

National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling

ECONOMISTS' PERSPECTIVES ON LIABILITY CAPS AND INSURANCE FOR THE OFFSHORE OIL AND GAS INDUSTRY IN THE WAKE OF THE MACONDO BLOWOUT

Working Paper

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Introduction

Economics theory refers to any cost not borne by the perpetrator of an action as a “negative externality.” Since these costs affect someone else, firms and individuals do not factor them properly into decision making unless policy forces them to “internalize” the externality by accounting for both the private and social costs of their actions. When this happens, theory says that the incentives of the individual or firm are aligned with those of society, and they will make decisions that maximize social welfare. Liability is traditionally used as the instrument that makes private firms account for social costs. When companies are liable to pay for the damage they cause to society, market forces encourage them to incorporate the risk of imposing harm on others into their profit-maximizing decision-making. In the wake of the Macondo blowout, policy discussion has raised several questions about the optimal structure of liability law for offshore drillers. Some have called for the current statutory cap on liability to be removed, arguing that this would ensure that safety is in the best interest of oil and gas companies and that victims would be compensated for any harm they incur as a result of an accident. Others have objected, worrying about the impact such a policy would have on the industry. Another line of suggestions emphasizes a strong system of private insurance as a policy response.

In an attempt to sort through the facts and ideas relevant to these discussions, this paper outlines existing liability policy and surveys the literature as well as several leading academics on the optimal structure of offshore drilling liability law.

Summary of Current Policy

Liability Limits

The Oil Pollution Act of 1990 (OPA 90) constitutes the main framework of liability law for offshore drillers. Under OPA 90, leaseholders for offshore drilling facilities have strict, unlimited liability for all costs “associated with containment or cleanup of the spill” and for economic and natural resources up to a limit of \$75 million.¹ This “strict” standard requires no proof of negligence for liability to take effect and channels all liability onto the firm that holds the lease for an offshore well.² Thus, a firm that causes a spill must pay the \$75 million of damages unless it can prove that the accident was caused by an act of God, act of war, or act of a third party.³ Conversely, the government may lift the cap and impose unlimited liability if a court rules that the incident was “proximately caused” by one of the following factors:

willful misconduct, gross negligence, violation of a federal safety, construction or operating regulation, failure to report an incident, and failure to provide reasonable cooperation with responsible officials.⁴

These exceptions allow for the possibility of unlimited liability, but proponents of removing the cap consider them to be less effective than a strict standard of unlimited liability for several reasons. First, a burden of proof requiring demonstrated misconduct entails significant government resources for litigation and might be difficult to meet with proper evidence even if wrongdoing did actually occur. Second, these rules do not give firms incentive to take subjective measures of risk mitigation, such as investments in improved safety technology or avoidance of excessively risky prospects. Third, firms are unlikely to consider themselves to be in violation of the rules prior to an accident, thus introducing the clear danger

¹ See Robyn Kenney, “Oil Pollution Act of 1990, United States,” *The Encyclopedia of Earth*, http://www.eoearth.org/article/Oil_Pollution_Act_of_1990,_United_States and Curry L. Hagerty & Jonathan L. Ramseur, “Deepwater Horizon Oil Spill: Selected Issues for Congress,” *Congressional Research Service*, July 30, 2010, <http://www.fas.org/sgp/crs/misc/R41262.pdf>.

² Nathan Richardson, “Deepwater Horizon and the Patchwork of Oil Spill Liability Law,” *Resources for the Future*, May 2010, http://www.rff.org/RFF/Documents/RFF-BCK-Richardson-OilLiability_update.pdf, p. 2.

³ Jonathan L. Ramseur, “Oil Spills in U.S. Coastal Waters: Background, Governance, and Issues for Congress,” *Congressional Research Service*, April 30, 2010, http://assets.opencrs.com/rpts/RL33705_20100430.pdf, p. 12.

⁴ Barbara E. Ornitz and Michael A. Champ, *Oil Spill First Principles: Prevention and Best Response*, (Elsevier Ltd. 2002), p. 49.

that they will assume the liability cap will protect them and remain unaffected by the ex ante safety incentives provided by unlimited liability. In light of this federal law, it is important to note also that 28 states have their own oil spill liability laws, 19 of which do not limit payouts on damages.⁵ Florida, Mississippi, and Alabama are among the states with no cap on damages.⁶

What Qualifies as Economic Damages?

Under OPA 90, liability for economic harm from a spill applies to losses suffered by private or government entities and covers the following:⁷

- lost profits
- personal property damages
- loss of subsistence use of natural resources
- lost revenues to government
- costs of providing extra public services during or after spill response.

To be awarded damages, claimants must demonstrate “quantifiable economic loss supported by proof,” as well as a “direct link” between the contamination and their loss.⁸ Examples of claims that would be deemed sufficiently dependent on natural resources or the environment would include losses from closed fishing areas or reduced tourism.⁹

Natural Resource Damages

Responsible parties are also strictly liable up to the cap for natural resource damages, which are defined as the following:¹⁰

- the cost of restoring, rehabilitating, replacing, or acquiring the equivalent of, the damaged natural resources
- the diminution in value of those natural resources pending restoration
- the reasonable cost of assessing those damages

The National Oceanic and Atmospheric Administration (NOAA) implements this law by conducting a Natural Resource Damage Assessment with the aim to “return natural resources . . . to their baseline, pre-spill condition while compensating the public for the losses occurring in the interim period.” In this assessment, the focus is not on the monetary value of these resources,

⁵ Ramseur, p. 3.

⁶ Richardson, p. 4.

⁷ See Ramseur, pp. 11-12 and Ornitz & Champ, p. 222.

⁸ Ornitz & Champ, p. 223.

⁹ Ramseur, p. 30.

¹⁰ Ibid, p. 6.

but rather on the costs of restoration, which are paid for by the responsible party in the form of a restoration plan prepared by the NOAA.¹¹

Liability Precedents

Data from previous oil spills provides context for the costs responsible parties have paid in the past. The NOAA reports that costs to oil companies from an oil spill have ranged from \$1 per gallon to \$923 per gallon, with an overall average of \$278 per gallon.¹² Natural resource damage payments typically made up about a quarter of the total costs, with cleanup and response accounting for about half. Perhaps due to the fact that most oil gets spilled away from land and perhaps partially due to the cap on liability, third-party claims do not typically comprise a significant portion of the total costs.

In terms of the Deepwater Horizon blowout, the *Exxon Valdez* represents the closest available parallel. The NOAA reports that the total costs to Exxon for the spill exceeded \$9 billion, but this figure greatly overstates the amount actually paid out. Response costs totaled approximately \$2.8 billion and the government settled natural resource damages at about \$1 billion. The largest cost included in the overall figure were third-party claims totaling \$5.3 billion in punitive damages awarded by an Anchorage jury in 1994.¹³ But only a small fraction of these claims actually got paid out, and not until nearly two decades after the spill. Following multiple legal appeals, the U.S. Supreme Court concluded in 2008 that Exxon owed only \$507.5 million plus an additional \$500 million in interest payments.¹⁴ As of 2009, only \$383 million had been paid out, which is less than economic damages from just from the loss of herring in the region, according to the Prince William Sound Science Center.¹⁵ Moreover, by the time of the payout, 8,000 of the original 33,000 claimants had died.¹⁶ Thus, despite no attempts by Exxon to seek protection under a liability cap, victims of the *Exxon Valdez* spill do not appear to have been

¹¹ Ornitz & Champ, pp. 214-218.

