND THE DISRUPTIONS OF THE TWENTY-FIRST CENTURY 109 (2021); Zenner et al., *supra* note 91; *see In re* Sanchez Energy Corp., 631 B.R. 847, 851 (Bankr. S.D. Tex. 2021) (describing the effects of COVID-related price collapse on restructuring proceedings).

[99] Noah Browning, *Oil Prices Climb as COVID Recovery, Power Generators Stoke Demand*, REUTERS (Oct. 18, 2021), https://www.reuters.com/business/energy/oil-prices-climb-highest-years-covid-recovery-power-generators-stoke-demand-2021-10-18/ [https://perma.cc/QG55-MQTR].

[100] Summer Said, *Saudi Aramco Posts Record Quarterly Profit on Surging Oil Prices*, WALL ST. J., https://www.wsj.com/articles/saudi-aramco-posts-record-quarterly-profit-on-surging-oil-prices-11652608615 [https://perma.cc/U8S3-NNGC] (May 15, 2022).

[101] *See* Cimarex Energy Co. v. Chastant, No. 11-cv-1713, 2012 WL 6652360, at *2 (W.D. La. Dec. 18, 2012) (adjudicating a dispute between an energy producer and a landlord over whether the terms of the lease required the energy company to pay royalties on proceeds it received from the derivatives contracts it purchased as part of its "hedging activity"); Jared A. Jones, Robert A. Swiech & Paul J. Kunkel, *Does My Insurance Cover It? Effect of Hedging on the Oil and Gas Producer's Depletion and IDC Preference*, 14 J. TAX'N FIN. PRODS. 21, 21–22 (2017) (describing the financial contracts that energy producers enter into in order to stabilize revenues in an otherwise volatile market).

[102] These new risks include the credit worthiness of the parties with whom the energy producers are entering these hedging contracts with. For example, as the oil and gas firms that entered into hedging contracts with Lehman Brothers learned, when Lehman collapsed during a period of oil price volatility, it owed substantial sums under these financial instruments for which it was unable to pay. *See, e.g.*, United Food & Com. Workers Union v. Chesapeake Energy Corp., No. 09-1114-D, 2013 WL 4494384, at *18–19 (W.D. Ok. Mar. 29, 2013) (stating that at the time Lehman Brothers filed for bankruptcy, it owed Chesapeake Energy $50 million from hedging contracts).

[103] *See, e.g.*, Whiting Petrol. Corp., Annual Report (Form 10-K) 34 (Feb. 25, 2021) (disclosing risks related to hedging transactions).

[104] Jinjoo Lee, *Oil Companies Got Their Hedges Clipped*, WALL ST. J. (Nov. 30, 2021), https://www.wsj.com/articles/oil-companies-got-their-hedges-clipped-11638273780 [https://perma.cc/35G5-BJ4U].

Thus, even accounting for hedges, it follows that the fossil fuel extraction industry is subject to intense boom-and-bust cycles driven by price swings,[105] and revenues for producers vary accordingly.[106] Total oil and gas revenues in the United States neared $300 billion in 2008 before rapidly declining to under $150 billion in 2009.[107] Revenues more than recovered in 2014, nearing $350 billion before collapsing again to below $200 billion in 2016.[108] 2020 saw an unprecedented number of write-downs as the industry's revenues suffered,[109] but declines were soon reversed.[110] The effects of the 2022 Russian war against Ukraine cut both ways for some U.S.-based producers when influxes of cash from high oil prices were partially offset for some firms by write-downs related to exits from projects in Russia.[111] At the same time, some firms saw record profits just two years after the COVID-driven collapse.[112]

Unsurprisingly, bankruptcy filings in the mining, oil, and gas sector are inversely related to oil prices.[113] "Mega bankruptcies" in that sector—defined as those involving companies with over one billion dollars in assets—averaged four per year between 2005–2019.[114] But in 2020, the year of the COVID-19

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[105] *See* Mallory C. Vachon, *The Local Economic Impacts of Natural Resource Extraction: A Survey of Economic Literature*, 5 LSU J. ENERGY L. & RES. 275, 277–79 (2017) (reviewing studies that examine the impact on earnings, employment, high school dropout rates, and disability insurance participation in various energy-producing regions during boom and bust periods); FERREY, *supra* note 28, § 6:23 *Oil* (explaining that domestic crude production is "highly sensitive to world crude oil prices").

[106] *See* Abboud & Betz, *supra* note 96, at 4 fig.3 (charting the annual oil and gas revenues in the United States between 2000 and 2018).

[107] *Id*.

[108] *Id.*

[109] Collin Eaton & Sarah McFarlane, *2020 Was One of the Worst-Ever Years for Oil Write-Downs*, WALL ST. J. (Dec. 27, 2020), https://www.wsj.com/articles/2020-was-one-of-the-worst-ever-years-for-oil-write-downs-11609077600 [https://perma.cc/L2D8-88JW].

[110] *See* Andy Brogan, *How Oil and Gas Sector Analysts View Q4 2021 Earnings*, EY (Mar. 18, 2022), https://www.ey.com/en_om/oil-gas/how-oil-and-gas-sector-analysts-view-q4-2021-earnings [https://perma.cc/L8HY-Z3VN] (noting the "phenomenal" renewed success in the oil industry, with "[o]il majors report[ing] a combined net income of US$41.3 billion" in Q4 2021).

[111] *See, e.g.*, Exxon Mobil Corp., Current Report (Form 8-K) Exhibit 99.1, at 1 (Apr. 29, 2022) (declaring that "[f]irst-quarter results included an unfavorable identified item of $3.4 billion associated with our planned exit from Russia Sakhalin-1"). Because of the unique circumstances in which profitable price increases combined with widespread pressure on certain U.S. producers to exit Russia-based operations at a loss, this Section's analysis largely focuses on market trends before the 2022 invasion of Ukraine.

[112] *See, e.g.*, Said, *supra* note 100 (noting that Saudi Aramco's "net income rose more than 80% to record highs . . . benefitting from a price boom accelerated by Russia's invasion of Ukraine").

[113] ALLIE SCHWARTZ, JOSEPH B. DOYLE, NICK YAVORSKY & XINGYI CHEN, CORNERSTONE RSCH., TRENDS IN LARGE CORPORATE BANKRUPTCY AND FINANCIAL DISTRESS: MIDYEAR 2021 UPDATE 5 fig.5 (2021) [hereinafter SCHWARTZ ET AL., MIDYEAR 2021 UPDATE]; HAYES & BOONE, LLP, OIL PATCH BANKRUPTCY MONITOR 12 (2020).

[114] ALLIE SCHWARTZ, JOSEPH B. DOYLE & XINGYI CHEN, CORNERSTONE RSCH., TRENDS IN LARGE CORPORATE BANKRUPTCY AND FINANCIAL DISTRESS: 2005—Q3 2020, at 1, 3 fig.3 (2020) [hereinafter SCHWARTZ ET AL., 2005—Q3 2020 TRENDS].

induced price collapse, the industry saw no fewer than twenty mega bankruptcies.[115] When this analysis is expanded to include firms with over $100 million in assets, 2005–2020 saw an average of 12.3 mining, oil, and gas bankruptcy filings per year, and 2020 alone saw an increase to an astounding forty-four filings.[116]

Indeed, from 2010 to the end of 2013, when the West Texas Intermediate (WTI)[117] spot price generally ranged from $80 to $110 per barrel, there were never more than five large Chapter 11 filings from the mining, oil, and gas sector in a given year.[118] But during oil-price nadirs in 2015, 2016, 2019, and 2020, when the WTI benchmark depressed to below $60, there were never fewer than twenty-five large Chapter 11 filings in the industry.[119] By contrast, many other industries exhibited far less volatility.[120] For example, in the transportation, communications, and utilities sector, the average number of large filings per year from 2005–2020 was 10.2, and the highest number in any given year during that period was eighteen.[121]

Figure 1, appearing at the end of this Article, sets forth the ten largest oil and gas Chapter 11 proceedings initiated during the first three quarters of 2020, with corresponding assets, liabilities, emergence dates, and amount of debt eliminated. Many of these firms explicitly acknowledged that the sudden downturn in oil and gas prices necessitated their filings.[122] These ten firms alone accounted for nearly seventy-eight billion dollars in productive assets and were relieved of over thirty-seven billion dollars in debt obligations as they emerged from Chapter 11 proceedings.[123]

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[115] *Id.*

[116] SCHWARTZ ET AL., MIDYEAR 2021 UPDATE, *supra* note 113, at 4 fig.4.

[117] Energy traders trade crude oil using indices named after the region where the oil was extracted, including WTI and Brent, which indicate characteristics of the crude oil extracted in those regions. David B. Spence & Robert Prentice, *The Transformation of American Energy Markets and the Problem of Market Power*, 53 B.C. L. REV. 131, 140 (2012). The WTI and Brent benchmarks are correlated and serve as the primary, though distinct, benchmarks for global oil prices. *In re* North Sea Brent Crude Oil Futures Litig., 256 F. Supp. 3d 298, 304, 313, 318 (S.D.N.Y. 2017).

[118] *See* SCHWARTZ ET AL., MIDYEAR 2021 UPDATE, *supra* note 113, at 5 fig.5 (plotting the WTI spot price against the number of bankruptcies filed between 2005 and the first half of 2021).

[119] *Id.*

[120] *See id.* at 4 fig.4 (displaying the numbers of annual large bankruptcies by sector between 2005 and 2020, including the services sector, which ranged from four to twenty-four, and the transportation, communications, and utilities sector, which ranged from one to eighteen).

[121] *See id.* (showing that the annual number of large bankruptcy in the transportation, communications, and utilities sector between 2005 and 2020 ranged from one to eighteen).

[122] *See, e.g.*, Oasis Petrol., Inc., Quarterly Report (Form 10-Q) 7 (Nov. 4, 2020) (stating that the company "filed voluntary petitions . . . for relief under chapter 11" because of the "volatile market environment" and the "unprecedent impact" of COVID-19).

[123] *See infra* Figure 1.

Some specific examples are illustrative. Noble Corporation, an offshore drilling firm that operates nineteen rigs, petitioned for relief under Chapter 11 after the 2020 oil price collapse.[124] The firm emerged from bankruptcy in February 2021, reducing its outstanding debt by approximately $3.6 billion.[125] Noble quickly acquired a new firm, bringing its rig count up to twenty-four.[126] The reorganized company's initial post-bankruptcy financial statement confidently predicted that demand for oil and gas will correct itself and continue to play a key role in the global energy industry.[127]

Around the same time, major oil and gas producer Whiting Petroleum, which controlled 557,000 productive acres, was driven to the point of insolvency.[128] Whiting approved "almost $15 million in cash bonuses" for executives less than a week before filing.[129] Through Chapter 11 proceedings, the firm reorganized and shed $3 billion in liabilities upon exiting from bankruptcy in 2020.[130] As of December of 2020, Whiting again stood to profit from rising prices.[131] In September of 2021, the firm acquired approximately 8,750 partially undeveloped acres in the Williston Basin in North Dakota for $271 million for further drilling.[132]

And as a final example, Chesapeake Energy entered bankruptcy in 2020 with over $9 billion in debt.[133] At the time of filing, Chesapeake faced significant liability from environmental cleanup obligations and tort suits arising

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[124] *See* Noble Corp., Quarterly Report (Form 10-Q) 13 (May 7, 2021).

[125] *See* Noble Corp., Current Report (Form 8-K) 2 (Feb. 8, 2021) (disclosing that emergence from bankruptcy "resulted in the reduction of the Company's outstanding debt by approximately $3.6 billion").

[126] Noble Corp., *supra* note 124, at 13, 38.

[127] *Id.* at 39.

[128] Renée Jean, *Bankruptcy Court Approves Whiting's Reorganization Plans*, WILLISTON HERALD, https://www.willistonherald.com/news/oil_and_energy/bankruptcy-court-approves-whitings-reorganization-plans/article_7ed056f2-e0c2-11ea-b48d-dbbf1ff47c1a.html [https://perma.cc/SH7Q-KS7C] (Sept. 23, 2021).

[129] Hiroko Tabuchi, *Fracking Firms Fail, Rewarding Executives and Raising Climate Fears*, N.Y. TIMES, https://www.nytimes.com/2020/07/12/climate/oil-fracking-bankruptcy-methane-executive-pay.html [https://perma.cc/8M8D-7ZCV] (July 12, 2021).

[130] Collin Eaton, *Whiting Petroleum Emerges from Chapter 11 Bankruptcy*, WALL ST. J. (Sept. 2, 2020), https://www.wsj.com/articles/whiting-petroleum-emerges-from-chapter-11-bankruptcy-11599042784 [https://perma.cc/6BHM-AJ6T].

[131] Press Release, Whiting Petrol. Corp., Whiting Petroleum Provides Preliminary Fourth Quarter 2020 Results & Oil & Gas Reserves, Discloses Executive Compensation Framework & Schedules Fourth Quarter 2020 Conference Call (Feb. 16, 2021), https://whitingpetroleumcorp.gcs-web.com/news-releases/news-release-details/whiting-petroleum-provides-preliminary-fourth-quarter-2020 [https://perma.cc/CY6V-DLKQ] (describing positive factors affecting Whiting in Q4 2020).

[132] Whiting Petrol. Corp., Quarterly Report (Form 10-Q) 33 (Nov. 3, 2021).

[133] *See* Sergio Chapa, *Chesapeake Exits Bankruptcy as CEO Lawler Sees 'New Era' for Shale*, BLOOMBERG, https://www.bloomberg.com/news/articles/2021-02-09/chesapeake-emerges-from-bankruptcy-vowing-new-era-for-shale#xj4y7vzkg [https://perma.cc/NC76-3Q6Q] (Feb. 10, 2021).

from a natural gas ignition that led to worker injuries and deaths.[134] The company successfully exited Chapter 11 proceedings in early 2021, announcing plans to direct the $1.3 billion in new financing toward natural gas extraction in Pennsylvania and Louisiana.[135] Its stock jumped sixteen percent on the day it emerged from bankruptcy.[136] The firm controlled roughly 7,500 oil and gas wells as of September 2021, and its management remained optimistic about the rebound in oil and gas demand.[137]

In stark contrast to this periodic swinging between expansion and insolvency, carbon-neutral energy sources, such as renewables and nuclear power, are far less volatile.[138] If the cost of uranium were to double, electricity costs from a nuclear reactor would increase by about seven percent.[139] Comparatively, if natural gas prices were to double, electricity costs from a gas plant would increase by as much as seventy percent.[140] Increased reliance on renewables may hedge against the economic impacts of fossil fuel price shocks.[141] And because the cost of local electricity is a key factor in the cost of operating an electric vehicle, reduced volatility in energy prices could lead to reduced volatility in transportation costs as more commuters adopt electric vehicles.[142]

Although clean energy offers clear economic advantages to the public, oil and gas price collapses have not produced large-scale liquidations that might disrupt fossil fuel production and force energy markets to adopt more stable

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[134] Tabuchi, *supra* note 129.

[135] Chapa, *supra* note 133.

[136] *Id.*

[137] Chesapeake Energy Corp., Quarterly Report (Form 10-Q) 47–48 (Nov 2, 2021).

[138] *See* Rentschler, *supra* note 90, at 14 (classifying nuclear and renewable as "low volatility" sources of energy); Fabien A. Roques, William J. Nuttall, David M. Newbery, Richard de Neufville et al., *Nuclear Power: A Hedge Against Uncertain Gas and Carbon Prices?*, 27 ENERGY J. 1, 8 (2006) (arguing that energy companies can use nuclear power to "hedge against the volatility and risk of gas and carbon prices"). A possible exception is hydropower, which may be subject to climate change-driven volatility if changing precipitation patterns affect the water levels of rivers. Rentschler, *supra* note 90, at 16.

[139] Roques et al., *supra* note 138, at 8 n.8.

[140] *Id.*

[141] *See* Rentschler, *supra* note 90, at 16–17 (describing simulations, the results of which "impl[y] that renewable energies can indeed play a significant role in hedging against oil price volatility").

[142] *Cf.* Joshua S. Graff Zivin, Matthew J. Kotchen & Erin T. Mansur, *Spatial and Temporal Heterogeneity of Marginal Emissions: Implications for Electric Cars and Other Electricity-Shifting Policies*, 107 J. ECON. BEHAV. & ORG. 248, 248–52 (2014) (describing how the net impact on carbon emissions from converting from gas to electric vehicles will partially depend on the type of power plant sourcing the electricity, which "differ[s] across [electric vehicle] charging locations"); JAMES KLIESCH & THERESE LANGER, AM. COUNCIL FOR AN ENERGY-EFFICIENT ECON., PLUG-IN HYBRIDS: AN ENVIRONMENTAL AND ECONOMIC PERFORMANCE OUTLOOK, REP. NO. T061, at 6 tbl.3 (2006) (reporting the variation in emissions from fully electric vehicles running in different regions).

power sources.[143] The oil and gas industry's reliance on Chapter 11 during periods of price collapse, as documented in this Section, likely allows producing firms to keep assets together and maintain operations until prices rise again, thus contributing to this counterproductive phenomenon.[144]

This conclusion suggests that the availability of Chapter 11 to insolvent fossil fuel producers has drastic ramifications for the environment and thus significant public policy implications. In the absence of a Chapter 11 path to reorganization, it is plausible that each period of price collapse would lead to the liquidation of several major extraction firms, taking assets out of production at least temporarily, disrupting the fossil fuel supply chain for longer time frames, and thereby increasing market pressure for the rapid adoption of more stable and carbon-neutral energy sources.[145] As the next Part demonstrates, models already exist for subjecting specific major industries to particular chapters and rules of the Bankruptcy Code based on their impact on the public.[146]

III. Models for Reform in Existing Bankruptcy Law

This Part identifies two industries for which the Bankruptcy Code deviates from the general Chapter 11 principles outlined above in Part II.[147] Section A discusses stockbrokers and commodity brokers, which may not reorganize under Chapter 11.[148] Section B reviews the treatment of insolvent railroad companies by the bankruptcy system, explaining that railroad companies may not proceed as debtors in possession and are reorganized in proceedings that take the public interest into account.[149] Section C of this Part then identifies principles from mass tort bankruptcies that are also applicable to fossil fuel

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[143] *Cf.* Roques et al., *supra* note 138, at 19–20 (finding that energy producers are reluctant to adopt nuclear energy because "there is little private value to merchant generating companies in retaining the nuclear option").

[144] *See supra* notes 113–137 and accompanying text (discussing the use of Chapter 11 bankruptcy by many energy producers during the energy market bust at the onset of the COVID-19 pandemic).

[145] *See* Kwangil Kim, *Elasticity of Substitution of Renewable Energy for Nuclear Power: Evidence from the Korean Electricity Industry*, 51 Nuclear Eng'g & Tech. 1689, 1694 (2019) (suggesting that fossil fuel electricity generation could be substituted by renewables and nuclear power); Lasse Fridstrøm & Vegard Østli, *Direct and Cross Price Elasticities of Demand for Gasoline, Diesel, Hybrid and Battery Electric Cars: The Case of Norway*, 13 Eur. Transp. Res. Rev. 3, 14–15 (2021) (evaluating the relationship between the price of electricity and demand for different types of vehicles); *cf.* West Virginia v. EPA, 142 S. Ct. 2587, 2637 (2022) (Kagan, J., dissenting) (noting that "the electrical grid works by taking up energy from low-cost providers before high-cost ones," and accordingly, measures that affect "plants' costs . . . automatically (by virtue of the way the grid operates) [affect] their share of the electricity market").

[146] *Infra* notes 152–270 and accompanying text.

[147] *See supra* notes 70–88 and accompanying text (discussing the policies underlying Chapter 11 bankruptcies and how Congress attempted to achieve those goals).

[148] *Infra* notes 152–176 and accompanying text.

[149] *Infra* notes 177–235 and accompanying text.

debtors.[150] Finally, Section D of this Part explains why these three models are especially apt comparisons for fossil fuel reorganizations and support the proposals that follows in Part IV.[151]

A. Stockbrokers and Commodity Brokers

Insolvencies of stockbrokers and commodity brokers raise unique public concerns. The financial industry is interconnected: brokers trade with their competitors, and when one broker fails, its counterparties can be forced to liquidate their own positions, creating downward pressure on share prices that can spiral out of control.[152] A significant contraction of the securities industry in the late 1960s highlighted these concerns, as customers found their assets to be effectively inaccessible because their insolvent brokers were either wrapped up in slow-moving bankruptcy proceedings or had dissolved.[153] This threatened to create a "domino effect" and impact other brokers with liquidity that were in business with the failing firms.[154] Congress responded to this systemic risk with the Securities Investor Protection Act of 1970 (SIPA),[155] which established the Securities Investor Protection Corporation (SIPC)[156] and was designed to safeguard public companies from financially troubled broker-dealers.[157] The Act was further strengthened in the wake of the Madoff Ponzi scheme to shore up public trust in the securities market.[158]

Nearly all U.S.-based brokers or dealers must be members of SIPC,[159] which is directed by a board appointed by the President, the Secretary of the

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[150] *Infra* notes 236–270 and accompanying text.

[151] *Infra* notes 271–290 and accompanying text.

[152] Michael E. Don & Josephine Wang, *Stockbroker Liquidations Under the Securities Investor Protection Act and Their Impact on Securities Transfers*, 12 CARDOZO L. REV. 509, 512 (1990); *see also* Stephen J. Lubben, *Systemic Risk & Chapter 11*, 82 TEMP. L. REV. 433, 433–34 (2009) (discussing systemic risk in the financial sector and its implications for reorganizations).

[153] Sec. Inv. Prot. Corp. v. Barbour, 421 U.S. 412, 415 (1975).

[154] *Id*.

[155] Pub. L. No. 91-598, 84 Stat. 1636 (codified as amended at 15 U.S.C. §§ 78aaa–78lll).

[156] 15 U.S.C. § 78ccc(a)(1). SIPC is a "non-profit membership corporation" chartered by Congress through SIPA to protect investors from insolvent brokers. *Mission*, SEC. INV. PROT. CORP., https://www.sipc.org/about-sipc/sipc-mission [https://perma.cc/D7M3-VVLN].

[157] Sec. & Exch. Comm'n v. Alan F. Hughes, Inc., 461 F.2d 974, 977 (2d Cir. 1972).

[158] *See Assessing the Limitations of the Securities Investor Protection Act: Hearing Before the Subcomm. on Cap. Mkts., Ins., & Gov't Sponsored Enters. of the H. Comm. on Fin. Servs.*, 111th Cong. 1–2 (2010) (statement of Rep. Paul E. Kanjorski, Chairman, Subcomm. on Cap. Mkts., Ins., & Gov't Sponsored Enters.) (discussing the need to amend SIPA to build back the public trust that was "seriously eroded by SIPC's narrow interpretation of its statutory mandate").

[159] *See* 15 U.S.C. § 78ccc(a)(2)(A) (excluding from the registration requirements only brokers or dealers whose principal business is executed outside the U.S. or whose business is limited to certain financial services specified in the statute).

Treasury, and the Federal Reserve Board.[160] The SEC also enjoys "plenary authority" to supervise SIPC.[161] The operations of SIPC is largely funded by assessments SIPC imposes on members.[162] Upon SIPC's determination that a member is likely to become insolvent, SIPC is empowered to file suit in district court seeking the appointment of a trustee to oversee that member's liquidation.[163] As a quasi-public corporation, SIPC plays a unique role, specifically in initiating securities industry bankruptcies, that is absent in other sectors' insolvency proceedings.[164]

The most significant difference between a SIPA liquidation and an ordinary bankruptcy is that SIPC provides special funds to protect an insolvent broker's customers.[165] SIPC remits these funds to the court-appointed trustee, who must use these funds to compensate customers, and not to repay other creditors, regardless of the priority those creditors would enjoy in an ordinary bankruptcy.[166] In 1985, in *In re Hanover Square Securities*, the Bankruptcy Court for the Southern District of New York explained that "Congress intended to protect those who had entrusted cash or securities to their broker/dealers[,]" and business lenders, in contrast, "are simply not a class to be specially protected under SIPA . . . ."[167] Thus, SIPC prioritizes the protection of investor-customers of an insolvent broker over the interests of other creditors during bankruptcy proceedings.[168]

Though SIPA was enacted before the Bankruptcy Reform Act of 1978, the two statutes were harmonized to work together.[169] Under current law, SIPA actions are removed to a bankruptcy court after the district court enters appropriate protective orders and appoints a trustee.[170] Apart from SIPA's special mandates, bankruptcy courts generally proceed as if the case was filed under

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[160] *Id.* § 78ccc(c)(2).

[161] Sec. Inv. Prot. Corp. v. Barbour, 421 U.S. 412, 417 (1975) (first quoting S. REP. NO. 91-1218, at 1 (1970); and then citing H.R. REP. NO. 91-1613, at 12 (1970)).

[162] 15 U.S.C. § 78ddd(a)(1), (c).

[163] *Id.* § 78eee(b)(1), (3); *see In re* Inv. Bankers, Inc., 4 F.3d 1556, 1558–59 (10th Cir. 1993) (describing the case facts, in which the SIPC sued Investment Bankers, Inc. (IBI) under SIPA, requesting that the court appoint a trustee to liquidate IBI because "IBI was in danger of failing to meets it obligations to its customers").

[164] *Mission*, *supra* note 156.

[165] Don & Wang, *supra* note 152, at 519–20 (citing § 78fff-3(a)).

[166] *Id.* (first citing § 78fff-3(a); and then citing *In re* Hanover Square Sec., 55 B.R. 235, 237 (Bankr. S.D.N.Y. 1985)).

[167] 55 B.R. at 238.

[168] Don & Wang, *supra* note 152, at 519–20.

[169] *See In re* Inv. Bankers, Inc., 4 F.3d 1556, 1564 (10th Cir. 1993) (finding that Congress's intent when passing the 1978 Bankruptcy Reform Act was for "bankruptcy courts to preside over SIPA liquidation proceedings").

[170] *Id.*; 15 U.S.C. § 78eee(b)(4).

Chapter 7.[171] Most significantly, to facilitate the consumer-focused liquidation mechanism established by SIPA, the Bankruptcy Code explicitly forbids stockbrokers and commodity brokers from reorganizing under Chapter 11.[172] In other words, brokers are *required* to liquidate upon an event of insolvency.[173] Thus, stockbrokers and commodity brokers are not entitled to the second chance offered by Chapter 11 to corporations in other industries.[174]

For the purposes of this Article, the mandatory liquidation of securities brokers provides a clear and simple model for future reforms to the Bankruptcy Code. Because certain operations within the securities industry pose heightened risks to the public, actors in that industry are barred from reorganizing under Chapter 11 and are instead directed to a modified liquidation procedure designed to protect the investing public.[175] The reforms proposed in Part IV are designed along similar lines.[176]

B. Railroad Reorganizations and the Public Interest

An equally instructive model can be found in railroad law, which was molded by the industry's historical significance to American society.[177] The realities of the post-Civil War economy shaped early railroad reorganization principles.[178] The victorious Union's breakneck pace of industrialization and its relentless drive to assimilate the continent depended on the construction of new rail lines.[179] Commentators note that railroads became a "catalyst for and

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[171] 15 U.S.C. § 78fff(b).

[172] *See* 11 U.S.C. § 109(d) (prohibiting "stockbroker[s]" and "commodity broker[s]" from accessing Chapter 11 bankruptcy); Toibb v. Radloff, 501 U.S. 157, 161 (1991) (explaining that § 109(d) blocks stockbrokers from filing under Chapter 11); Sec. Inv. Prot. Corp. v. Blinder, Robinson & Co., 962 F.2d 960, 964 (10th Cir. 1992) (describing Congress' unambiguous intent that "stockbrokers may not use Chapter 11 procedures").

[173] *See* 11 U.S.C. § 109(d) (leaving Chapter 7 as the only bankruptcy option for insolvent stockbrokers).

[174] Grogan v. Garner, 498 U.S. 279, 286–87 (1991) (explaining that the purpose of the Bankruptcy Code is to provide "certain insolvent debtors . . . a new opportunity in life" (quoting Local Loan Co. v. Hunt, 292 U.S. 234, 244 (1934))), *superseded by statute*, Sarbanes Oxley Act of 2002, Pub. L. No. 107-204, 116 Stat. 745.

[175] *Supra* notes 152–174 and accompanying text.

[176] *Infra* notes 298–325 and accompanying text.

[177] RICHARD D. STONE, THE INTERSTATE COMMERCE COMMISSION AND THE RAILROAD INDUSTRY: A HISTORY OF REGULATORY POLICY 1 (1991).

[178] JAMES W. ELY, JR., RAILROADS AND AMERICAN LAW 175–77 (2001).

[179] *See* WOLFGANG SCHIVELBUSCH, THE RAILWAY JOURNEY: THE INDUSTRIALIZATION OF TIME AND SPACE IN THE NINETEENTH CENTURY 89–95 (2014) (discussing how at the start of the nineteenth century, there was no major American transportation system outside of New England and that the construction of the American railroad system between 1850 and 1875 was an "instrument for launching the American industrial revolution" (quoting W.W. ROSTOW, THE PROCESS OF ECONOMIC GROWTH 262 (1962))); JOSEPH A. FRY, LINCOLN, SEWARD, AND U.S. FOREIGN RELATIONS IN THE CIVIL WAR ERA 12, 155 (2019) (describing the important role that the transcontinental railroad played

symbol of a transformation in the 'space' of the nation and the individual's place in it."[180] The industry transformed the very nature of American life.[181]

Although established northern and southern rail lines remained relatively stable, speculation and risky debt instruments financed the construction of rail lines during the nation's breathless western expansion.[182] In the west, whether a new town could attract a functioning railroad determined its fate.[183] Congress granted land to firms for rail line construction, contingent on the construction's completion.[184] This promise of land incentivized firms to use increasingly risky financing methods to fund the rapid completion of their work.[185] Firms bribed public officials with stock options, and overcapitalized firms sold bonds to farmers desperate to attract rail lines to their communities.[186]

These factors led to a high rate of western railroad defaults in a system that was not designed to address them.[187] No bankruptcy law existed from 1878 to 1898.[188] The national imperative to maintain western railroad operation and expansion in the face of insolvencies during this era produced legal innovations, such as equity receiverships, that allowed insolvent railroads to continue functioning as going concerns well before Congress implemented that objective in bankruptcy legislation.[189] By the end of the depression of the 1890s, firms reorganized through an equity receivership under judicial supervision controlled nearly one third of all U.S. railroad miles.[190] But, as a bankruptcy model, these early cases left much to be desired. In the absence of regu-

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in the expansion of the US economy in the late 1800s); STONE, *supra* note 177, at 1 (highlighting the importance of the construction of the railroads in America on many aspects of the American economy).