¹² See Ornitz & Champ, p. 93. Data gathered from various sources. Also see Douglas Helton and Tony Penn, "Putting Response and Natural Resource Damage Costs in Perspective," *National Oceanic and Atmospheric Administration*, 1999, <http://www.darrp.noaa.gov/library/pdf/costsofs.pdf>.

¹³ "19 Years Later, Exxon Spill Before High Court," *Associated Press*, February 25, 2008, <http://www.msnbc.msn.com/id/23338979/>.

¹⁴ Kate Gordon, "Why We Need to Raise or Eliminate the Oil Spillers' Liability Cap," Testimony to the U.S. House of Representatives, *Center for American Progress*, June 9, 2010, http://www.americanprogressaction.org/issues/2010/06/oil_responsibility.html.

¹⁵ See *ibid.* for value paid out. For herring value, see Dan Simon and Augie Martin, "Alaska Fishermen Still Struggling 21 Years After Exxon Spill," *CNN*, May 7, 2010, <http://www.cnn.com/2010/US/05/06/exxon.valdez.alaska/index.html>.

¹⁶ See <http://www.msnbc.msn.com/id/23338979/> and Gordon.

compensated in a timely or satisfactory manner. Furthermore, since *Exxon* made profits of \$3.8 billion and \$5 billion in 1989 and 1990, the overall penalty to the firm, while not insignificant, probably fell far short of the costs imposed on society.

Perspectives on the Optimal Liability Structure

The second part of this paper draws on interviews with leading academics as well as a survey of the available literature to explore the optimal liability structure for offshore drillers.

Support for Unlimited Liability

A policy of strict, unlimited liability finds support in basic economic theory that suggests firms will have incentive to act in a socially optimal manner when they are forced to “internalize” externalities by paying for any costs they impose on society. As University of Chicago economics professor Richard Thaler explained, “How can government reduce the frequency and the severity of future catastrophes? Companies that have the potential to create significant harm must be required to pay for the costs they inflict, either before or after the fact. Economists agree on this general approach.”¹⁷ The Obama Administration has said it “strongly supports” repealing the liability limit on economic damages, which it calls an “implicit subsidy” to oil companies responsible for spills.¹⁸ In addition, scholars affiliated with think-tanks across the political spectrum, including the Heritage Foundation, Cato Institute, Brookings Institution, and Center for American Progress have supported this initiative.¹⁹ The following are statements by economists also in favor of this approach:²⁰

Kenneth J. Arrow, Stanford University, Department of Economics

¹⁷ Richard H. Thaler, “Recipes for Ruin, in the Gulf or on Wall Street,” *New York Times*, June 12, 2010, <http://www.nytimes.com/2010/06/13/business/13view.html?src=busln>.

¹⁸ Siobhan Hughes, “UPDATE: US House Passes Offshore-Drilling Bill: Senate Fate Uncertain,” *NASDAQ*, August 30, 2010, <http://www.nasdaq.com/aspx/companynewsstory.aspx?storyid=201007301907DOWJONESDJONLINE000605>

¹⁹ See “Lift Liability Caps, Promote Safety, and Continue Drilling,” *Heritage Foundation*, August 3, 2010, <http://blog.heritage.org/2010/08/03/lift-liability-caps-promote-safety-and-continue-drilling/>.

Richard A. Epstein, “BP Doesn’t Deserve a Liability Cap,” *Cato Institute*, June 16, 2010, [http://www.cato.org/pub_display.php?pub_id=11905&utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+CatoRecentOpeds+\(Cato+Recent+Op-eds\)](http://www.cato.org/pub_display.php?pub_id=11905&utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+CatoRecentOpeds+(Cato+Recent+Op-eds)).

Gordon, http://www.americanprogressaction.org/issues/2010/06/oil_responsibility.html.

Michael Greenstone, “A Built-In Incentive for Oil Spills,” *Brookings Institution*, June 3, 2010, http://www.brookings.edu/opinions/2010/0603_oil_greenstone.aspx.

²⁰ These statements do not represent a scientific poll. Academics were contacted for this report based on their expertise in economics and law regarding energy, environment, liability, regulation, information, risk, and governance and their responses also reflect availability and interest. However, there is also no reason to believe a particular bias should exist in the presented viewpoints.

In this particular case, it strikes me that strict liability is the essential weapon. What damage you cause, you pay for it. If you cause catastrophic damage, you pay catastrophically. It seems to me this is relatively simple in this case, the reason being is that these companies are so big, that you can expect them to really pay.²¹

Jim Sweeney, Stanford University, Department of Management Science & Engineering

I think that's the most important thing you can do – make sure that everybody knows that if there is a risk, they're going to have full liability for all the costs that are incurred, including the secondary costs like people out of work in fishing boats. I think in the past we had a lot of incentives for risk-taking, because everybody believed there wouldn't be anywhere near full liability. You need to do a full legal analysis to see where there are laws limiting full liability and you have to weed them out.²²

David Moss, Harvard Business School

The existence of a cap on liability should immediately raise a red flag, particularly if the cap is set very low and if there is no natural risk monitor in the private sector. In this case, people are being exposed to potentially grave harm, and yet they are being sharply limited in their ability to collect damages. Now, if you're going to go ahead and put on a cap, despite all the potential problems, then you absolutely have to regulate effectively to guard against moral hazard – that is, to prevent excessive risk taking by those being protected. But it's not clear we had (or have) the needed regulation in this case. Capping liability without controlling the inevitable moral hazard through effective regulation is awfully dangerous. In fact, it nearly ensures you'll have a major event – a major loss – as a result.²³

Joseph Stiglitz, Columbia University, Department of Economics

The general point that almost all economists would agree on is that [oil companies should bear] the full cost of any damage that they [caused]. The full cost, which means that in the case, for instance, of BP, they would have to pay for the loss of income of everybody, the cost of the cleanup, the cost of restoration . . . all of the costs that they have imposed on others. That is the economic solution. Because of . . . and the risk of irreversibility, they probably should actually have to pay a penalty in addition to any cost that they have to bear.²⁴

Ryan Kellogg, University of Michigan, Department of Economics

If you want firms to think of the full scope of the externality, what you really want in a case like this is full, unlimited liability.

²¹ Kenneth J. Arrow, Personal Interview, August 6, 2010. Professor Arrow is the 1972 Nobel Prize winner in economics. A listing of his research can be found here: <http://homepage.newschool.edu/het/profiles/arrow.htm>.

²² Jim Sweeney, Personal Interview, August 19, 2010. Professor Sweeney is the Director of the Precourt Institute for Energy Efficiency. A summary of his work can be found here: <http://soe.stanford.edu/research/layoutMSnE.php?sunetid=jsweeney>.

²³ David Moss, Personal Interview, August 6, 2010. Professor Moss has done research on governments, regulation, and risk management. A list of his publications can be found here: <http://drfd.hbs.edu/fit/public/facultyInfo.do?facInfo=pub&facId=6518>.