[180] BARBARA YOUNG WELKE, RECASTING AMERICAN LIBERTY: GENDER, RACE, LAW, AND THE RAILROAD REVOLUTION, 1865–1920, at 249 (Christopher Tomlins ed., 2001) (footnote omitted).

[181] STONE, *supra* note 177, at 1.

[182] Harold G. Wren, The American Law of Railroad Reorganization (1957) (J.S.D. dissertation, Yale Law School), 13–19 (1957) (HeinOnline).

[183] STONE, *supra* note 177, at 2–3.

[184] Wren, *supra* note 182, at 15.

[185] *Id.* at 15–16.

[186] STONE, *supra* note 177, at 3 (citing SOLON JUSTUS BUCK, THE GRANGER MOVEMENT: A STUDY OF AGRICULTURAL ORGANIZATION AND ITS POLITICAL, ECONOMIC AND SOCIAL MANIFESTATIONS 1870–1880, at 13–15 (1913)).

[187] *Id.*; Wren, *supra* note 182, at 16–17.

[188] Albro Martin, *Railroads and the Equity Receivership: An Essay on Institutional Change*, 34 J. ECON. HIST. 685, 688 (1974).

[189] *Id.* at 687–88; *see* Wren, *supra* note 182, at 17–20 (discussing the unknown origin of applying the idea of receivership to the case of a railroad mortgage, which at the time was necessary because the typical remedy in the event of a default, selling off the mortgaged property, was futile for railroad-company bondholders). In 1886, in *Central Trust Co. v. Wabash, Saint Louis & Pacific Railway Co.*, the Circuit Court of the Eastern District of Missouri noted that expenditures are justified when made to maintain the operations of an insolvent railroad, because without an operating railroad, rail lines simply rust on open land. 29 F. 618, 626 (C.C.E.D. Mo. 1886).

[190] Martin, *supra* note 188, at 688.

latory supervision or uniform rules promulgated under Congress's bankruptcy power, ad hoc judicial workarounds largely failed to protect investors or to develop sustainable financial structures for reorganized firms.[191]

Though railroads soon crisscrossed the continent, unsupervised firms produced lines that "were a jumble of discontinuous segments, exclusive track, different gauges, [and] short runs."[192] This uncoordinated transportation network proved utterly insufficient to meet wartime logistical needs, first during the Spanish-American War[193] and then more dramatically during the First World War.[194] Faced with the task of deploying two million American troops to coastal embarkation points and ferrying raw materials to wartime industries in other parts of the country, the railroads initially pledged to merge "all their merely individual and competitive activities in the effort to produce a maximum of national transportation efficiency."[195] But industry-led efforts proved lacking,[196] and the United States was forced to nationalize all rail service in December 1917, retaining governmental control until March 1920.[197]

The Transportation Act, 1920 (the "1920 Act") restored U.S. railroads to the private sector, mollifying owners and managers who had chafed under federal supervision.[198] The public, however, viewed the short-lived United States Railroad Administration as a success because it improved efficiency and increased wages for railroad workers.[199] The railroad unions and others argued for extended, or even indefinite, national control.[200]

Although this view did not prevail in Congress, the 1920 Act accounted for a degree of public involvement and supervision in what had once been a

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[191] Wren, *supra* note 182, at 42; *cf.* Atl. Coast Line R.R. Co. v. St. Joe Paper Co., 216 F.2d 832, 835 (5th Cir. 1954) (per curiam) (asserting that "[t]he history of equity receiverships is not such as to inspire hope of any improvement by the change from bankruptcy to the equity side of the court").

[192] WELKE, *supra* note 180, at 250.

[193] FRANK HAIGH DIXON, RAILROADS AND GOVERNMENT: THEIR RELATIONS IN THE UNITED STATES 1910–1921, at 107 (1922).

[194] *See* John G.B. Hutchins, *The Effect of the Civil War and the Two World Wars on American Transportation*, 42 AM. ECON. REV. 626, 630, 634–35 (1952).

[195] SPECIAL REPORT OF THE INTERSTATE COMMERCE COMMISSION, H.R. DOC. NO. 65-503, at 5 (1917); Hutchins, *supra* note 194, at 630–31; DIXON, *supra* note 193, at 109; *see* Hugh Rockoff, *Until It's Over, Over There: The U.S. Economy in World War I* 16 (Nat'l Bureau of Econ. Rsch., Working Paper No. 10580, 2004) (discussing the strain on the railroad system during World War I because "the bulk of shipments were heading to a few east coast ports").

[196] DIXON, *supra* note 193, at 107–18.

[197] *Id.* at 119–20, 161; Hutchins, *supra* note 194, at 634; WILLIAM L. WITHUHN, AMERICAN STEAM LOCOMOTIVES: DESIGN AND DEVELOPMENT, 1880–1960, at 189, 204 (2019).

[198] Pub. L. No. 66-152, Ch. 91, 41 Stat. 456, 457 (1920) (repealed 1926); WITHUHN, *supra* note 197, at 204.

[199] WITHUHN, *supra* note 197, at 204.

[200] *Id.*; STONE, *supra* note 177, at 20.

privately controlled industry.[201] Congress gave a larger oversight role to the newly-empowered Interstate Commerce Commission (ICC), a regulatory agency that had been created decades earlier, in part due to the public's disapproval of the railroad industry's general practices.[202] The 1920 Act envisioned the creation of an improved nationwide transportation network with private enterprise working under regulatory supervision.[203] In 1923, in *New England Divisions Case*, the U.S. Supreme Court stated that:

> [Before the 1920 Act,] the effort of Congress had been directed mainly to the prevention of abuses; particularly, those arising from excessive or discriminatory rates. [In contrast, t]he 1920 Act sought to ensure, also, adequate transportation service . . . . And to attain it, new rights, new obligations, new machinery, were created.[204]

The ICC was empowered, among other things, "to fix minimum, as well as maximum, rates; and thus prevent cut-throat competition and the taking away of traffic from weaker competitors, to prevent the depletion of interstate revenues by discriminating intrastate rates, and to determine the division of joint rates."[205] Significantly, the 1920 Act also required railroads to seek the ICC's approval before issuing new securities, and the ICC would not grant such permission unless the issuance would be "compatible with the public interest" and would "not impair the applicant's ability to perform the service of a public carrier."[206] Therefore, the ICC could check railroad companies' attempts to discontinue service or liquidate certain lines.[207]

Because any corporate reorganization would necessarily involve adjustments to a firm's capital structure and require the entity to issue new securities, the 1920 Act effectively mandated the ICC's involvement, and the considera-

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[201] *See* STONE, *supra* note 177, at 20–22 (discussing the provision of the Transportation Act, 1920 that heavily regulated the rail industry).

[202] Samuel P. Huntington, *The Marasmus of the ICC: The Commission, the Railroads, and the Public Interest*, 61 YALE L.J. 467, 470–71 (1952); *see* STONE, *supra* note 177, at 6–10 (summarizing the history and lack of power held by the ICC between its creation in 1887 through 1918).

[203] STONE, *supra* note 177, at 20–21; *see* Nathan L. Jacobs, Paper, *The Interstate Commerce Commission and Interstate Railroad Reorganizations*, 45 HARV. L. REV. 855, 863 n.45 (1932) (discussing portions of the 1920 Act that required approval from the ICC before railroads could build or purchase railroad lines or issue securities).

[204] 261 U.S. 184, 189–90 (1923).

[205] *Id.* at 190 n.8 (citations omitted).

[206] Pittsburg & W. Va. Ry. Co. v. Interstate Com. Comm'n, 293 F. 1001, 1002 (D.C. Cir. 1923); *see* STONE, *supra* note 177, at 21–22 (discussing the discretion that the ICC held when evaluating railroad activity that needed ICC approval, including the issuance of new securities). *See generally* DIXON, *supra* note 193, at 284–99 (analyzing the regulation by the government of railroad capitalization).

[207] *See* STONE, *supra* note 177, at 21.

tion of the public interest, in all reorganization proceedings.[208] Incorporating this consideration into all reorganization proceedings was a long-term goal of reformers.[209] Reformers argued, even in the pre-war era, that the federal government should supervise railroad reorganizations to ensure that firms in this critical industry emerged from insolvency with sustainable capital structures because they had largely failed to do so during the era of equity receiverships.[210] Railroad firms challenged these new provisions, arguing that the 1920 Act exceeded Congress's authority under the Commerce Clause.[211] But even during the Lochner Era, courts upheld these provisions.[212]

Shortly after the 1920 Act's passage, Princeton economist Frank Haigh Dixon reflected on its implications:

> [T]he war experiment shook us out of a lethargic state into which we seemed to have fallen, and started us with renewed vigor on the task of solving this perennial railroad problem. . . . [T]he railroads are now officially placed in a new relation to the public[] . . . [and a] new responsibility is placed upon the Interstate Commerce Commission. But this very fact emphasizes and enforces the public nature of the industry with which we are dealing.[213]

In the depths of the Great Depression, rail tonnage fell precipitously and new forms of transportation began to cut into the railroad industry's traditional monopoly.[214] As insolvencies increased, Congress considered removing railroad reorganizations from the courts entirely and simply handing them over to the ICC for administration.[215] Though Congress ultimately did not go so far, Congress clarified the supervisory role of the ICC by adding Section 77 to the Bankruptcy Act.[216] Section 77, which established special rules governing rail-

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[208] Jacobs, *supra* note 203, at 863–66; Huntington, *supra* note 202, at 472 n.18.

[209] Jacobs, *supra* note 203, at 861 (citing *Hearings Before the Joint Comm. on Interstate and Foreign Com.*, 64th Cong. 556, 581 (1916) (statement of Max Thelen, President, Nat'l Ass'n Ry. Comm'rs)).

[210] *Id*.; *see* Martin, *supra* note 188, at 688 (explaining that "as much as one third of all U.S. railroad mileage in existence in 1898 had been through the receivership process").

[211] *E.g.*, Pittsburg & W. Va. Ry. Co., 293 F. at 1004.

[212] *See id.* (rejecting the railroad's argument that "the authority conferred by the act upon the Interstate Commerce Commission is not within the power of Congress" and holding that such regulations fit squarely within Congress's Commerce Clause powers).

[213] DIXON, *supra* note 193, at viii.

[214] STONE, *supra* note 177, at 36–37.

[215] Palmer v. Massachusetts, 308 U.S. 79, 86–87 (1939) (citing 76 CONG. REC. 5358 (1932) (statement of Rep. Fiorello Henry La Guardia)).

[216] Baker v. Gold Seal Liquors, Inc., 417 U.S. 467, 479 (1974) (Rehnquist, J., dissenting), *superseded by statute*, Bankruptcy Reform Act of 1978, Pub. L. No. 95-598, 92 Stat. 2549; Ecker v. W. Pac. R.R. Corp., 318 U.S. 448, 467–72 (1943). *See generally* Robert T. Swaine, *A Decade of Railroad*

road bankruptcies, signaled a collective appreciation for the ICC's investigations into the intricacies of railroad reorganizations.[217] In Section 77 proceedings, federal courts shared responsibility with the ICC to formulate reorganization plans, but courts were not permitted to approve a plan unless it was certified by the ICC as serving the public interest.[218] The ICC engaged in significant supervisory activity, including closely supervising railroad reorganization proceedings, evaluating proposed plans, ratifying the appointment of trustees, supervising the compensation of trustees, regularly reporting on the firms and mileage involved in reorganization, and proposing legislative revisions to improve the efficacy of Section 77.[219]

In the following decades, the courts and the ICC construed the public interest broadly, considering not just narrow logistical interests, but also the impact of a firm's insolvency on particular localities and on railroad employees.[220] Courts prohibited railroad companies from paying any prepetition debts—even *taxes*—if such payments could jeopardize continued public service.[221] For example, in 1978, in *In re Pennsylvania Central Transportation Co.*, the U.S. District Court for the Eastern District of Pennsylvania explained that "because of the public interest in continued rail service[,] . . . [a] railroad debtor simply must continue to operate, *without regard to the interests or desires of its creditors*, at least until such time as the constitutional rights of secured creditors . . . are clearly in jeopardy."[222]

By the time the venerable Bankruptcy Act was replaced in 1978 by the modern Bankruptcy Code, railroad service had declined largely due to federal policy preferences for highways and automobiles.[223] Congress streamlined Section 77 to improve its efficiency[224] and transferred certain ICC powers to the bankruptcy courts.[225] Although the new Subchapter IV incorporated railroad reorganizations into the general scheme of Chapter 11, it retained certain

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Reorganization Under Section 77 of the Federal Bankruptcy Act, 56 HARV. L. REV. 1193 (1943) (analyzing the impact of Section 77 on railroad reorganizations).

[217] *Ecker*, 318 U.S. at 468.

[218] *Id.* at 472; *Baker*, 417 U.S. at 473–74.

[219] *See, e.g.*, INTERSTATE COM. COMM'N, ANNUAL REPORT OF THE INTERSTATE COMMERCE COMMISSION: 1935–1936, at 20–22, 44–46, 159–60 (1936) (detailing various actions taken by the ICC).

[220] Reed v. Meserve, 487 F.2d 646, 649–50 (1st Cir. 1973).

[221] *In re* Chi., Milwaukee, St. Paul & Pac. R.R Co., 830 F.2d 758, 760 (7th Cir. 1987); *In re* Bos. & Me. Corp., 719 F.2d 493, 498 (1st Cir. 1983).

[222] 458 F. Supp. 1234, 1277 (E.D. Pa. 1978) (emphasis added).

[223] FRANK J. DOOLEY & WILLIAM E. THOMS, RAILROAD LAW A DECADE AFTER DEREGULATION 43, 125 (1994).

[224] S. REP. NO. 95-989, at 11 (1978), *as reprinted in* 1978 U.S.C.A.A.N. 5787, 5797.

[225] *Id.*; DOOLEY & THOMS, *supra* note 223, at 5, 52–55.

special provisions that were carried over from Section 77.[226] Notably, Subchapter IV continues to include a provision mandating the consideration of the public interest when determining the disposition of a railroad debtor's assets.[227]

In 2002, in *In re Merco Joint Venture LCC*, the U.S. Bankruptcy Court for the Eastern District of New York outlined the ways that modern railroad industry bankruptcies under Subchapter IV differ from other corporate reorganizations.[228]

First:

> [T]here can be no continuing management and control of the railroad by its prepetition officers and directors in a case under subchapter IV . . . . In sharp contrast, in every non-railroad chapter 11 case, the strong presumption is that the prepetition management of the debtor will be maintained in place.[229]

Second:

> [T]he Secretary of Transportation in Washington, D.C. has the sole and exclusive authority to forward five names of qualified trustees to the United States Trustee; then the United States Trustee must make the appointment of the railroad trustee from one of these five recommended candidates, and no others. In a word, the appointment of a sub-chapter-IV trustee is a highly political act by a member of the President's Cabinet. The appointment has to be political for the compelling reason that the railroad trustee must constantly keep all eyes focused on what is in the public's best interest.[230]

And finally, in a railroad case:

> [T]he bankruptcy court must explicitly consider the public interest . . . . In non-railroad cases, the confirmation of a chapter 11 plan is intended to treat fairly and equitably the impaired claims of the classes of secured creditors, priority creditors, and general unsecured creditors. Consideration of the public interest is not a statutory criterion for confirmation in non-railroad cases.[231]

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[226] S. REP. NO. 95-989, at 11, *as reprinted in* 1978 U.S.C.A.A.N. 5787, 5797.

[227] *Id.* at 133–34, *as reprinted in* 1978 U.S.C.A.A.N. 5787, 5919–20; 11 U.S.C. § 1165; Wheeling-Pittsburgh Steel Corp. v. McCune, 836 F.2d 153, 160–61 (3d Cir. 1987) (citing § 1165).

[228] No. 02-80588-288, 2002 WL 32063450, at *2–3 (Bankr. E.D.N.Y. July 19, 2002).

[229] *Id.* at *2 (citing 7 COLLIER ON BANKRUPTCY ¶ 1100.01 (15th rev. ed. 1996)).

[230] *Id.*

[231] *Id.* at *3.

Thus, even as rail travel declines in importance to society, the Bankruptcy Code continues to impose unique requirements on the industry.[232] Though Subchapter IV is now rarely used,[233] it is by no means dormant, and the public interest standard remains applicable in modern cases.[234] The bankruptcy system's treatment of insolvent railroad companies thus provides a viable model for the application of the public interest standard to other industries.

Accordingly, some scholars who argue for greater consideration of community interests in bankruptcy proceedings point to the railroad reorganization cases as exemplary.[235] For the purposes of this Article, the importance of the railroad legacy is twofold: it provides a clear example of both the consideration of the public interest and the imposition of special standards on a particular industry where business operations impact larger societal concerns.

C. Mass Tort Bankruptcies

As a final model, lessons can be drawn from mass tort bankruptcies, where companies that have injured numerous victims seek bankruptcy relief in the face of thousands of actual claims and the possibility of additional claims by victims who may not yet realize their injury.[236] Because the bankruptcy system treats those entitled to unliquidated judgments against a debtor, including tort victims, as creditors, and a bankruptcy proceeding is ultimately a process through which creditors divide a debtor's assets, the assets of bankrupt mass tortfeasors are redeployed to ensure victims are compensated to the maximum extent possible.[237] Rather than relying on piecemeal civil litigation that might grant early plaintiffs a disproportionate share of a tortfeasor's remaining assets,

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[232] *See* 11 U.S.C. §§ 1161–1165.

[233] GROSS, *supra* note 66, at 34.

[234] *See, e.g.*, *In re* San Luis & Rio Grande R.R., Inc., 634 B.R. 599, 605 (Bankr. D. Colo. 2021) (adjudicating a dispute whereby the San Luis and Rio Grande Railroad was actively engaged in bankruptcy proceedings under Subchapter IV (citing 11 U.S.C. §§ 1161–1174)). *But see* GROSS, *supra* note 66, at 34 (calling the use Subchapter IV "largely dormant" in 1997). Though Subchapter IV and the public interest standard survive to this day, the ICC does not. The venerable agency was wound down in 1996. ICC Termination Act of 1995, Pub. L. No. 104-88, 109 Stat. 803 (1995). Many of the ICC's functions transferred to its successor agency, the Surface Transportation Board. *See* 49 U.S.C. §§ 1301–1302.

[235] *See* GROSS, *supra* note 66, at 220–21 ("An obvious question is why concern for the public interest should be limited to railroads."). *See generally* Julie A. Veach, Note, *On Considering the Public Interest in Bankruptcy: Looking to the Railroads for Answers*, 72 IND. L.J. 1211 (1997) (arguing that bankruptcy judges should have discretion to consider public interest in all reorganization proceedings).

[236] Alan N. Resnick, *Bankruptcy as a Vehicle for Resolving Enterprise-Threatening Mass Tort Liability*, 148 U. PA. L. REV. 2045, 2045, 2050 (2000); Thomas A. Smith, *A Capital Markets Approach to Mass Torts Bankruptcy*, 104 YALE L.J. 367, 372–78 (1994) [hereinafter Smith, *A Capital Markets Approach*].

[237] Smith, *A Capital Markets Approach*, *supra* note 236, at 372–78.

a bankruptcy proceeding can preserve wealth, centralize proceedings, and fairly distribute dwindling assets between numerous current and future victims.[238]

In the mass tort context, the bankruptcy system thus offers some theoretical advantages over traditional or multidistrict tort litigation.[239] Most significantly, bankruptcy's aim of conferring equal treatment to creditors in similar positions coincides with the goal of treating equally early claimants and potential claimants yet to file.[240] Bankruptcy courts typically appoint a representative to advocate on behalf of future claimants as a class to ensure that funds are allocated to compensate injuries arising out of a debtor's past conduct that have not yet manifested.[241] The bankruptcy system has resolved the largest mass tort proceedings to date,[242] including the liquidation or reorganization of firms implicated in asbestos production,[243] the Dalkon Shield IUD,[244] faulty silicone gel breast implants,[245] and California wildfires.[246]

But perhaps no mass tort bankruptcy involved as many claims or victims as the recent case involving Purdue Pharma that produced, distributed, and aggressively marketed drugs that contributed to the nation's devastating opioid epidemic.[247] In 2021, in *In re Purdue Pharma L.P.*, the Bankruptcy Court for the Southern District of New York noted that the case involved the biggest creditor body to date, including 618,000 individual claimants injured by the

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[238] *See* Douglas G. Smith, *Resolution of Mass Tort Claims in the Bankruptcy System*, 41 U.C. DAVIS L. REV. 1613, 1639–49, 1656 (2008) [hereinafter Smith, *Resolution of Mass Tort Claims*]. *But see* Rice & Davis, *supra* note 62, at 407–10 (arguing that mass tort claimants are disadvantaged when "thrust involuntarily into the bankruptcy forum" compared to individuals pursuing claims through class action litigation).

[239] Smith, *Resolution of Mass Tort Claims*, *supra* note 238, at 1634, 1639–49; *see also* MICHAEL DORE, 2 LAW OF TOXIC TORTS § 20:13.20 *The Bankruptcy Option*, Westlaw (database updated July 2022) (noting that "[r]ecent Supreme Court decisions have made it very difficult, if not impossible, to settle mass tort claims through the mechanism of federal class actions . . . [and therefore] there has been increased interest in the extent to which the Bankruptcy Courts can be used to either settle or otherwise resolve such claims" (first citing Ortiz v. Fibreboard Corp., 527 U.S. 815 (1999); and then citing Amchem Prods., Inc. v. Windsor, 521 U.S. 591 (1997))).

[240] Resnick, *supra* note 236, at 2050.

[241] Smith, *Resolution of Mass Tort Claims*, *supra* note 238, at 1640.

[242] Smith, *A Capital Markets Approach*, *supra* note 236, at 372. For a collection of mass tort cases the bankruptcy system resolved, see *id.* at 372 n.22 (citations omitted).

[243] *E.g.*, *In re* Joint E. & S. Dist. Asbestos Litig., 129 B.R. 710, 732 (E.D.N.Y. 1991), *vacated*, 982 F.2d 721, 725 (2d Cir. 1992), *modified on reh'g*, *In re* Findley, 993 F.2d 7, 11 (2d Cir. 1993).

[244] A.H. Robins Co. v. Piccinin, 788 F.2d 994, 996 (4th Cir. 1986).

[245] *In re* Dow Corning Corp., 211 B.R. 545, 551 (Bankr. E.D. Mich. 1997).

[246] *See* Elias Kohn, *Mitigating PG&E's Wildfire Ignitions: A Framework for Environmental Resilience and Economic Stimulus*, 12 GEO. WASH. J. ENERGY & ENV'T L. 3, 12 (2021) (describing PG&E's use of the bankruptcy system as an "escape route" after it was found liable for the damage caused by California's wildfires in 2017 and 2018).

[247] *See generally* Ronald Chow, *Purdue Pharma and OxyContin—A Commercial Success but Public Health Disaster*, 25 HARV. PUB. HEALTH REV. 1, 1 (2019) (describing crisis of opioid addiction in the United States and the role of Purdue Pharma).

addictive properties of OxyContin, Purdue's principal prescription drug, joined by a multitude of governmental entities bringing *parens patriae* claims on behalf of their citizens.[248]

The Purdue proceedings received significant attention, and criticism largely focused on the Sackler family, the company's owners, who secured familial wealth by withdrawing over ten billion dollars from the company and placing it in "spendthrift trusts" and "offshore companies," effectively removing that wealth from the reach of the company's creditors.[249] Despite its documented frustration with the result, the bankruptcy court approved a plan discharging the Sacklers from civil liability arising from their work at the company, in exchange for their participation in and contribution to a settlement.[250] The district court, however, ultimately reversed this holding, pointing to a circuit split regarding the scope of a bankruptcy court's power to discharge the liability of non-debtors.[251]

Putting aside the uncertain status of nonconsensual nondebtor releases[252] or the propriety of requiring a bankruptcy court to recognize the sanctity of spendthrift trusts in these circumstances, the initially confirmed plan aptly demonstrates a bankruptcy court's effective redeployment of an insolvent tortfeasor's assets for the benefit of victims and the general public. The plan distributed the bulk of Purdue's value into several creditor trusts that would make distributions to various opioid abatement efforts and to victims of Purdue's products.[253] Future tort claims would be channeled into actions brought against the appropriate trust.[254] Purdue itself would dissolve, with its remaining assets, including intellectual property, transferred to a new company ("NewCo" in bankruptcy parlance) that would operate for the public good.[255]

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[248] 633 B.R. 53, 58 (Bankr. S.D.N.Y.), *vacated*, 635 B.R. 26 (S.D.N.Y. 2021), *appeal filed*, No. 21-cv-7532 (2d Cir. 2022).

[249] *In re Purdue Pharma, L.P.*, 635 B.R. at 34–37.

[250] *In re Purdue Pharma L.P.*, 633 B.R. at 81–82, 93–95 ("This is a bitter result. B-I-T-T-E-R.").

[251] *In re Purdue Pharma, L.P.*, 635 B.R. at 34–37; *see also, e.g.*, Ralph Brubaker, *Bankruptcy Injunctions and Complex Litigation: A Critical Reappraisal of Non-debtor Releases in Chapter 11 Reorganizations*, 1997 U. ILL. L. REV. 959, 1034–35 (arguing that "non-debtor releases are not an appropriate extension of the historical injunctive powers of federal bankruptcy courts").

[252] There are competing views on the validity of such releases. *Compare In re* Lowenschuss, 67 F.3d 1394, 1401 (9th Cir. 1995) (stating that the Bankruptcy Code "precludes bankruptcy courts from discharging the liabilities of non-debtors" (collecting cases)), *with* Behrmann v. Nat'l Heritage Found., 663 F.3d 704, 712 (4th Cir. 2011) (acknowledging authority to approve nondebtor releases, albeit "cautiously and infrequently"). *See also In re* Aegean Marine Petrol. Network Inc., 599 B.R. 717, 720–27 (Bankr. S.D.N.Y. 2019) (discussing nonconsensual releases in contemporary bankruptcy practice).

[253] *In re Purdue Pharma, L.P.*, 635 B.R. at 66.

[254] *Id.* at 66–68.

[255] *Id.* at 66–67. Examples of NewCo's products include digestive medication, "opioid-abatement medications," and cancer treatments. *Id.* at 67.

Specifically, the plan called for NewCo to be managed and directed by disinterested officers appointed in part by the creditors' committees, and then observed by the Department of Justice and a public monitor.[256] The reorganized firm would operate subject to an injunction that forbids the company to market opioid products or set employee compensation based on opioid sales volumes or quotas.[257] The company would also be obligated to use its resources to develop "overdose reversal and addiction treatment medications" and to distribute those medications at low or no cost.[258] Significantly, under the plan, NewCo's long-term objective is to eventually cease operations, and managers were required to use reasonable best efforts to sell NewCo's assets and wind down the firm by the end of 2024.[259]

This case demonstrates that the bankruptcy system is eminently capable of redeploying assets from insolvent tortfeasors for the benefit of the public, especially where a firm's harmful actions sweep so wide that the collection of injured victims essentially consists of the general public.[260] In such cases, the majority of the firm's creditors are tort victims with a strong interest in restitution as well as efficient asset distribution.[261] Restitution can be achieved by, for example, establishing trusts and requiring successor corporations to operate under supervision according to the terms of continuing injunctions.[262]

Indeed, for asbestos-related cases, Congress codified a mass tort resolution mechanism through the Bankruptcy Reform Act of 1994, which inserted 11 U.S.C. § 524(g) into the Bankruptcy Code.[263] Section 524(g) reflected a compromise between the interests of business and the plaintiff's bar authorizing bankruptcy courts to establish trusts to compensate future claimants while also discharging reorganized successor companies (and in some cases, third parties) from liability for those claims.[264] The codification of the asbestos provisions in the Bankruptcy Code provides a clear model for amendments to address mass tort filings within a given industry.

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[256] *Id.* at 66–67.

[257] *Id.*

[258] *Id.* at 67.

[259] *Id.*

[260] *See In re* Purdue Pharma L.P., 633 B.R. 53, 58 (Bankr. S.D.N.Y.), *vacated* 635 B.R. 26 (S.D.N.Y. 2021), *appeal filed*, No. 21-cv-7532 (2d Cir. 2022) (noting that the creditor body included "people who could arguably be said to be represented by their local and state governments and by the United States," who participated as creditors).

[261] *See id.* (discussing the numerosity of tort creditors).

[262] *See In re Purdue Pharma*, *L.P.*, 635 B.R. at 66–68 (describing Purdue's reorganization plan with those exact elements).

[263] Pub. L. No. 103-394, 108 Stat. 4106 (codified as amended in scattered sections of 11 U.S.C.); *see also* Bruce T. Smyth, *Section 524(g) Asbestos Bankruptcy Trusts: Is the Cure Worse Than the Disease?*, 15 ENV'T CLAIMS J. 171, 171–72 (2003).

[264] Smyth, *supra* note 263, at 171–72; 11 U.S.C. § 524(g).