²⁴ Joseph Stiglitz, Personal Interview, September 24, 2010. Professor Stiglitz is the 2001 Nobel Prize winner in economics. His CV can be found here: http://www2.gsb.columbia.edu/faculty/jstiglitz/download/Stiglitz_CV.pdf.

Jerry Green, Harvard University, Department of Economics

A cap like \$75 million seems to me far too low. I don't think there's a good economic argument, a good theoretical argument, for any cap. I would like to see no cap, and let it be legislated.²⁵

Severin Borenstein, Haas Business School, University of California at Berkeley

Obviously the economic default is to make them liable for any damages that come across from drilling and therefore a rule of strict liability with unlimited damages would be a starting point.²⁶

Kip Viscusi, Vanderbilt University Law School

We're talking about capping damages related to the harm that's been caused. I can't see any reason for capping that. That's what you're relying on for incentives.²⁷

Timothy Bresnahan, Stanford University, Department of Economics

This cap on liability for oil companies just sounds goofy. Why there's a cap on the big companies, other than a political reason, presumably caused by the need to get the big firms to buy in to have enough votes, I just don't see the reason. The whole point here is that the scope of the damage can scale to a major chunk of the whole economy. Assigning the liability to BP, and having that be uncapped, that may well be the best mechanism to deal with this. That cap just sounds like a policy mistake.²⁸

Richard A. Epstein, University of Chicago Law School

Tort remedies are essential to protect people (and their property) who do not have contractual relations with defendants from harms such as air and water pollution. The legal system should never allow self-interested parties to keep for themselves all the gains from dangerous activities that unilaterally impose losses on others—which is why the most devout defender of laissez-faire must insist, not just concede, that tough medicine is needed in these cases. The first element in the mix is a no-nonsense liability system that fastens full responsibility on the parties who run dangerous operations, no excuses allowed. Accordingly, we have to be especially wary of statutory caps on tort damages, including the current law. That \$75 million is chicken feed.²⁹

Roger Noll, Stanford University, Department of Economics

In order for companies to internalize an externality, it must be the case that they have full liability for the consequences of their actions on third parties.³⁰

²⁵ Jerry Green, Personal Interview, August 4, 2010. Professor Green specializes in choice under uncertainty and the economics of incentives. His CV can be found here: <http://www.people.hbs.edu/jgreen/JG-CV-S02.pdf>.

²⁶ Severin Borenstein, Personal Interview, August 16, 2010. Professor Borenstein specializes in energy markets. A list of his work can be found here: <http://faculty.haas.berkeley.edu/borenste/>

²⁷ W. Kip Viscusi, Personal Interview, August 9, 2010. Professor Viscusi has done research on risk, insurance, and environmental regulation. His CV can be found here: <http://law.vanderbilt.edu/facultyresources/faculty/196cv.pdf>.

²⁸ Timothy Bresnahan, Personal Interview, August 3, 2010. Professor Bresnahan has done work on incentives and safety regulation. His CV can be found here: <http://www.nber.org/vitae/vita113.htm>.

²⁹ Richard A. Epstein, "BP Doesn't Deserve a Liability Cap," *Wall Street Journal*, June 16, 2010, http://online.wsj.com/article/NA_WSJ_PUB:SB10001424052748704312104575298902528808996.html.

³⁰ Roger Noll, Personal Interview, August 9, 2010. Professor Noll has done research on regulation, legal institutions, energy, oil leasing, and nuclear safety. His CV can be found here: http://economics.stanford.edu/files/Noll_cv.pdf.

Lawrence Goulder, Stanford University, Department of Economics

I don't see any economic rationale for [the cap].³¹

Don Fullerton, University of Illinois, Department of Economics

There's no particular reason to limit liability.³²

Michael Greenstone, Massachusetts Institute of Technology, Department of Economics

The rub here is that the \$75 million cap on liabilities for economic damages now protects oil companies from full responsibility for damages. This misalignment of incentives is a classic case of moral hazard. Firms or people behave differently when they are protected from risk. Consider that oil companies make decisions about where to drill, and which safety equipment to use, based on benefit-cost analyses of the impact on their bottom line. For example, in choosing a location, oil companies assess whether the expected value of the oil exceeds the costs. These costs include equipment used and wages paid employees. But they also include the expected payouts for potential spill damages to shorelines, local economies and the environment. So the cap inevitably distorts the way companies evaluate their risk. Locations where damages from a spill may be costly — for example, places near coasts or in sensitive environmental areas — seem more attractive for drilling with the cap than if firms actually were responsible for all damages. The cap effectively subsidizes drilling in the very locations where the damages from spills would be the greatest. Further in all drilling locations, it reduces the incentives for investing in the best safety equipment or using the safest, but time-consuming, methods.

A critical aspect of any package of reforms should be the elimination of the liability cap or, at a minimum, greatly increasing it. Then real market forces would guide oil companies' investment decisions – including a consideration of oil spill costs.³³

Arguments for Limited Liability

The support for unlimited liability is not quite unanimous. Vanderbilt law professor Mark Cohen sums up the two basic arguments for supporters of limited liability: that there are social benefits from oil drilling that are not captured by the companies doing the drilling or that unlimited liability would result in uninsurable risks that would make drilling too risky.³⁴

Michael Levi, a senior fellow at the Council on Foreign Relations, makes a case for the first of these reasons; a positive externality from drilling that would justify a subsidy in the form of limited liability:

³¹ Lawrence Goulder, Personal Interview, August 2, 2010. Professor Goulder specializes in environmental and energy economics. His CV can be found here: <http://www.stanford.edu/~goulder/CV.pdf>.

³² Don Fullerton, Personal Interview, August 12, 2010. Professor Fullerton specializes in environmental and energy economics. His CV can be found here: http://works.bepress.com/don_fullerton/cv.pdf/

³³ See http://www.brookings.edu/opinions/2010/0603_oil_greenstone.aspx. Professor Greenstone has done research on environmental economics and regulation. His CV can be found here: <http://econ-www.mit.edu/files/5621>.

³⁴ Mark A. Cohen, "Deterring Oil Spills: Who Should Pay and How Much," *Resources for the Future*, May 2010, http://www.rff.org/rff/documents/RFF-BCK-Cohen-DeterringOilSpills_update.pdf.

While there are public risks associated with offshore drilling, there are also public benefits. When a company extracts oil from the Gulf of Mexico, the government collects part of the rent in the form of royalties, which benefits the American people as a whole. Leaving that oil in the ground is leaving money on the table. That doesn't mean that all oil that's out there should be extracted – but it does mean that the market won't recognize its entire value by itself.³⁵

This point, while true, is a very weak justification for an external benefit. Royalties from offshore drilling are essentially taxes collected on an economic activity and while oil companies certainly do not account for the value of these taxes to society, neither does any firm undertaking any activity. Thus, the extension of this logic would mean that all legal economic activity has a “public benefit” and deserves a subsidy. Levi also makes a second point:

Second, U.S. production displaces production elsewhere in the world. The United States produced 1.6 million barrels per day (mb/d) from the offshore Gulf of Mexico last year. Let's say that removing the liability cap knocked out 0.5 mb/d . . . and that OPEC countries responded by increasing their own production by 0.5 mb/d, holding the price of oil (and hence demand) constant. At \$80/bbl, The United States would send an extra \$40 million abroad each day for oil, for a total of \$14.6 billion each year. At the same time, OPEC countries would gain \$14.6 billion in annual revenues. Removing the oil spill liability cap is worth something in terms of reduced oil spill risk. I doubt that it is worth paying a \$14.6 billion annual premium to OPEC. Basic market dynamics do not price this problem in.³⁶

This energy security argument has been a mainstay of the political discourse for decades, also articulated recently by South Carolina Senator Lindsey Graham: “Last year we spent more than \$400 billion on foreign oil and now find ourselves more dependent on overseas supplies than before 9/11. Sometimes our money even goes to fund enemies bent on our destruction.”³⁷

Certainly, reliance on imported oil does come with the risks Graham cites, but the real question for liability should focus on the degree to which domestic production mitigates this problem.

The following is a summary of views from energy economists on this issue:

Frank Wolak, Stanford University, Department of Economics:

³⁵ Michael Levi, “Removing the Oil Spill Liability Cap Could Be Dangerous,” *Council on Foreign Relations*, August 2, 2010, <http://blogs.cfr.org/levi/2010/08/02/removing-the-oil-spill-liability-cap-could-be-dangerous/>.

³⁶ Ibid.

³⁷ Lindsey Graham, “Building Consensus for Drilling Key,” *National Journal*, July 16, 2010, <http://energy.nationaljournal.com/2010/07/should-congress-expand-offshor.php>.

It's hard to argue that there's a positive externality to drilling offshore in the Gulf . . . I don't see much intrinsic value in the fact that the oil is produced in the United States versus other parts of the world.³⁸

Why does it not matter where the oil is produced? Borenstein says "there's no reason to worry about energy self-sufficiency in the security sense. The world market for oil really does trade oil quite efficiently." Because of this worldwide trading, all that really matters in the oil market is the global supply and the global demand. This means that, according to Jerry Taylor of the Cato Institute, "a shortage of oil anywhere in the world increases the price of oil everywhere in the world."³⁹ Thus, producing more oil in the Gulf makes the United States more resilient to insecure sources of oil only to the extent that it increases global production. As Sweeney puts it, the impact of this is "quantitatively insignificant. Yes there is a phenomena there, but it's a small phenomena, it's not something that should be important enough for driving your decision-making. How much oil we're going to produce offshore is a very small fraction of the world oil market."

Levi's calculations sound significant because of the assumption that expanded domestic production displaces imports barrel for barrel. But as Resources for the Future's Stephen Brown and Stanford's Hillard Huntington showed, this is not in fact the case. Huntington and Brown estimated the social welfare benefits from supplying one more barrel of oil domestically to be only about \$1 per barrel.⁴⁰ In order to justify the positive externality argument, this benefit would have to exceed the social costs of drilling risks to the economy and the environment, which were clearly very significant in the case of the BP blowout. Furthermore, economists do not generally regard increased domestic production as the most effective way to ease supply concerns:

Fullerton:

It's hard to imagine what those positive externalities are. There are concerns about things like energy security and national security, so we want to be doing the drilling for the sake of domestic production, but frankly, I've never thought much of that argument.

³⁸ Frank Wolak, Personal Interview, August 5, 2010. Professor Wolak directs the Program on Energy and Sustainable Development and has done research on energy, industrial organization, and government regulation. More information can be found here: <http://www.stanford.edu/~wolak/>.

³⁹ Jerry Taylor, "No Reason to Cut U.S. Oil Imports," *Cato Institute*, September 26, 2004, http://www.cato.org/pub_display.php?pub_id=4053.

⁴⁰ Mark A. Cohen, "Policy Context Key for Offshore Drilling," *National Journal*, July 12, 2010, <http://energy.nationaljournal.com/2010/07/should-congress-expand-offshor.php>

Also see Stephen Brown and Hillard Huntington, "Estimating U.S. Oil Security Premiums," *Energy Modeling Forum*, September 2009, <http://emf.stanford.edu/files/pubs/22528/OP68Rev.pdf>.

If you're worried about the amount we rely on imports of oil, then the best response would be to reduce consumption in the United States.

Goulder:

If we're concerned about our vulnerability to supply disruptions on the world oil market, I think the best way to do that is to introduce policies that would reduce our overall consumption of oil because I think it's much better than trying to artificially stimulate domestic production. You could think of it in externality terms. If there's a vulnerability externality because we depend on petroleum and petroleum-based products, then the price of petroleum should reflect that external cost as well as the environmental costs. If you instead try to support or subsidize domestic production, you're not directly dealing with the externality, so I'm not a fan of giving special privileges to domestic oil drillers, offshore or in other contexts.

Sweeney:

The difference you make in importing [by expanding domestic production] will be significantly smaller than the impact you make through your changes in the demand for oil.

Economists say the real benefit of offshore drilling is the value of the oil produced in the form of jobs and revenues that help local economies. But since firms capture this value entirely, it cannot justify subsidies to oil drillers in the form of protection from liability.

Others caution that inefficiencies in the legal system could be a reason for a liability cap:

Bruce Owen, Stanford University, Department of Economics

There isn't any reason to put a cap on liability if you think the judicial system is capable of accurately estimating the damages. The only reason to put a cap on liability is if you think that the legal system systematically overestimates or underestimates the level of the damages.⁴¹

Wolak:

In a world where transactions costs are zero, the legal system is likely to do a good job, but transactions costs aren't zero.

Richard Zeckhauser, Harvard Kennedy School

One of the reasons to cap liability is that today's tort system produces very unpredictable results. We need clear rules for liability. For example, workers can recover no more than what they can demonstrate in lost wages. Punitive damages should go to the state rather than to the plaintiffs.⁴²

⁴¹ Bruce Owen, Personal Interview, August 9, 2010. Professor Owen has done research on law, regulation, and the *Exxon Valdez* spill. His CV can be found here: <http://www.stanford.edu/~bmowen/owen.cv.htm>.

⁴² Richard Zeckhauser, Personal Interview, August 17, 2010. Professor Zeckhauser has done research on risk, uncertainty, and large-scale catastrophes. More information can be found here: <http://www.hks.harvard.edu/fs/rzec/khau/resum.htm>

This expressed aversion to the ineffectiveness of the legal system to deal with widespread liability does not affect the basic theory of unlimited liability, but rather its practice. Thus, it is possible that a method of paying damages disconnected from the courts, such as the escrow fund set up by BP and run by Kenneth Feinberg, would alleviate some of these concerns partly by, as Zeckhauser suggested, designing specific rules to determine payouts.

But none of the above reasons has been used as the main defense for a liability cap, which is summed up by Harvard's Robert Stavins: "A cap might be put in place for political reasons if you wish to make sure you don't squeeze small businesses out." Addressing the relevance and legitimacy of this concern first requires understanding why small businesses could be squeezed out.