Mass tort bankruptcies such as the asbestos cases and *In re Purdue Pharma*, however, are not perfect analogies for the bankruptcies of fossil fuel producers.[265] In contrast, fossil fuel firms have largely *avoided* tort liability to date for their role in the climate crisis and distorting early climatological research.[266] Nonetheless, much like the production and distribution of asbestos and OxyContin,[267] the emission of greenhouse gasses through the burning of fossil fuels and the obfuscation of climate change research by energy companies[268] have injured numerous victims and given rise to theoretically viable tort claims and potential *parens patriae* litigation by governmental entities.[269] The potential tort liability of firms that contributed to climate change has yet to be definitively established.[270] Nevertheless, as a general principle, where numerous victims have been injured by the business operations of a debtor, it is consistent with the logic of the bankruptcy system for victims' representatives to play a role in the ultimate distributions of the debtors' assets.

D. Applicability of These Models to Fossil Fuel Extractors

The Bankruptcy Code's special treatment of securities brokers is a viable model for the potential treatment of fossil fuel producers for straightforward reasons. The potential for contagion and panic in the securities markets (addressed by SIPA)[271] and the destructive effects of carbon pollution (the target

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[265] *See In re Purdue Pharma L.P.*, 633 B.R. at 58 (describing victims' viable tort claim against Purdue for "wrongful use . . . of opioid products").

[266] *See* Am. Elec. Power Co. v. Connecticut, 564 U.S. 410, 424 (2011) (holding that federal common law nuisance actions seeking injunctions against greenhouse gas emitters are preempted by the Clean Air Act); Victor Flatt & Richard O. Zerbe, *Climate Change Common Law Nuisance Suits: A Legal-Efficiency Analysis*, 49 ENV'T L. 683, 690 (2019) (identifying a "trend" toward dismissing "greenhouse gas state common law nuisance law suits for damages"). *But see* Exxon Mobile Corp. v. Att'y Gen., 94 N.E.3d 786, 790 (Mass. 2018) (affirming denial of motion to set aside a civil investigative demand to Exxon Mobile alleging that the company acted "to undermine the evidence of climate change altogether, in order to preserve its value as a company").

[267] *See supra* notes 242–248 and accompanying text (discussing the large number of victims injured by these products).

[268] *See Exxon Mobile Corp.*, 94 N.E.3d at 790 (discussing reports of Exxon Mobil's knowledge, "long before the general public [knew], that emissions from fossil fuels . . . contributed to global warming and climate change"); *see also* Roshaan Wasim, Note, *Corporate (Non)disclosure of Climate Change Information*, 119 COLUM. L. REV. 1311, 1312–15 (2019) (discussing investigations into Exxon Mobil by the New York Attorney General, the Massachusetts Attorney General, and the SEC that were prompted by data suggesting that Exxon Mobil "had deliberately misrepresented its vulnerabilities to climate change" to the public).

[269] *See* Kirsten H. Engel, *State Standing in Climate Change Lawsuits*, 26 J. LAND USE & ENV'T L. 217, 219–20 (2011) (discussing the open and important question of whether states or individuals having standing to bring climate change litigation).

[270] *See id.* at 219 (explaining that "the doctrinal basis of a state's standing to sue over climate change" is "uncertain").

[271] Sec. Inv. Prot. Corp. v. Barbour, 421 U.S. 412, 415 (1975).

of these proposed reforms) are both negative externalities that affect the general public.[272] Scholars have already identified financial sector risks and air pollution as quintessential examples of negative externalities in the context of Pigouvian taxes,[273] and others have explained:

> Systemic [financial] risk is in truth but one form of the classic externality problem. Pollution is the classic example of an externality, as the polluting firm does not bear the full social costs that it creates. By definition, systemic risk similarly involves costs that are externalized by the firm and fall instead on society.[274]

Because pollution and financial contagion are frequently addressed together as externality problems, regulatory solutions for one may serve as models for the other.[275] The statutory scheme that addresses the systemic risks posed by panics and runs in the securities industry removes brokers from the ambit of Chapter 11, and a plan to address the negative externalities created by the fossil fuel industry might do the same.[276]

The link between fossil fuel policy and railroad reorganization law is more complex but no less compelling. The pipeline network transports the majority of U.S.-produced natural gas and U.S.-produced petroleum with most of the remainder transported by rail.[277] Further, the public's involvement in the construction of the pipeline network closely mirrored its involvement in the construction of the railways—a clear link between the two industries.[278] Nineteenth century railroad firms acquired land through the use of the public power[279] of eminent domain, delegated to them by state governments.[280] Accord-

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[272] John C. Coffee, Jr., *Systemic Risk After Dodd-Frank: Contingent Capital and the Need for Regulatory Strategies Beyond Oversight*, 111 COLUM. L. REV. 795, 808–09 (2011); *see also* Eric A. Posner, *How Do Bank Regulators Determine Capital-Adequacy Requirements?*, 82 U. CHI. L. REV. 1853, 1860, 1864 (2015) (discussing the negative externalities from engaging in risky transactions in financial system due to its systemic risk); David E. Adelman & Kirsten H. Engel, *Reorienting State Climate Change Policies to Induce Technological Change*, 50 ARIZ. L. REV. 835, 842 (2008) (stating that pollution-causing climate change is the "classic" example of an externality).

[273] Jonathan S. Masur & Eric A. Posner, *Toward a Pigouvian State*, 164 U. PA. L. REV. 93, 94–95, 108–19, 124–28 (2015). Pigouvian taxes are taxes that impose penalties on firms "equal to the harm that the firm imposes on third parties." *Id.* at 95.

[274] Coffee, *supra* note 272, at 809.

[275] Masur & Posner, *supra* note 273, at 108–19, 124–28.

[276] *See* 15 U.S.C. §§ 78aaa–78lll; 11 U.S.C. § 109(d).

[277] Alexandra B. Klass & Danielle Meinhardt, *Transporting Oil and Gas: U.S. Infrastructure Challenges*, 100 IOWA L. REV. 947, 968–74, 1015 (2015); *Crude Oil and Petroleum Products Transported in the United States by Mode*, BUREAU OF TRANSP. STAT., https://www.bts.gov/content/crude-oil-and-petroleum-products-transported-united-states-mode [https://perma.cc/TTZ4-4M4H].

[278] Klass & Meinhardt, *supra* note 277, at 954–58.

[279] The power of eminent domain must be exercised to advance a public use. Kelo v. City of New London, 545 U.S. 469, 477–78 (2005).

ingly courts recognized that these special powers also created public obligations that exceeded those of other common carriers.[281] In 1921, in *Lucking v. Detroit & Cleveland Navigation Co*., the U.S. District Court for the Eastern District of Michigan explained:

> A railroad company is clothed by the state with special rights, franchises, and privileges, including certain attributes of sovereignty itself, as, for example, the power of eminent domain. Enjoying, therefore, as it does, these special and public powers, such railroad company is subject to correspondingly special and public duties, among which is the obligation[] . . . to operate as a common carrier over the lines and routes established by it for that purpose; such obligation arising out of, and depending upon, the unusual and peculiar rights and privileges so exercised by it. The reasons, however, which underlie and prompt the imposition of this duty upon common carrier railroad companies, do not apply to common carriers such as [steamboat companies]. The latter holds no public franchise and enjoys no rights or privileges other than are held by any private individual desiring to engage in the business of transporting freight and passengers by water. It cannot exercise the power of eminent domain.[282]

Accordingly, the ICC was charged with approving or rejecting plans to abandon lines.[283] Given the public's role in creating and maintaining these lines, the public's interest should be afforded weight during railroad reorganizations, which closely parallels the public's role and the weight that should be given to the fossil fuel industry.

Over the course of the nineteenth century, the nascent petroleum industry fought for, and gradually won, the same eminent domain powers granted to railroad companies.[284] Like the railroads before them, pipelines today are often built through the lands of unwilling property owners by using eminent domain to acquire easements on behalf of a private company.[285] Today, federal law

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[280] Freyer, *supra* note 46, at 1263–64.

[281] Lucking v. Detroit & Cleveland Navigation Co., 273 F. 577, 582 (E.D. Mich. 1921) (citations omitted).

[282] *Id.*; *accord* Philadelphia & W. Chester Traction Co. v. Pub. Serv. Comm'n, 80 Pa. Super. 355, 363 (1923).

[283] *See* STONE, *supra* note 177, at 96–98; *e.g.*, INTERSTATE COM. COMM'N, *supra* note 219, at 23–24.

[284] Klass & Meinhardt, *supra* note 277, at 954–58.

[285] *See, e.g.*, Mountain Valley Pipeline, LLC v. 6.56 Acres of Land, 915 F.3d 197, 208–09 (4th Cir. 2019) (deciding whether a pipeline company has instant access to an easements granted through eminent domain against the wishes of the landowners or whether the pipeline can only gain access to

empowers natural gas firms to acquire such easements,[286] and states have generally extended that same power to oil pipelines.[287] In 2021, in *PennEast Pipeline Co. v. New Jersey*, the U.S. Supreme Court held that the federal Natural Gas Act empowered private firms to acquire public land *even from nonconsenting state governments* for the construction of pipelines.[288] And, just as ICC approval was required for rail line abandonment, the Federal Energy Regulatory Commission must approve pipeline abandonment.[289] Given the public's role in the development of the pipeline network on which the fossil fuel industry depends, consideration of the public interest in fossil fuel bankruptcies is more than justified.

Finally, to the extent that atmospheric degradation and the obfuscation of climate research can be conceived of as mass torts, the bankruptcy system's regular disposition of the assets of mass tortfeasors for the benefit of their victims provides further support for the public's role in the disposition of fossil fuel assets.[290] Just as the *In re Purdue Pharma* plan did not allow the firm to continue contributing to the opioid epidemic, fossil fuel bankruptcy proceedings should not allow reorganized debtors to continue contributing to the climate crisis.[291]

With these models in hand, reforms to protect the public in an era of climate emergency can be designed.

IV. A Partial Solution: Proposed Bankruptcy Code Reforms

This Part proposes reforms to the Bankruptcy Code that reflect the fossil fuel industry's documented contribution to the climate crisis.[292] Section A proposes inserting a statutory definition for entities and terms relevant to the climate crisis.[293] Section B suggests requiring fossil fuel firms to reorganize under Chapter 7, rather than Chapter 11.[294] Section C details a proposed mandated consideration of the public interest in fossil fuel firms' liquidation proceed-

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such easements once the proceedings over just compensation are completed); Hubenak v. San Jacinto Gas Transmission Co., 141 S.W.3d 172, 175 (Tex. 2004) (adjudicating challenges from landowners in condemnation proceedings, which were brought by companies building natural gas pipelines through privately owned land).

[286] *See* 15 U.S.C. § 717f(h) (granting eminent domain powers to builders of natural gas pipelines).

[287] *See* Klass & Meinhardt, *supra* note 277, at 1027–53 (listing state statutes that grant eminent domain power to pipelines).

[288] 141 S. Ct. 2244, 2251–52 (2021).

[289] 15 U.S.C. § 717f(b).

[290] *Supra* notes 236–270 and accompanying text.

[291] *See In re* Purdue Pharma L.P., 633 B.R. 53, 66–68 (Bankr. S.D.N.Y.), *rev'd* 635 B.R. 26 (S.D.N.Y. 2021), *appeal filed*, No. 21-cv-7532 (2d Cir. 2022).

[292] *Infra* notes 297–325 and accompanying text.

[293] *Infra* notes 297–303 and accompanying text.

[294] *Infra* notes 304–312 and accompanying text.

ings.[295] Finally, Section D proposes the appointment of an environmental trustee in these proceedings.[296]

A. Defining Contributors to Climate Change

To ground the reforms proposed in this Part, this Article suggests inserting a statutory definition encompassing firms that significantly contribute to climate change and thus warrant special treatment under the Bankruptcy Code during the climate emergency. Subjecting certain industries to special treatment in bankruptcy is far from novel—the Code already targets various sectors through statutory definitions.[297] For example, 11 U.S.C. § 101 provides specific definitions for commercial fishing operations,[298] commercial fishing vessels,[299] family farmers,[300] health care businesses,[301] and railroads.[302] Consistent with this statutory scheme, lawmakers should amend 11 U.S.C. § 101 to insert a simple definition for Climate Altering Fossil Fuel Firms (hereinafter referred to as "CA3Fs").

Although more complex and targeted formulations might ultimately be of value, this proposal models its definitions on those proposed in a carbon-tax bill from 2019 and a 2022 executive order targeting Russian energy products.[303] Congress should amend 11 U.S.C. § 101 to define a "Climate Altering Fossil Fuel Firm" as:

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[295] *Infra* notes 313–319 and accompanying text.

[296] *Infra* notes 320–325 and accompanying text.

[297] *See* 11 U.S.C. § 101.

[298] *Id.* § 101(7A) (defining "commercial fishing operation" as "the catching or harvesting of fish, shrimp, lobsters, urchins, seaweed, shellfish, or other aquatic species or products of such species," or "aquaculture activities consisting of raising" those species for market).

[299] *Id.* § 101(7B) (defining "commercial fishing vessel" as any "vessel used by a family fisherman [itself a defined term] to carry out a commercial fishing operation").

[300] *Id.* § 101(18) (defining the term extensively to include individuals or closely held corporations engaged in farming operations with debts and assets that fall within certain thresholds). The phrase "farming operations" is in turn defined as "farming, tillage of the soil, dairy farming, ranching, production or raising of crops, poultry, or livestock, and production of poultry or livestock products in an unmanufactured state." *Id.* § 101(21).

[301] *Id.* § 101(27A) (defining the term to include public or private entities primarily providing "diagnosis or treatment of injury, deformity, or disease" or "surgical, drug treatment, psychiatric, or obstetric care," expressly including hospitals, emergency treatment facilities, hospices, home health agencies, nursing facilities, intermediate care facilities, assisted living facilities, and other long-term care facilities).

[302] *Id.* § 101(44) (defining railroad to include any "common carrier by railroad engaged in the transportation of individuals or property or owner of trackage facilities leased by such a common carrier").

[303] Energy Innovation and Carbon Dividend Act of 2019, H.R. 763, 116th Cong. § 3 (2019); Exec. Order No. 14,066, 87 Fed. Reg. 13625 § 1 (Mar. 8, 2022).

> (1) in the case of crude oil, petroleum, petroleum fuels, oils, and products of their distillation—(A) any entity engaged in a drilling operation in the United States, (B) any entity operating a refinery in the United States, and (C) any importer or exporter into or from the United States, (2) in the case of coal and coal products—(A) any entity engaged in a coal mining operation in the United States, and (B) any importer or exporter of coal into or from the United States, (3) in the case of natural gas—(A) any entity entering pipeline quality natural gas into the natural gas transmission system, and (B) any importer or exporter of natural gas into or from the United States.