Bonding Requirements and Financial Responsibility

Basic economic theory posits that holding firms liable only works when they actually have the assets to pay the costs. If a firm goes bankrupt and is shielded from the full cost of damages, their liability is essentially limited and prevents them from having the proper incentive to invest in safety. Furthermore, absent taxpayer contribution, compensation will not be available for victims of an accident. While it appears BP will be big enough to bear the full costs of the Deepwater Horizon accident after they waived the liability cap, that would not have been the case with a smaller firm. Thus, unlimited liability actually creates a strong advantage for smaller firms who do not have to worry about damages they cannot pay. This also creates, as Sweeney puts it, "incentive for corporations to spin-off separate companies that will be doing the riskier things." Greenstone describes the problem further and proposes a set of possible solutions:

There are a series of corporate reorganizations that firms could take to evade a higher cap. This might include dividing themselves into smaller entities and making liberal use of bankruptcy statutes in the case of a spill or the formation of limited partnerships. To prevent such practices, any increase in the cap should be accompanied by a requirement for proof of liability insurance, a certificate of financial responsibility, or the posting of a bond to cover damages.⁴³

A financial responsibility requirement means firms must demonstrate the ability to pay for a certain amount of potential damages, either through external or self insurance. The current requirement for offshore facilities is \$150 million, which would have to be raised by orders of

⁴³ Greenstone, http://www.brookings.edu/testimony/2010/0609_oil_spill_greenstone.aspx.

magnitude to ensure the ability to pay for an accident resembling the Deepwater Horizon.⁴⁴ Mark Cohen, a Vanderbilt University law professor, does believe, however, that doing so would effectively prevent the threat of firms creating small limited-liability entities to do drilling.⁴⁵

A stronger version of demonstrating financial liability would actually require drilling firms to post a bond before drilling in offshore wells. Such a system would ensure the availability of funds to pay out damage claims in the event of an accident, not only protecting potential spill victims from the risk of bankruptcy, but also serving to make safety far more salient to the company. As Wolak puts it: “That’s quite salient to them. Instead of us trying to get money out of you, it’s you trying to get money back from us.” In light of concerns that firms will not rationally account for the threat of low-probability, high-consequence events such as oil spills, this salience could be an important consequence of bonding.

An additional benefit of bonding requirements goes to victims who do not have to wait for court decisions to compel companies to pay for damages. Wolak says that “part of putting this money in escrow is if you have [an accident], we immediately have this money available to confiscate to do whatever we want with.” Noll adds a description of further benefits

So you can avoid the problem . . . [of] lots of people going out of business – going into bankruptcy – who actually are probably eventually going to get paid, but the process is so slow they don’t get it [in time]. It would be a two-step process. It would not only be to create the fund, but have an advance plan of ‘how do I in two days get people down there writing checks to avert short-term impacts that have arisen.’ I think that’s a perfectly good way to reduce the human cost of the disaster.

The human cost referred to by Noll can be seen in victims of the *Exxon Valdez* disaster who waited nearly two decades before receiving any compensation for that spill, clearly underscoring the importance of a bonding program.

One cautionary note on imposing bonding requirements involves setting the right level. Zeckhauser asks the key question: “How much do you want to have? If you say you have to post a bond for \$2 billion, you’re going to say only the major oil firms can do it.”⁴⁶ In a related issue, Noll wonders how it is possible to estimate the potential costs beforehand:

Suppose you’re sitting here a year ago and you’ve decided to set up such a program, and you want proof of financial responsibility to cover a potential explosion of a deepwater well in the Gulf. What is the number you use as proof of financial responsibility? Even

⁴⁴ EPA, <http://epa.gov/oem/content/lawsregs/opaover.htm>.

⁴⁵ Mark Cohen, Personal Interview, August 10, 2010. Professor Cohen is Vice President for Research at Resources for the Future.

⁴⁶ The impact on competition from restricting offshore drilling to major firms is discussed more on p. 29.

now, three months after the event, we don't know . . . how much this thing is going to end up costing because of all these secondary and tertiary impacts. In principle, one could do this. In practice, one would need some sort of procedure for estimating in advance a reasonable estimate of what these things are going to cost.

While a valid concern, this issue does not undermine the overall case for strong bonding requirements. A bond need not be a comprehensive source of damage payments, only assurance that at least something will be available to pay out damages in the case of a catastrophe.

In terms of the specific mechanism, existing law does require a “surety bond” for leases in the Gulf of Mexico, but these currently range in the hundreds of thousands of dollars, virtually meaningless compared to the scale of deepwater drilling accidents.⁴⁷ Thus, simply raising the magnitude of existing requirements could institute a strong system of bonding. In addition, current rules allow for “area-wide general lease surety bonds,” which would alleviate concerns that oil companies could not repeatedly pay a large bond for each individual well.⁴⁸ This type of bonding could allow oil companies to post a large bond that would cover catastrophes in an entire region, such as the Gulf of Mexico. Boston College law professor Zygmunt Plater strongly supports this idea:

It's very powerful because you don't start a deepwater drill without a surety bond and the bond is not going to be issued by a private issuer unless you're following the best available technology. And if I'm looking for a way to make the industry take seriously prevention and response, by creating an economically feasible bonding system, then it turns into a self-enforcing, self-correcting mechanism. I would suggest that's one of the ways that industry could be made more responsive.⁴⁹

Stiglitz agrees:

One of the advantages of posting bonds is that you then have one other party that has incentive to have oversight. You create a system of private oversight incentives. One could make an argument that everybody has to post a bond from a third party to make sure that there is somebody else monitoring them. The holder of the bond has a lot of incentive to make sure the [company] is acting in a reasonably safe way.

Whether or not the monitoring of a bondholder adds any value to safety, the overall benefits of expanded surety bonds are clear: assurance that bankruptcy will not prevent polluters from paying, salience of liability penalties, and swift availability of funds for compensation.

⁴⁷ “Guidelines for General Lease Surety Bonds,” *United States Department of the Interior, Minerals Management Service*, September 7, 2000, <http://www.gomr.boemre.gov/homepg/regulate/regs/ntls/ntl00-g16.html>.

⁴⁸ This concern was raised by Borenstein.

⁴⁹ Zygmunt Plater, Personal Interview, August 12, 2010. Professor Plater has done research on environmental and administrative agency law and the *Exxon Valdez* spill. More information can be found here: <http://www.bc.edu/schools/law/fac-staff/deans-faculty/platerz.html>

The Role of Private Insurance

In order to meet a substantial bonding requirement, small firms in the industry would need to purchase private insurance. Some large firms might also seek private insurance as a complement or replacement for self-insurance. In addition, private insurance has been raised as an alternative to using unlimited liability in an effort to incentivize safety. Some, such as Epstein, even suggest that purchases of external insurance should be made mandatory:

We'd all be much better off if there were no statutory liability cap and if operators both big and small were required to purchase insurance—amounting to the tens of billions if necessary—when they operate in dangerous waters or terrains. Solid insurance underwriting is likely to do a better job in pricing risk than any program of direct government oversight. Only strong players, highly incentivized and fully bonded, need apply for a permit to operate.⁵⁰

Private insurance holds appeal because unlike the government, insurance companies have strong monetary incentives to monitor risk-taking and prevent accidents that they would have to pay for. In addition, a comprehensive system of private insurance would allow smaller companies to continue drilling with the financial backing of insurance companies even in the presence of strong bonding and liability requirements. Indeed, insurance companies already play a role in Gulf drilling. Moody's Analytics estimates that the Deepwater Horizon had between \$1.4 billion and \$3.5 billion in insured losses.⁵¹ But the total losses from the spill were orders of magnitude higher than the insured losses. So in order to become a complete solution, private insurance would have to scale up dramatically. There are several problems impeding this outcome.

First, all indications are that the magnitude of costs involved in a catastrophe such as Deepwater Horizon would not be insurable. Sweeney said that "I don't believe they'll get anywhere near full coverage by any of the insurance companies. It's not going to be available." Several independent insurance analysts agree. For instance, Robert Hartwig, President of the Insurance Information Institute said that even a \$10 billion cap on liability would force drillers to self-insure because "there isn't enough capacity to provide that level of protection in the global energy market," which collects about \$3 billion per year in annual premiums.⁵² One executive at Munich Re, one of the companies exposed to losses from this spill, called the event "a market-

⁵⁰ Epstein.

⁵¹ "Moody's: Offshore Drilling Insurance Rates to Jump," *Associated Press*, June 4, 2010, <http://www.businessweek.com/ap/financialnews/D9G4J6VO0.htm>.

⁵² For more information, see Natalie Obiko Pearson, "Offshore Insurance to Shrink as Providers Flee BP-Like Risk," *Bloomberg*, June 23, 2010, <http://www.bloomberg.com/news/2010-06-24/offshore-oil-drilling-insurance-to-shrink-as-providers-flee-bp-like-risk.html>.

changing event” after which “buyers and sellers of coverage will be reevaluating their appetites for offshore energy risk.”⁵³ John Lloyd, Chairman and CEO of Lloyd’s of London, a company that insures many complicated major risks, including some involved with the Deepwater Horizon, was even more blunt in a letter to the U.S. Senate:

“Any significant increase in this limit will cause Insureds operating in US Waters to face the prospect of significant self insurance, since (depending on the amount) the insurance market will not have sufficient capacity to provide cover for this in addition clean-up costs and third party properties damage suits.”⁵⁴

Thus, the signals from insurance companies and the magnitude of potential losses indicate that complete private insurance will not be feasible without a relatively low cap on damages. Arrow sums up this issue and adds another concern about comprehensive external insurance:

There are times when you need insurance, but I can’t see that insurance can play a major role with companies of this size and losses of this magnitude. It could play an auxiliary role, but I don’t think insurance should be a major element when you talk about companies that can pay for the damage. Insurance, in any case will be difficult because in this case the companies have so much technical knowledge insurance companies won’t share.

The information asymmetries that inhibit the ability of insurance companies to monitor risk are important. While insurance companies have better incentives than governments to monitor, they are still not in the best position to do so effectively compared to the drilling firm itself. Since no amount of monitoring will make every risky decision transparent, particularly in a technologically complex deepwater activity, the best risk management can only come from the company doing the drilling. With insurance, however, the company doing the drilling has significant moral hazard, or lack of incentive to take proper care, because the insurance company will pay the costs of an accident. Theoretically, the insurance company could keep safety incentives in place by charging differentiated premiums based on a company’s safety efforts. But if many safety decisions are difficult to observe and experience-rated premiums cannot properly measure the risk of extremely rare events, these traditional tools might be insufficient. Thus, even if private insurance could cover all the costs, it would do so at the risk of moving the safety incentives away from the people with the most power to take precautions: the firms doing the drilling.

⁵³ Ibid.

⁵⁴ John Lloyd, Open Letter, http://epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=5b3a522f-53a5-4fbe-872f-21ed37589543.

This does not mean that private insurance should be removed from the equation entirely.

According to Borenstein:

I think no company is going to take this on completely self-insured. They are going to have an outside insurance intervention and that company is going to also have this risk that they have to monitor . . . I think that you do have to be insured and that insurance company is not judgment proof, then they're going to have a very strong incentive to participate in the risk decision-making.

This suggestion by Borenstein and Arrow of private insurance playing a complementary role is a notable alternative. Having the insurance firm serve as an extra monitor with strong incentives could only help when combined with significant self-insured liability and monitoring from government agencies. And while full insurance seems unlikely, a Lloyd's spokesman did say that some forms of insurance for offshore drilling would still be available when it is "good business" for the company.⁵⁵ Thus, the balance of the evidence indicates private insurance can be viewed as a component of a liability system for companies to use at their own discretion, but will likely be insufficient as a comprehensive option.

Small Firms

If, in the above scenario of unlimited liability, private insurance could not help small firms pay the significant bonding requirements, these firms could be pushed out of the deepwater drilling industry. This fact has been raised often in political discussion following the Deepwater Horizon spill. One publication notes that "out of luck would be smaller companies like Anadarko Petroleum, Marathon Energy Company, Devon Energy, or Conoco Phillips, which collectively produce one-third of oil and two-thirds of natural gas from the [Outer Continental Shelf]."⁵⁶ If this does happen, a spokesman for one Senator asks "where are the free-market values in that?"⁵⁷ But economists take a different view:

Moss:

Even if you take off the cap, another cap that still implicitly exists stems from limited liability law, which caps liability at the value of the firm. And so smaller firms would essentially have an advantage. If they ended up causing a large amount of damage as a result of a spill, they might not ultimately have to cover much of the losses because shareholders could simply give up the value of the firm and call it quits. If firms can't

⁵⁵ Nin-Hai Tseng, "Gulf spill hasn't scared off Lloyd's of London," *CNN*, July 6, 2010,

http://money.cnn.com/2010/07/05/news/companies/lloyds_london_gulf.fortune/index.htm.

⁵⁶ Patricia Murphy, "Raising Liability Costs Could Help BP, GOP Warns," *Politics Daily*, June 2010,

<http://www.politicsdaily.com/2010/05/26/oil-spill-liability-caps-oddly-raising-them-could-help-bp-som/>.

⁵⁷ Siobhan Hughes, "Smaller Firms Might Exit Gulf, Browner Says," *Wall Street Journal*, July 3, 2010,

http://online.wsj.com/article/NA_WSJ_PUB:SB10001424052748704699604575343203016512616.html.

afford to cover potential losses (either through their own balance sheet or through insurance), then they're posing a financial danger to everyone around them when they drill. You're almost certainly going to have more accidents if you create a situation where, legally, certain firms can externalize costs onto victims. I can see why smaller firms might take issue with that, but the truth is that the smaller firms – unless they're adequately insured – would have the potential to trigger enormous losses that they couldn't ultimately pay for.

Fullerton:

If they're taking big risks – in other words, if there might be large damages – if they can't cover, and they can't insure, then they shouldn't be doing it. You need them to be insured or to have large enough companies that could cover the losses.

Arrow:

If a small company is not able to meet the obligations, then that's a good argument for saying it should not be in this business. Why should the fishermen take losses in order to subsidize so-called small companies? There's enough competition by the big companies to take care of that question without being worried about any sort of monopoly.

Borenstein:

The appropriate response is if that hurts the industry, then what you're saying is paying the full cost of drilling hurts the industry and that is the right cost for them to be covering.

Goulder:

I think from a social point of view, if they're not able to be responsible for the cost they might impose on society, then they shouldn't be in the business. We shouldn't be subsidizing small firms that are capable of creating huge damages and are not going to take the necessary precautions, or in the event of damage won't be able to deal with it.

These statements reflect the general sentiment expressed by White House adviser Carol Browner that “maybe this is a sector where you really need large companies who can bring to bear the expertise and who have the wherewithal to cover the expense if something goes wrong.”

⁵⁸ If these smaller firms are not able to continue drilling in their present structure, that raises several questions about the impact on the industry.