B. Mandating Liquidation of Insolvent Fossil Fuel Firms

The centerpiece of these proposed reforms is to direct all CA3Fs to liquidate under Chapter 7 rather than reorganize under Chapter 11.[304] In this respect, treatment of CA3Fs would mirror the Code's current treatment of stockbrokers and commodity brokers.[305] This reform would bring the treatment of CA3Fs in line with that of certain firms in mass tort bankruptcies where insolvent tortfeasors may be wound down to prevent the continued marketing of harmful and destructive products, with existing assets redirected to compensate victims.[306]

In the current Bankruptcy Code, 11 U.S.C. § 109 defines what entities are considered a debtor under each chapter. To realize the proposed Chapter 7 liquidation requirement, Congress should amend 11 U.S.C. § 109(d) by inserting "or a Climate Altering Fossil Fuel Firm" after "commodity broker," which is currently written as:

> Only a railroad, a person that may be a debtor under chapter 7 of this title (except a stockbroker or a commodity broker), and an uninsured State member bank, or a corporation organized under section

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[304] 11 U.S.C. §§ 701–784; *id.* §§ 1101–1195.

[305] *See id.* § 109(d) (excluding stockbrokers and commodity brokers from the list of eligible debtors under Chapter 11); *see also* Toibb v. Radloff, 501 U.S. 157, 161 (1991) (discussing § 109(d)'s exclusion of stockbrokers and commodity brokers from Chapter 11 eligibility); Sec. Inv. Prot. Corp. v. Blinder, Robinson & Co., 962 F.2d 960, 964 (10th Cir. 1992) (same); *In re* Schave, 91 B.R. 110, 111–12 (Bankr. D. Colo. 1988) (deciding whether the debtor was a stockbroker, and thus could not file for bankruptcy under Chapter 11).

[306] *See, e.g.*, *In re* Purdue Pharma, L.P., 635 B.R. 26, 67 (S.D.N.Y. 2021), *appeal filed*, No. 21-cv-7532 (2d Cir. 2022) (stating that as a condition of the plan "NewCo is not intended to operate indefinitely" but rather, the plan instructs "the managers to use reasonable best efforts to sell the assets of NewCo by December 21, 2024").

> 25A of the Federal Reserve Act . . . may be a debtor under chapter 11 of this title.[307]

With this addition, the fossil fuel firms defined above would be required to liquidate under Chapter 7 rather than reorganize under Chapter 11.

Although these alterations alone would address some of the social ills identified above in Section II,[308] they would not be sufficient without the further reforms listed below.[309] An ordinary Chapter 7 proceeding entails selling the debtor's nonexempt assets to third parties, with the goal of maximizing returns for creditors.[310] Therefore, under normal bankruptcy principles, a competitor may acquire an insolvent producer's assets that contribute to climate change—leases, rigs, and drilling equipment, for example—and simply keep them in production. To be sure, there are at least some reasons why this outcome is still preferable to the current system because some assets of insolvent firms would permanently go offline in the event of Chapter 7 liquidation. "Bust" cycles and price collapses put stress on competitors as well as insolvent debtors, and even solvent competing firms may be poorly positioned to acquire assets from bankrupt firms during these periods.[311] Nonetheless, the possibility that insolvent CA3Fs will sell polluting assets to competitors that will continue to use them remains a serious concern in Chapter 7 proceedings.[312] The reforms in Section C of this Part are designed to reduce this risk.

C. The Public Interest

The proposed reforms in this Section and Section D model provisions on SIPA and Subchapter IV to ensure that the public interest is advanced during CA3F liquidation proceedings under Chapter 7.[313] For the historical reasons discussed above, 11 U.S.C. § 1165 currently provides that, in railroad cases, "the court and the trustee shall consider the public interest in addition to the

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[307] 11 U.S.C. § 109(d).

[308] *Supra* notes 90–145 and accompanying text.

[309] *Infra* notes 313–321 and accompanying text.

[310] JACKSON, *supra* note 65, at 211.

[311] *See* Zenner et al., *supra* note 91 (noting that "[h]istorically, companies have shored up their balance sheets and attempted to raise liquidity in times of oil price decline").

[312] For example, Royal Dutch Shell announced in February 2021 that it would sell oil sands assets "under growing investor pressure to battle climate change," but the "30,000 barrels of oil equivalent per day" were merely acquired by another oil producer. Reuters Staff, *Shell to Divest Kaybob Assets to Canada's Crescent Point for C$900 Million*, REUTERS (Feb. 17, 2021), https://www.reuters.com/article/us-shell-divestiture-crescent-point/shell-to-divest-kaybob-assets-to-canadas-crescent-point-for-c900-million-idUSKBN2AH2WG [https://perma.cc/FRH2-RMX3]. Similar outcomes could arise from ordinary Chapter 7 proceedings.

[313] *Infra* notes 314–321 and accompanying text; 11 U.S.C. §§ 1161–1165; 15 U.S.C. §§ 78aaa–78lll.

interests of the debtor, creditors, and equity security holders."[314] This Section recommends the creation of an identical provision that would apply in CA3F bankruptcies within 11 U.S.C. § 704, which governs the duties of trustees in proceedings under Chapter 7.[315]

Federal law currently dictates that "the business of transporting and selling natural gas for ultimate distribution to the public is affected with a public interest,"[316] but regulatory authorities have interpreted the "public interest" in pipeline cases as weighing in favor of cheap and plentiful natural gas.[317] To avoid this result, Congress should amend the Bankruptcy Code by mandating and defining the consideration of public interest. Language specifying that "in considering the public interest, the court and trustee shall consider the need to protect the public from climate change by reducing greenhouse gas emissions, which necessarily must occur primarily by decreasing fossil fuel production" should thus be added alongside the new additions to 11 U.S.C. § 704.[318] This language draws from many state statutes that require consideration of the public interest when assigning water-use rights, and several state statutes that explicitly define criteria that must be considered in determining what the public interest requires.[319]

D. An Environmental Trustee

Finally, in railroad cases, 11 U.S.C. § 1163 provides that "the Secretary of Transportation shall submit a list of five disinterested persons that are qualified and willing to serve as trustees in the case. The United States trustee shall appoint one of such persons to serve as trustee in the case."[320] Under these provisions, appointing a trustee in a railroad case is a "highly political act" that results in a politically responsive trustee who will "keep all eyes focused on what is in the public's best interest."[321] Congress should amend the Bankruptcy

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[314] 11 U.S.C. § 1165; *supra* notes 182–235 and accompanying text.

[315] 11 U.S.C. § 704.

[316] 15 U.S.C. § 717(a).

[317] *See In re* Ultra Petrol. Corp., 621 B.R. 188, 195 (Bankr. S.D. Tex. 2020) (stating that FERC's mandate of protecting the public interest entails consideration of the "rates and terms for interstate natural gas transport").

[318] *See supra* note 315 and accompanying text (recommending amendments to 11 U.S.C. § 704).

[319] *See, e.g.*, N.D. CENT. CODE § 61-04-06(1)(d) (2021) (including, among other considerations, "[t]he effect on fish and game resources" and the "[h]arm to other persons resulting from the proposed appropriation"); OR. REV. STAT. § 537.170(8) (2021) (including, among other considerations, "[t]he control of the waters of this state for all beneficial purposes, including drainage, sanitation and flood control"); ALASKA STAT. § 46.15.080(b) (2020) (including, among other considerations, "the effect on public health" and the "harm to other persons resulting from the proposed appropriation").

[320] 11 U.S.C. § 1163.

[321] *In re* Merco Joint Venture LLC, No. 02-80588-288, 2002 WL 32063450, at *2 (Bankr. E.D.N.Y. July 19, 2002).

Code to mirror this provision by substituting the Secretary of Transportation with the Administrator of the Environmental Protection Agency, who is well situated to nominate trustees capable of considering the climate implications of CA3F liquidations.

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In sum, under these reforms, insolvent fossil fuel companies would liquidate through Chapter 7 in proceedings supervised by an environmental trustee who considers the best interests of the public in addition to the interests of creditors and shareholders. Although the insolvent firm's assets would be sold, as in an ordinary Chapter 7 case, to provide returns to the firm's creditors, this goal would now be weighed against the public's urgent need to reduce greenhouse gas emissions. These considerations would weigh heavily against the sale of any polluting asset to a competing firm that planned to keep that asset in operation.

For example, because the public interest would weigh heavily against selling a debtor's lease of land currently used for shale oil extraction or an abandoned coal mine to another fossil fuel company, courts may favor selling the assets to a firm constructing solar or wind farms.[322] Further, oil rigs might be converted to artificial reefs to support the fishing and tourism industries[323] or platforms for offshore renewable power generation,[324] as the public interest would weigh against the oil rigs' sale to another drilling company. The envi-

[322] Rifle, Colorado, for example, enjoyed an intense oil boom followed by an extended depression. Having transitioned away from oil dependency, the area now produces more solar power per capita than any other U.S. municipality. Negro, *supra* note 90, at 206–08. Abandoned mine sites, which tend to be concentrated in mountainous areas that receive significant wind flows, are often ideal sites for wind farms. ENV'T PROT. AGENCY, OFFICE OF SUPERFUND REMEDIATION & TECH. INNOVATION, A BREATH OF FRESH AIR FOR AMERICA'S ABANDONED MINE LANDS: ALTERNATIVE ENERGY PROVIDES A SECOND WIND 1 (2012). Former coal plants have also proven attractive as sites for renewable energy projects because they are already connected to the electricity grid. Elena Shao, *In a Twist, Old Coal Plants Help Deliver Renewable Power. Here's How.*, N.Y. TIMES (July 15, 2022), https://www.nytimes.com/2022/07/15/climate/coal-plants-renewable-energy.html [https://perma.cc/75P7-YEQJ].

[323] *See* 16 U.S.C. § 1220 (permitting old ships to be sunk and used as artificial reefs); FLA. STAT. § 379.249 (2022) (instituting an artificial-reef program whereby the state provides financial and technical assistance to local government, universities, and non-profits to use, monitor, and study artificial reefs from old ships); *see also* Kara K. McQueen-Borden, Comment, *Will the Rigs-to-Reefs Experiment Be Based on the "Best Scientific Information Available"?*, 87 TUL. L. REV. 1281, 1282–83 (2013) (discussing a "method known as rig-to-reefs" used as a tool used to increase the population of fish in the oceans).

[324] *See Developing Untapped Potential: Geothermal and Ocean Power Technologies: Hearing on H.R. 2304 and H.R. 2313 Before the Subcomm. on Energy & the Env't of the H. Comm. on Sci. & Tech.*, 110th Cong. 57–64 (2007) (statement of Sean O'Neill, President, Ocean Renewable Energy Coalition) (discussing the potential for offshore wind projects as well as the "use of decommissioned oil platforms" as part of a "rigs-to-renewables program").

ronmental trustee would also be well positioned to ensure that insolvent operators meet all cleanup obligations under state law, such as the responsibility to plug abandoned wells, before any financial assets are redeployed for other business uses.[325]

V. OBJECTIONS AND RESPONSES

Part IV's proposed legislative reforms offer concrete benefits. Unlike current policy, the proposed policy provisions would directly remove assets from the production of fossil fuels, causing an immediate environmental impact. By limiting the ability of creditors to maximize their recovery during bankruptcy, these reforms offer the indirect benefit of increasing the risk of lending to fossil fuel firms, which raises financing costs and provides a relative advantage to renewable competitors. This incidental effect should be welcomed by environmentalists and the climate-conscious public. Yearly subsidies to the fossil fuel industry are estimated at $409 billion worldwide.[326] Even a quick end to those subsidies—a long overdue reform—would not fully address the legacy advantages conferred on fossil fuels by a century of publicly funded support.[327] Policy initiatives that increase the relative cost of debt for fossil fuel firms are a step in the direction toward rectifying this historical imbalance.

Nonetheless, several objections to these proposals can be anticipated, and I briefly address the most conspicuous of them in the following sections.[328] Section A addresses the argument that environmental policy and bankruptcy should be kept separate.[329] Section B responds to the claim that targeting fossil fuel companies is unduly punitive.[330] Section C discusses the potential out-

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[325] *See* FERREY, *supra* note 28, § 6:24 *Natural Gas* (explaining how Texas' statutes "require[] that the operator plug the well upon abandonment" (citing TEX. NAT. RES. CODE ANN. § 89.002(a)(2) (West 2021))); *see also* Joshua Macey & Jackson Salovaara, *Bankruptcy as Bailout: Coal Company Insolvency and the Erosion of Federal Law*, 71 STAN. L. REV. 879, 882–87 (2019) (discussing the use of bankruptcy proceedings by coal companies to clean contaminated land and provide for victims of black lung). Under this Article's proposals, the EPA-nominated trustee would be positioned to ensure that sufficient assets are reserved to address the problems highlighted by Macey and Salovaara.

[326] Craig A. Hart & Dominic Marcellino, *Subsidies or Free Markets to Promote Renewables?*, 3 RENEWABLE ENERGY L. & POL'Y REV. 196, 197–98 (2012).

[327] *See generally* Ploy Achakulwisut, Peter Erickson & Doug Koplow, Letter, *Effect of Subsidies and Regulatory Exemptions on 2020–2030 Oil and Gas Production and Profits in the United States*, 16 ENV'T RSCH. LETTERS, no. 8, 2021, at 1, 1 (examining subsidies that have been in place since 1916 and projecting their impact on production and profit through 2030).

[328] *Infra* notes 333–391 and accompanying text.

[329] *Infra* notes 333–342 and accompanying text.

[330] *Infra* notes 343–361 and accompanying text.

come of firms evading bankruptcy.[331] Finally, Section D grounds the proposed reforms in the reality of the industry landscape.[332]

A. Should Environmental Policy and Bankruptcy Be Kept Separate?

Objectors to these proposed reforms will likely argue that environmental policy is a non-bankruptcy matter best addressed outside of bankruptcy. Yet, as this Article demonstrates, exogenous policy concerns have always altered the law of corporate reorganizations.[333] Railroad reorganizations proceed through structures designed to fulfill national logistical needs.[334] Mandatory liquidations of stockbrokers and commodity brokers are intended to protect the investing public from the unique risks of the securities industry.[335] Mass tortfeasors can be reorganized into entities that mitigate past harms to the public.[336] And proponents of Chapter 11 itself justify it as a means of preserving jobs, though bankruptcy scholars criticize Chapter 11 as being unjustified by market principles.[337] As then-professor Elizabeth Warren explained:

> Congressional comments on the Bankruptcy Code are liberally sprinkled with discussions of policies, of concerns about the community impact of bankruptcy, and of the public interest beyond the interests of the disputing parties. These comments serve as reminders that Congress intended bankruptcy law to address concerns broader than the immediate problems of debtors and their identified creditors . . . .[338]

If these various social and policy interests are valid justifications for altering bankruptcy procedures and priorities, surely an imminent ecological catastrophe falls in that category as well.

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[331] *Infra* notes 362–369 and accompanying text.

[332] *Infra* notes 370–391 and accompanying text.

[333] *Supra* notes 152–270 and accompanying text.

[334] *Supra* notes 177–235 and accompanying text.

[335] *Supra* notes 152–175 and accompanying text.

[336] *Supra* notes 236–270 and accompanying text.

[337] *See* Jones, *supra* note 86, at 1089–91 (stating that the protection of workers was a partial motivator for passing statutes allowing firms to reorganize, but arguing that in reality the perception that Chapter 11 saves jobs "is largely a mirage"); Bradley & Rozenweig, *supra* note 35, at 1043, 1045 (describing Congress's rationale for promoting reorganizations as a way to "'preserve[] jobs and assets'" while highlighting scholars who argue that reorganization "is inefficient because it impedes the flow of corporate assets to higher-valued uses" (quoting H.R. REP. NO. 95-595, at 220 (1977), *as reprinted in* 1977 U.S.C.C.A.N. 5963, 6179) (citations omitted)); *see also* Douglas G. Baird, *A World Without Bankruptcy*, 50 LAW & CONTEMP. PROBS. 173, 183–84 (1987) (disputing the argument that bankruptcy law is necessary to protect the workers of failing companies).

[338] Warren, *supra* note 89, at 81.

Ultimately, the argument that bankruptcy should solely collectivize the process of asset distribution among creditors,[339] however conceptually sound it may be,[340] simply does not align with either the text of the Bankruptcy Code[341] or the intent of its drafters.[342] Nor should it stand in the way of reforming the Code to help mitigate a looming climate disaster.

B. Is Targeting Fossil Fuel Companies Unduly Punitive?

Objectors may also argue that these reforms would be unduly punitive on fossil fuel companies, their shareholders, their employees, or customers who will pay in the short term for higher fuel prices. The interests of these groups, however, must be balanced against those of the millions who currently stand to be displaced by coastal land loss, flooding, droughts, and various other catastrophic effects of climate change.[343] The additional losses that energy sector creditors might suffer under these reforms pale in comparison to the projected economic losses that would result from ecological collapse, which are estimated to reach five to ten percent of global GDP.[344] As for the short-term impact on consumers, other policy concerns, such as deterrence against Russian aggression toward Ukraine, have warranted restrictive measures on the supply of oil and gas products.[345] The climate emergency is equally as dire and warrants an equal response.[346]

To be sure, this calculus prioritizes the greater good over the rights of individual stakeholders in the target companies, and in some instances the Con-

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[339] Thomas H. Jackson, *Translating Assets and Liabilities to the Bankruptcy Forum*, *in* CORPORATE BANKRUPTCY, *supra* note 89, at 58, 72.

[340] *See generally* Baird, *supra* note 89, at 95–108 (defending the theory that bankruptcy law should not venture far into the world of social policy); *see also* Macey & Salovaara, *supra* note 325, at 890 (discussing ongoing debate between "traditionalists, who think that bankruptcy proceedings should further social values such as increased employment, and proceduralists, who argue that bankruptcy should aim exclusively to maximize asset values" (citing JEFFREY T. FERRIELL & EDWARD J. JANGER, UNDERSTANDING BANKRUPTCY § 1.02, at 7–10 (3d ed. 2013))).

[341] *See, e.g.*, 11 U.S.C. § 1165 (calling for the consideration of the public interest).

[342] *See, e.g.*, H.R. REP. NO. 95-595, at 220 (1977), *as reprinted in* 1977 U.S.C.C.A.N. 5963, 6179 (discussing preservation of jobs as a rationale for allowing insolvent businesses to reorganize under an amended bankruptcy code).

[343] Freeman & Guzman, *supra* note 8, at 1546 (citing Alley et al., *supra* note 19, at 12).

[344] *See id*. at 1548 (projecting that an increase in global temperatures of five to six degrees Celsius would cause global GDP to reduce five to ten percent).

[345] *See, e.g.*, Exec. Order. No. 14,066, 87 Fed. Reg. 13625 (Mar. 8, 2022) (blocking imports of Russian oil, causing supply to decrease and prices to increase).

[346] *See* West Virginia v. EPA, 142 S. Ct. 2587, 2626–27, 2637 (2022) (Kagan, J., dissenting) (characterizing climate change as the "greatest environmental challenge of our time" and listing associated dangers).

stitution might not permit policymakers to proceed in such a way.[347] At the same time, there is "no constitutional right to obtain a discharge of one's debts in bankruptcy."[348] For decades, Congress simply chose not to exercise its bankruptcy powers at all.[349] Bankruptcy policy affects "the area of economics and social welfare" rather than fundamental rights, and it is therefore a field where climate policy may be enacted with relatively few constraints. [350]

Moreover, some types of debtors have always lacked access to bankruptcy under some chapters, as well as other types of relief.[351] Restricting the ability of fossil fuel companies to reorganize under Chapter 11 is no more draconian than restricting stockbrokers from this same ability,[352] or restricting the ability of student loan debtors to obtain discharges available to holders of other forms of consumer debt.[353] This Article's proposed reforms would impact only insolvent producers and would play no direct role in creating or exacerbating the failures that lead these firms to file for bankruptcy.[354]

Additionally, this Article's proposed reforms would only undo a small portion of the many special governmental benefits historically enjoyed by the fossil fuel industry, including direct monetary subsidies,[355] below-market leases of federal land for extraction operations,[356] favorable tax deductions relative to other industries,[357] public assumption of cleanup and abandonment costs,[358] and the use of eminent domain to acquire easements through private and public

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[347] *See* U.S. CONST. amend. V (stating that "nor shall private property be taken for public use, without just compensation").

[348] United States v. Kras, 409 U.S. 434, 446 (1973), *superseded by statute*, Bankruptcy Reform Act of 1978, Pub. L. No. 95-598, 92 Stat. 2549.

[349] Martin, *supra* note 188, at 688.

[350] *Kras*, 409 U.S. at 446.

[351] *See* GROSS, *supra* note 66, at 37 tbl.I (listing the bankruptcy chapters and the types of debtors for which each chapter is available).

[352] *See* 11 U.S.C. § 109(d).

[353] *See* Kevin J. Smith, *Defining the* Brunner *Test's Three Parts: Time to Set a National Standard for All Three Parts to Determine When to Allow the Discharge of Federal Student Loans*, 58 S.D. L. REV. 250, 250 (2013) (explaining that, under the Bankruptcy Code, almost all forms of student debt are "non-dischargeable, absent the showing of undue hardship" by the debtor (citing 11 U.S.C. § 523(a)(8) (2006))).

[354] *See* Warren, *supra* note 89, at 82 (stating that the bankruptcy system is not the "cause" of a societal "cost" created from a firm's inability to pay its debts but rather "the distributor of the cost").

[355] *See* Hart & Marcellino, *supra* note 326, at 197 (listing the types of subsidies given to fossil fuel producers, including "tax benefits and grants").

[356] *See* Achakulwisut et al., *supra* note 327, at 3 tbl.1 (listing existing subsidies to oil and gas industry, including "onshore fields located in federal lands [that] are subject to below-market royalty rates on gross production").

[357] *Id.*

[358] *Id.* at 4 tbl.1.

land for the construction of pipelines.[359] Indeed, eminent domain power was a key tool in both constructing railroads and constructing the pipeline network, which makes railroad reorganization principles an especially compelling model to apply to today's fossil fuel industry.[360] Scholars often discuss how the present system uses subsidies to enable players in the fossil fuel industry to continually harm the public through their operations.[361] It is far from unduly punitive to impose special regulations on the fossil fuel industry now with the industry having benefited for so long from special treatment, and in light of the context and calculus of its contributions to the climate crisis.

C. Avoiding Bankruptcy as a Viable Response to Proposed Legislation

Not all insolvent firms declare bankruptcy, and avoiding bankruptcy may seem like an easy way to evade the reach of these reforms. An insolvent firm may restructure outside of bankruptcy through an exchange offer or by soliciting creditor consent to the modification of prior debt instruments.[362] Firms that have not yet reached a state of insolvency might also wind down without defaulting on outstanding obligations. For these reasons, some may argue that these reforms would merely incentivize insolvent fossil fuel producers to address their problems outside of the bankruptcy system.[363]

Although there may be some merit to this argument, the wave of Chapter 11 reorganizations during the 2020 price collapse demonstrates that fossil fuel producers *benefit* from Chapter 11, and society can no longer afford to grant these benefits given the dire climate emergency.[364] Two of the largest oil and gas firms that filed under Chapter 11 in 2020[365] relied on bankruptcy litigation

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[359] *See* Mountain Valley Pipeline, LLC v. 6.56 Acres of Land, 915 F.3d 197, 208–10 (4th Cir. 2019); PennEast Pipeline Co. v. New Jersey, 141 S. Ct. 2244, 2251–52 (2021).

[360] *See* Freyer, *supra* note 46, at 1263–64 (highlighting the pivotal role that eminent domain played in the growth of the railroad industry); *Mountain Valley Pipeline, LLC*, 915 F.3d at 208–10 (discussing the use of eminent domain to build pipelines); *PennEast Pipeline Co.*, 141 S. Ct. at 2251–52 (same).

[361] *E.g.*, Carol M. Rose, *Commons, Cognition, and Climate Change*, 32 J. LAND USE & ENV'T L. 297, 330 (2017).

[362] CORPORATE ACQUISITIONS, MERGERS, & DIVESTITURES § 11:131 *Workouts: The Voluntary, Consensual Restructuring Alternative to Bankruptcy—Nonbankruptcy Restructuring: Two Techniques*, Westlaw (database updated July 2022).

[363] *Cf.* Baird, *supra* note 89, at 98 (suggesting that if bankruptcy law was concerned both with scenarios when firms fail and when firms default to multiple creditors, there would be "in bankruptcy many cases that do not belong there, and many cases outside bankruptcy that belong in bankruptcy").

[364] *See* West Virginia v. EPA, 142 S. Ct. 2587, 2626–27, 2637 (2022) (Kagan, J., dissenting) (highlighting the significant dangers and challenges that climate change creates).

[365] *See infra* Figure 1.

to reject executory contracts and achieve millions in savings.[366] A coal mining firm that filed for Chapter 11 in 2020 was reorganized over the objection of multiple creditors in a "cramdown" process.[367] The power company PG&E, facing massive liability arising from its contribution to devastating climate-change-driven wildfires, obtained DIP financing and gained the suspension of a $200 million regulatory fine during Chapter 11 proceedings.[368] These powers and benefits would not be available in a consensual restructuring outside of the bankruptcy system, and losing access to them would impose meaningful costs on polluting firms. Moreover, the tax system generally incentivizes restructuring through Chapter 11 rather than through a consensual nonbankruptcy exchange.[369] Reorganizing outside of bankruptcy may sometimes be an option, but it will not always be equally viable or an appealing one.

D. Is the Proposed Legislation Sufficient?

The final potential objection addressed here comes from the other direction. Given the enormity of the crisis facing the planet, a bankruptcy reform that primarily relies on market forces to render a producer insolvent before its assets are redeployed is almost certainly insufficient to the vital task at hand. To that argument, this Article responds by noting that its proposed reforms do not preclude others. It is designed to provide a starting point and offers several advantages over other types of climate legislation.

The first advantage relates to feasibility. This Article's proposed reforms are ultimately market-based and non-coercive, in that they directly impact only insolvent firms that resort to the bankruptcy system. It is beyond the purview of this Article (and its author's expertise) to forecast the near-term political feasibility of enacting the Article's proposals. Nevertheless, legislators, executives, and policymakers at the federal and state levels frequently express their receptiveness to market-based solutions to the climate crisis.[370] With these

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[366] *In re* Extraction Oil & Gas, 622 B.R. 608, 614–20 (Bankr. D. Del. 2020) (permitting the debtor to reject its transportation services agreements under § 365(a) of the Bankruptcy Code, which allows debtors to assume or reject executory contracts); *In re* Chesapeake Energy Corp., 622 B.R. 274, 280–84 (Bankr. S.D. Tex. 2020) (permitting the debtor to reject a gas purchase under § 365(a) of the Bankruptcy Code).

[367] *In re* Murray Metallurgical Coal Holdings, LLC, 623 B.R. 444, 500–04, 520–32 (Bankr. S.D. Ohio 2021).

[368] Kohn, *supra* note 246, at 4, 10–13.

[369] CORPORATE ACQUISITIONS, MERGERS, & DIVESTITURES, *supra* note 362, § 11:165 *Debt Modification Involving Exchange of Debt for Stock*.

[370] *See, e.g.*, President Barack Obama, Remarks by the President in the State of the Union Address (Feb. 12, 2013), https://obamawhitehouse.archives.gov/the-press-office/2013/02/12/remarks-President-state-union-address [https://perma.cc/7U28-D6GC] (urging Congress to "pursue a bipartisan, market-based solution to climate change"); *Small Business Solutions for Combatting Climate Change: Hearing Before the S. Comm. on Small Bus. & Entrepreneurship*, 110th Cong. 41 (Mar. 8,

statements comes a hope that market-based proposals may be quickly enacted. In addition to the advantage of political plausibility, public policy reasons motivate some scholars to advocate for market-based solutions.[371]

Once enacted, market-based reforms may also be relatively insulated from attack. One scholar explains:

> If technological improvements not only displace GHGs but also appeal to large numbers of people and businesses through their pocketbooks, then those people and businesses will act accordingly[,] . . . [and] multiple, distributed, market-based decisions [will] create a positive common knowledge: that people can be trusted to do good, because they are doing well at the same time.[372]

By incentivizing energy markets to adopt renewable sources of energy and disincentivizing creditors from financing fossil fuel companies, bankruptcy reforms could attract supporters from the benefited sectors.

The second advantage relates to blame attribution. Realistic proposals to hasten the adoption of renewable energy sources must address the likelihood of public backlash to temporarily higher energy prices.[373] Although the extent to which voters attribute blame for their personal economic conditions to incumbents may be exaggerated, some backlash over short-term energy price in-

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2007) (statement of Byron Kennard, Executive Director, Center for Small Business and the Environment) ("Going green may be the biggest economic opportunity of the 21st century. It is the mother of all markets." (quoting John Dorr, venture capitalist)); LARRY PARKER, CONG. RSCH. SERV., IB97057, GLOBAL CLIMATE CHANGE: MARKET-BASED STRATEGIES TO REDUCE GREENHOUSE GASES 6–9 (2001) (discussing potential market-based policies for combating climate change, including tradable carbon credits and a carbon tax); Off. of Nev. Governor Steve Sisolak, *Order Directing Executive Branch to Advance Nevada's Climate Goals*, Exec. Order No. 2019-22, § 6(a) (2019) (ordering a state agency to "identify and evaluate . . . market-based mechanisms" for reducing greenhouse gas emissions in Nevada). *See generally Climate Change and Social Responsibility: Helping Corporate Boards and Investors Make Decisions for a Sustainable World: Virtual Hearing Before the Subcomm. on Inv. Prot., Entrepreneurship, & Cap. Mkts. of the H. Comm. on Fin. Servs.*, 117th Cong. (Feb. 25, 2021) (debating the use of environmental, social, and governance disclosure requirements so investors have more transparency into a company's climate footprint).

[371] *See, e.g.*, Eric Biber, *Climate Change and Backlash*, 17 N.Y.U. ENV'T L.J. 1295, 1341 (2009) (noting that "individuals and corporations that benefit from . . . new economic investment can provide a political base of support for the new regulatory system"); Randall S. Abate & Todd A. Wright, *A Green Solution to Climate Change: The Hybrid Approach to Crediting Reductions in Tropical Deforestation*, 20 DUKE ENV'T L. & POL'Y F. 87, 87 n.1 (2010), https://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=1050&context=delpf [https://perma.cc/YA7U-FRMJ] (collecting sources discussing "the need to address alternatives to traditional command-and-control emissions reductions").