Impact on Employment

If small firms cannot continue operating independently, how will that impact employment in the oil industry? That question is crucial in considering the consequences of the policies outlined above. Levi argues that production will diminish significantly in this scenario, which implies that employment would follow as well:

⁵⁸ Hughes, *Wall Street Journal*.

Would removing the liability cap really knock out a big chunk of production? I think there's good reason to believe that it would. Supermajors will probably fail to pick up a good chunk of the leases that smaller players control if those independents are put out of business; the business is just too different. Those independents won't survive if they can't get insurance.⁵⁹

Levi's conjecture has support from a study conducted by IHS Global Insights, which found that the industry would lose 300,000 jobs over the next decade if small firms were pushed out of the business because "the resulting vacuum would likely be filled only marginally by the major oil companies, if at all, and the loss of independents could actually precipitate a decline in activity by majors" because small firms play an important role in joint exploration and development projects.⁶⁰ It is worth noting that existing law under OPA 90 channels all liability to the holder of a lease on an offshore well, meaning that independents that assist with large drilling projects – like Halliburton and Transocean did with the Deepwater Horizon – would be completely unaffected by changes to liability law and joint exploration and development should continue uninhibited. The IHS study's other warning reflects Levi's concern that shallow wells currently drilled by independent companies would get ignored with unlimited liability.⁶¹ Kellogg clarifies the assumptions necessary for this conclusion to be true:

[If] we think that the smaller firms are drilling in places (small fields) that the big firms aren't interested in going – I don't know the answer to that question – . . . that would be the route for job loss. But if these are cases where the small firms are taking things the big firms would've otherwise taken, I don't see why that would necessarily mean a job loss at all. It's possible [that big firms won't be interested]. I know this was the case at BP. BP has adopted this philosophy of really focusing its efforts on large fields. To the extent there are smaller pools lying around, BP's probably not so interested in those. I don't know the extent to which that's also the case at, say, Exxon or Shell or something like that. But, in a world in which unlimited liability pushes out the smaller firms, this situation could change and you'd see the larger firms move in.⁶²

The majority of surveyed opinions reject the theory that jobs will be lost because of the impact of unlimited liability on small firms:

Yossi Feinberg, Stanford Business School:

I can't answer your question on the magnitude of jobs that will be lost, but they will be lost not because the small companies will be gone. They will be lost because there will

⁵⁹ See <http://blogs.cfr.org/levi/2010/08/02/removing-the-oil-spill-liability-cap-could-be-dangerous/>.

⁶⁰ Patrice Hill, "Heavy Liability Could Sink Small Drillers," *Washington Times*, July 25, 2010, <http://www.washingtontimes.com/news/2010/jul/25/heavy-liability-could-sink-small-oil-drillers/print/>.

⁶¹ Hill.

⁶² Kellogg was an economic analyst for BP from 1999-2003. He is not speaking for the company in any official capacity and is currently an Assistant Professor of economics at the University of Michigan.

be less activity because it becomes more costly to do this activity, which is fine because the probability of disaster will also be smaller. And that's where the job loss will come from – not from the reshuffling of the industry – but because on the margin the project will or will not be taken.⁶³

Sweeney:

Probably won't make a damn bit of difference on employment. It'll just mean employment will be with big companies rather than small companies. The same job will be being done, and you need the same number of people and same amount of capital to do the job, that means you won't have much impact on employment. Some of the big companies will contract out with the small companies to do the actual drilling with the liability moving onto the big company, and it won't have any impact on employment whatsoever.

Stiglitz:

[The impact on employment would be] negligible . . . It doesn't even have to adversely affect [employment] and if it does, it won't have a big effect.

Fullerton:

If those workers cannot do that work for the small company, they could in all probability be rehired to do the same work by a big company. So, it doesn't necessarily have any employment effects. It might change the normal practice in the industry from being small firms to large firms instead. First off, that's not the end of the world, and second of all, that's probably a good thing if they're undertaking activities that have large risks and those risks need to be covered.

Owen:

The total amount of production would decrease because the overall price of producing oil would increase somewhat, probably not a lot. The net effect on employment would be that some employees would shift toward the larger firms and some employees would be employed elsewhere, if at all, because of a probably very tiny decrease in the total production of oil.

Borenstein:

I don't think it would change level of employment substantially at all because I think that projects that are worth drilling would get drilled and you need people to do it. I also think that employment in the offshore drilling sector should not be a primary public-policy goal. Employment should be a goal overall, but trying to preserve jobs in a specific industry is not good public policy. We should try to set the costs for doing the drilling appropriately and we realize now that appropriately includes insurance coverage for a spill and if that causes less drilling, then so be it. It's the appropriate cost. Otherwise, what you're doing is you're going to subsidize the industry by letting them carry insufficient insurance just so some people can have jobs in that industry.

⁶³ Yossi Feinberg, Personal Interview, August 16, 2010. Professor Feinberg teaches about strategic decision making, the economics of organization, and has done research on BP's organizational structure. His CV can be found here: <http://www.stanford.edu/~yossi/Files/CV.pdf>.

Greenstone:

There is no doubt that lifting the cap will raise the costs for drilling in some locations. This could reduce the overall level of production and that would cause some job losses. However, it is important to underscore that these job losses would be limited to employment at sites where the expected damages from spills are substantial. These are the risky sites that are only viable economically due to the subsidy from the liability cap. I would be remiss if I failed to point out that oil spills can have negative employment consequences. For example, the Deepwater Horizon spill is causing significant economic damages in the Gulf by limiting activity in multiple industries, including fishing and tourism.⁶⁴

Arrow:

The number of jobs is going to be driven by the demand for oil. That demand's going to be met somehow. Years ago, after the Enron failure, the accounting firm, Arthur Andersen was sued. I remember business commentators speaking on TV that this is going to drive so many thousands of people out of work. That's preposterous. The need for accountants is there. If Arthur Andersen goes out of business, then someone else will take over and they'll have to hire these people.

This final point that the demand will be met seems quite firm. If the expected benefits from oil revenues of a drilling project outweigh the expected costs – which would be higher in the case of unlimited liability because they would include the external costs on society from possible spills – then economic theory suggests that private firms will carry out the activity. Why, as Sweeney suggested for example, would BP not agree to purchase some of the independent drillers working in shallow water, cover their liability, and gain the profits from those wells while allowing those firms to continue drilling? There might be transitional costs as the industry adapts to the new rules, but speculating that large companies would make this decision to forego profit in the long-term, as Levi and the IHS Study seem to above, assumes a market inefficiency caused by a myopia of private firms that does not correspond to standard economics. In the absence of this response, we are left with the conclusion that only actions taken to mitigate risk will cause any reductions in economic profits and employment.

Impact on Competition

Effectively restricting offshore oil drilling to a few large firms induces some concerns about the impact on competition in the oil industry. Generally, firms in a market with few competitors are at risk of colluding in terms of pricing and other behaviors that can have a

⁶⁴ Greenstone, http://www.brookings.edu/testimony/2010/0609_oil_spill_greenstone.aspx.

negative impact on consumers. As Sweeney explains, however, this would not be the case if drilling in the Gulf Coast were only performed by a small number of large firms:

What they're really competing in when they're trying to find oil, [is] the world oil market. That's already not competitive because of the role of OPEC, but I don't think having a concentration of the number of people doing deepwater drilling [in the Gulf] does much to change the concentration in the world oil market. That's not actually a problem.

Borenstein agrees that "it's not a valid concern in terms of the world market for oil. This is not going to change the world market for oil at all." This conclusion implies that there would be no discernible effects on consumers from having fewer firms drilling in the Gulf. Borenstein cautions that there would be some impact on the bidding for offshore leases, thus costing the Treasury some money, but given that revenues from this process have often historically been foregone, this should not be a matter of great concern. A further point by Noll warns that when "it's easier for them to coordinate their behavior, one of the behaviors they can coordinate is dealing with government [and] dealing with regulators." This problem of regulators being captured by industry must be strongly guarded against, and a greater risk of collusion would certainly impair that. But it is important to recognize that putting unlimited liability on corporations large enough to withstand it also theoretically alleviates the regulatory problem by shifting the incentive for safety onto the firm.

Is Liability Already Implicit?

Some people wonder whether the tremendous costs incurred by BP in the aftermath of the Deepwater Horizon spill has already been a large enough penalty to deter future harm. The company has already set aside \$32.2 billion to deal with the spill by selling assets and decreasing capital expenditures and dividend payments, suffered a \$17 billion loss in the second quarter of 2010, and has seen its market value dip by as much as 44% or \$82 billion.⁶⁵ In addition to the \$20 billion escrow fund, BP has provided \$100 million to pay the losses of workers affected by the moratorium on deepwater drilling, paid about \$8 billion dollars in cleanup costs, and could owe several billion more in civil penalties.⁶⁶ Furthermore, reputational losses could add

⁶⁵ See Thaler. Also see Julia Werdigier and Jad Mouawad, "BP Envisions Leaner Future Under Its New Chief," *New York Times*, July 27, 2010, <http://www.nytimes.com/2010/07/28/business/global/28oil.html?hp>. Also see Jonathan Weisman and Guy Chazan, "BP Agrees to \$20 Billion Fund," *Wall Street Journal*, June 17, 2010, <http://online.wsj.com/article/SB10001424052748704198004575310571698602094.html>.

⁶⁶ Eduard Gismatullin, "BP's Gulf of Mexico Oil Spill Response Costs Rise to \$8 Billion," *Bloomberg*, September 2, 2010, <http://www.bloomberg.com/news/2010-09-03/bp-s-gulf-of-mexico-oil-spill-response-costs-rise-to-8-billion.html>.

significant harm beyond the direct financial penalties. Several economists also commented on the importance of these various penalties in encouraging safety. So do these statements mean to suggest that all the proper incentives are properly in place? Greenstone, one of the most vocal supporters of lifting the liability cap, does not think so:

Some have argued that the publicity around the Deepwater Spill will cause oil companies to take all available precautions. I would not be surprised if oil companies are currently implementing new safeguards against spills. However, memories about the current tragedy will undoubtedly fade as time goes by. The advantage of lifting the cap is that it will provide a permanent incentive to prevent spills.⁶⁷

Whether or not the penalty after the fact has been large for BP, safety decisions are not made after the fact. In order for future firms to take the optimal amount of safety precautions, they must have full certainty that they will be responsible for the external costs to society of an accident. Otherwise, there is no theoretical reason to believe firms will not go back to operating under the assumption that limited liability laws will shield them from the full costs of their actions.

Difficulty in Accounting for All Costs – A Shortcoming of the Liability Method

While many observers consider liability to be an important step to creating the right incentives for safety, it should be noted that it is rarely considered a comprehensive solution by itself. Part of the problem stems from the strong likelihood that no amount of payment can completely nullify all the effects of a catastrophic accident. Some of the damages will inevitably be irreversible, too difficult to measure, or too difficult to compensate. Some costs, for example, accumulate over time and are thus difficult to estimate initially. In the case of *Exxon Valdez*, up to 16,000 gallons remain in the intertidal zones of Prince William Sound even twenty years later and not all fishing industries have recovered.⁶⁸

Other costs, such as mental health damages are difficult to quantify. In the wake of *Exxon Valdez*, statistical evidence shows significant increases in the frequency of anxiety, posttraumatic stress disorder, depression, drug and alcohol abuse, and social conflict.⁶⁹ Even in 2010, up to 40% of the 30,000 Alaskans living near Prince William Sound suffer from its effects,

⁶⁷ Greenstone, http://www.brookings.edu/testimony/2010/0609_oil_spill_greenstone.aspx.

⁶⁸ Gordon.

⁶⁹ See Lawrence Palinkas, et. al., "Community patterns of psychiatric disorders after the Exxon Valdez oil spill," *American Journal of Psychiatry*, 1993 http://ajp.psychiatryonline.org/cgi/content/abstract/150/10/1517?ijkey=9a1236ee4ffc66c56ce89bbdbbc7dbd7eb556118&keytype=tf_ipsecsha, pp. 1517-1523.

Also see Lawrence A. Palinkas, "The *Exxon Valdez* Oil Spill," *Mental Health and Disasters*, 2009, http://www.smvoad.com/Palinkas_EV_Chap_2009.pdf, p. 469.

according to University of South Alabama sociologist Steven Picou.⁷⁰ No amount of payment can undo these sorts of effects. Furthermore, since no one case of mental illness or suicide can be attributed to a broad trend, compensation is impossible to attain anyway. Courts have previously rejected such claims as “unquantifiable” and BP has rejected claims of \$3 million and \$2.5 million from Louisiana and Florida respectively to pay for mental health services strained by the load of spill victims.⁷¹

A further example of potentially uncompensated costs is the indirect impact on industries without strong geographical links to the spill. Florida, for instance, has sparked “fierce debate” over compensation for lost tourism in a state where almost all of its coastline remained untouched by oil. Clearly, the losses incurred by Floridian firms would not have happened without an irrational consumer response that misjudged the span of the spill.⁷² But without the root cause of the drilling accident, the events that eventually affected these companies would not have happened. Ultimately, the damage payouts for an accident must set some geographic boundary, but it is likely that any reasonable decision will leave some affected firms and individuals uncompensated for and thus, some costs unaccounted for.

Difficulties in liability implementation such as those discussed here do not serve to undermine the overall legitimacy of using this method to encourage safety and compensate victims. It is important to note, however, that the only way for offshore drillers to avoid imposing any net cost on society is likely for them to avoid catastrophic accidents in the first place. Thus, strengthening liability should be considered not as a solitary solution, but as an important contribution to an overall system to ensure offshore drilling safety.

⁷⁰ Dara Kam, “Valdez Expert: Psychological impact of Gulf oil spill won’t emerge fully for years,” *Palm Beach Post*, June 29, 2010, <http://www.palmbeachpost.com/news/valdez-expert-psychological-impact-of-gulf-oil-spill-776588.html>.

⁷¹ See Kam and Richard Knox, “How Will the Gulf Spill Affect Human Health?” *NPR*, June 23, 2010, <http://www.npr.org/templates/story/story.php?storyId=128008826>.

⁷² See Neil King Jr., “Spill Damage Claims Absent the Spill,” *Wall Street Journal*, August 27, 2010, <http://online.wsj.com/article/SB10001424052748703959704575453922212641454.html>.