[372] Rose, *supra* note 361, at 331.

[373] *See* Biber, *supra* note 371, at 1317–28 (discussing both the economic and non-economic reasons why sudden regulatory changes can receive significant public pushback).

creases can be expected in response to *any* initiative that transitions fossil fuel firms from a subsidized industry into a disfavored one.[374]

These proposals, however, may partially mitigate backlash, at least relative to other reforms, because the liquidation of fossil-fuel-producing firms would not be a direct result of governmental action. Instead, an insolvency event and a corporate decision to declare bankruptcy act as intervening causal events. The "causal responsibility" model of blame attribution posits that observers analyze actions to determine a person's responsibility for specific results.[375] When people blame external forces for causing economic problems, political incumbents are less likely to be blamed for their roles in causing the outcomes.[376] And voters have been shown to divide responsibility and blame for negative economic outcomes between business and governmental actors.[377] If poor business decisions are at least partially responsible for a producer's insolvency and subsequent exit from the market, public blame for resultant temporary price increases may be partially directed away from those attempting to address the climate crisis and toward those who have contributed to it.

Additionally, these proposals are less likely to trigger Takings Clause concerns than other initiatives to wind down fossil fuel producers. Under the Fifth Amendment, "private property [may not] be taken for public use, without just compensation."[378] Governmental attempts to directly bar the use of fossil fuels will almost certainly be met by legal challenges brought under the Takings Clause by investors seeking compensation for the diminished value of their investments.[379] Although the merit of such claims is uncertain—the Supreme Court did not, for example, require compensation for distillers when states enacted prohibition laws, and the Takings Clause protects only *reasonable* investment expectations—they have the potential to drain budgets, complicate regulatory responses, and perhaps create a windfall for the owners of firms that contributed to climate change.[380] Scholars have already identified

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[374] *See* Mark Peffley, *The Voter as Juror: Attributing Responsibility for Economic Conditions*, 6 POL. BEHAV. 275, 277 (1984) (analyzing the literature and finding little evidence that the majority of people attribute their poor financial position to national policies).

[375] *Id.* at 283.

[376] *Id.*

[377] *See* K. Jill Kiecolt, *Group Consciousness and the Attribution of Blame for National Economic Problems*, 15 AM. POL. Q. 203, 213–17 (1987).

[378] U.S. CONST. amend. V; *see* Lucas v. S.C. Coastal Council, 505 U.S. 1003, 1027 (1992) (extending the Takings Clause to cover regulatory takings).

[379] *See* Serkin & Vandenbergh, *supra* note 49, at 1037 (predicting that the fossil fuel industry will attempt to protect themselves against environmental regulation through Takings Clause litigation).

[380] *See* Mugler v. Kansas, 123 U.S. 623, 668–69 (1887); Serkin & Vandenbergh, *supra* note 49, at 1040–45 (discussing the Supreme Court's emphasis on "'reasonable' investment-backed expectations" when assessing whether a regulation constitutes a taking (quoting J. David Breemer, *Playing*

the intersection between protecting property and addressing climate change,[381] as well as the high stakes involved when significant investment expectations collapse as a result of policy changes.[382]

But Takings Clause considerations change in a bankruptcy proceeding.[383] As one scholar explained:

> [T]he whole concept of a bankruptcy law is to excuse *A* from paying his full debt to *B*, because of a net social utility in allowing *A* a fresh start. While it would be possible to give *B* just compensation (his net loss) for the private property (*B*'s full claim against *A*) taken for public use (*A*'s fresh start), the concept of bankruptcy was well accepted at the time of the Framers, and it therefore seems unlikely that the Takings Clause applies.[384]

In other words, the bankruptcy power, like the taxing power, is identified as a special circumstance where an enumerated power's very "exercise would be impossible without taking private property for public use without just compensation," and where the Takings Clause should not apply.[385]

In the courts, Takings Clause challenges brought by those whose interests have been impeded by bankruptcy reforms have frequently failed.[386] Thus, at a minimum, climate mitigation measures that operate through bankruptcy reform would complicate attempts by the industry to secure a windfall through the Takings Clause.[387]

Finally, these proposals suggest a path for Congress to address climate change without exclusively relying on administrative agencies, at a time when administrative law appears to be in flux. In 2022, in *West Virginia v. EPA*, Justice Gorsuch, in a concurring opinion joined by Justice Alito, questioned the

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the Expectations Game: When Are Investment-Backed Land Use Expectations (Un)reasonable in State Courts?, 38 URB. LAW. 81, 85–86 (2006))).

[381] *E.g.*, Serkin & Vandenbergh, *supra* note 49, at 1044.

[382] *See* Gregor Semieniuk, Philip B. Holden, Jean-Francois Mercure, Pablo Salas et al., *Stranded Fossil-Fuel Assets Translate to Major Losses for Investors in Advanced Economies*, 12 NATURE CLIMATE CHANGE 532, 532 (2022) (analyzing potential financial impact of a transition to renewable energy on energy sector investors).

[383] U.S. CONST. amend. V; Clegg, *supra* note 48, at 562–63.

[384] Clegg, *supra* note 48, at 562–63.

[385] *Id.*

[386] *See In re* Thaw, 769 F.3d 366, 369–70 (5th Cir. 2014) (rejecting Takings Clause claim by debtors who acquired homestead interests after the enactment of a bankruptcy statute eliminating certain homestead exemptions); *In re* Witt, 231 B.R. 92, 95–99 (Bankr. N.D. Okla. 1999) (rejecting argument that new restrictions on the ability of trustees to avoid prepetition transfers of assets to religious institutions constituted a taking of a vested property interest).

[387] *See* U.S. CONST. amend. V; Clegg, *supra* note 48, at 562–63.

scope of permissible regulations in the environmental field[388] and appeared to add vitality to a strict nondelegation doctrine.[389] The dissenting opinion in turn charged that concurrence of harboring an "anti-administrative-state stance" that would block agencies from solving important problems.[390] In other recent administrative law cases, the Court declined to cite or address the *Chevron* deference doctrine, despite *Chevron* issues having been litigated and decided below.[391] Given the urgency of the climate crisis and the ongoing turmoil in the administrative law field, Congress would be well advised to consider mitigation reforms that do not rely solely on administrative agencies.

These advantages related to political feasibility, blame attribution, the Takings Clause, and the uncertain status of administrative law suggest that bankruptcy reform would provide a valuable starting point as the nation attempts to comply with international climate obligations and address the ongoing climate emergency. This Article does not suggest that these reforms alone are sufficient, but instead proposes them as a useful first step.

CONCLUSION

Industrial greenhouse gas emissions have driven the world toward a crisis point, jeopardizing the habitability of the environment for both humans and other species. Fossil fuel companies, the major contributors to this climate emergency, continue to ride out the boom-and-bust cycles inherent to the oil and gas sector by making use of Chapter 11's generous reorganization provisions. Thus, Chapter 11 is effectively another public subsidy provided to the fossil fuel industry, putting firms focused on renewable forms of energy at a relative disadvantage.

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[388] 142 S. Ct. 2587, 2626 (2022) (Gorsuch, J., concurring) (declaring that the "Constitution does not authorize agencies to use pen-and-phone regulations as substitutes for laws passed by the people's representatives").

[389] *See* Alison Gocke, Chevron*'s Next Chapter: A Fig Leaf for the Nondelegation Doctrine*, 55 U.C. DAVIS L. REV. 955, 957 (2021) (arguing that "a majority of Supreme Court Justices have signaled that they are ready to develop a new test for the nondelegation doctrine" (first citing Paul v. United States, 140 S. Ct. 342 (2019) (mem.) (Kavanaugh, J., statement respecting the denial of certiorari); then citing Gundy v. United States, 139 S. Ct. 2116, 2131–48 (2019) (Gorsuch, J., dissenting); and then citing *id.* at 2130–31 (Alito, J., concurring))).

[390] *West Virginia v. EPA*, 142 S. Ct. at 2641 (Kagan, J., dissenting).

[391] *See generally* Am. Hosp. Ass'n v. Becerra, 142 S. Ct. 1896 (2022) (deciding the case without citing *Chevron, USA, Inc. v. Nat. Res. Def. Council, Inc.*, 467 U.S. 837 (1984)); Am. Hosp. Ass'n v. Azar, 967 F.3d 818, 828–34 (D.C. Cir. 2020), *rev'd*, *Becerra*, 142 S. Ct. 1896 (2022), *remanded to* Am. Hosp. Ass'n v. Becerra, No. 19-5048, 2022 WL 3061709 (D.C. Cir. Aug. 3, 2022) (analyzing *Chevron* deference questions); Becerra v. Empire Health Found., 142 S. Ct. 2354 (2022) (deciding the case without citing *Chevron*); Empire Health Found. v. Azar, 958 F.3d 873, 884–86 (9th Cir. 2020) (analyzing *Chevron* deference questions).

The special treatment of critical sectors has many precedents in existing bankruptcy law, including the treatment of stockbrokers, railroad companies, and mass tortfeasors in the asbestos industry. Amendments to the Bankruptcy Code to address the climate crisis, modeled on current sections of the Code that focus on specific industries, are thus a viable solution to the problem identified above.

First, Congress should amend the Bankruptcy Code to define fossil fuel firms and what should be considered "the public interest." Second, the Code should be amended such that fossil fuel firms are explicitly prohibited from filing as a debtor under Chapter 11. Finally, Congress should amend the Bankruptcy Code to mandate the appointment of an environmental trustee in fossil fuel liquidation cases in order to weigh the public interest in mitigating climate change against the interests of other creditors. These proposed amendments to the Bankruptcy Code are directly shaped by bankruptcy law's special treatment of other industries and are thus consistent with the logic of the bankruptcy system.

FIGURE 1

Figure 1: Ten Largest Oil & Gas Chapter 11 Filings: Q1–Q3 2020				
Filer and Case Information	Assets[392] (billions)	Liabilities[393] (billions)	Emergence from Bankruptcy	Debt Relieved (billions)
Chesapeake Energy Corp. (S.D. Tex. No. 20-33233)	$16.19	$11.79	Feb. 9, 2021	$9.4[394]
Valaris plc (S.D. Tex. No. 20-34114)	$13.04	$7.85	Apr. 30, 2021	$7.1[395]
McDermott International Inc. (S.D. Tex. No. 20-30336)	$8.75	$9.86	June 30, 2020	$4.6[396]
Whiting Petroleum Corp. (S.D. Tex. No. 20-32021)	$7.64	$3.61	Sept. 1, 2020	$3.0[397]
Oasis Petroleum Inc. (S.D. Tex. No. 20-34771)	$7.50	$3.66	Nov. 19, 2020	$1.8[398]
Noble Corp. plc (S.D. Tex. No. 20-33826)	$7.26	$4.66	Feb. 5, 2021	$3.6[399]
Diamond Offshore Drilling (S.D. Tex. No. 20-32307)	$5.83	$2.60	Apr. 23, 2021	$2.1[400]

[392] SCHWARTZ ET AL., 2005—Q3 2020 TRENDS, *supra* note 114, at 4 fig.4.

[393] *Id.*

[394] Chesapeake Energy Corp., Annual Report, (Form 10-K) 52 (Feb. 24, 2022) (disclosing that "[a]s a result of the Chapter 11 Cases, we reduced our total indebtedness by $9.4 billion by issuing equity in a reorganized entity to the holders of our FLLO Term Loan, Second Lien Notes, unsecured notes and allowed general unsecured claimants").

[395] Valaris Ltd., Quarterly Report (Form 10-Q) 11, 13 (Aug. 3, 2021) (disclosing that "[u]pon emergence from the Chapter 11 Cases, we eliminated $7.1 billion of debt and obtained a $520 million capital injection by issuing the first lien secured notes").

[396] Sergio Chapa, *Houston-Based McDermott International Exits Bankruptcy*, HOUS. CHRON. (June 30, 2020), https://www.houstonchronicle.com/business/energy/article/Houston-based-McDermott-International-exits-15377581.php [https://perma.cc/RFN9-SNTD] (reporting that "Houston oil field service company McDermott International shed $4.6 billion [in] debt after emerging from bankruptcy Monday afternoon").

[397] Eaton, *supra* note 130 (reporting that "Whiting Petroleum Corp. said Tuesday that it had emerged from bankruptcy and cut its debt by $3 billion as part of its restructuring plan").

[398] Oasis Petrol. Inc., Annual Report (Form 10-K) 6 (Mar. 8, 2021) (disclosing that "[a]s a result of the restructuring, we strengthened our balance sheet, reducing our total indebtedness by $1.8 billion by issuing equity in a reorganized entity to the holders of our senior unsecured notes").

[399] Noble Corp., *supra* note 125, at 2 (disclosing that emergence from bankruptcy "resulted in the reduction of the Company's outstanding debt by approximately $3.6 billion").

[400] Press Release, Diamond Offshore Drilling, Diamond Offshore Completes Financial Restructuring (Apr. 26, 2021), https://www.prnewswire.com/news-releases/diamond-offshore-completes-financial-restructuring-301276701.html [https://perma.cc/KC3L-S4W6] (reporting that "[t]he restructuring significantly delevers the Company's balance sheet . . . resulting in the equitization of approximately $2.1 billion in senior unsecured note obligations").

Denbury Resources Inc. (S.D. Tex. No. 20-33801)	$4.61	$3.12	Sept. 18, 2020	$2.1[401]
California Resources Corp. (S.D. Tex. No. 20-33568)	$4.07	$6.12	Oct. 27, 2020	$4.4[402]
Extraction Oil & Gas Inc. (D. Del. No. 20-11548)	$2.93	$2.24	Jan. 20, 2021	$1.3[403]

[401] Denbury Inc. Annual Report (Form 10-K) 41 (Mar. 5, 2021) (disclosing that the company "[e]liminated approximately $2.1 billion of bond debt by issuing equity and/or warrants to the holders of that debt").

[402] Cal. Res. Corp., Press Release: California Resources Corporation Completes Financial Restructuring (Oct. 27, 2020), https://investors.crc.com/news/news-details/2020/California-Resources-Corporation-Completes-Financial-Restructuring-/default.aspx [https://perma.cc/J46E-4ZQG] (reporting that "[u]nder the Plan approved by the bankruptcy court, approximately $4.4 billion of loans and notes outstanding as of June 30, 2020 have been equitized").

[403] Hart Energy Staff, *Extraction Oil & Gas Emerges From Bankruptcy with Tom Tyree as CEO*, HART ENERGY (Jan. 22, 2021), https://www.hartenergy.com/exclusives/extraction-oil-gas-emerges-bankruptcy-tom-tyree-ceo-191967 [https://perma.cc/7433-DP47] (reporting that Extraction's "restructuring resulted in a net reduction of approximately $1.3 billion in funded debt and preferred equity").

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