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Liability for Environmental Damages from the Offshore Petroleum Industry: Strict Liability Justifications and the Judgment-Proof Problem

INTRODUCTION

After the Deepwater Horizon oil spill of 2010, one of the worst environmental man-made disasters and the largest ever oil spill in the United States,¹ scholars and government investigators analyzed the offshore regulatory regime and its implementation in search of failures that led to the accident and possible solutions.² Relatively few critiques of the regulatory regime discussed strict liability for environmental damages from oil spills.³ Enacted in the Oil Pollution Act of 1990,⁴ this regime is a part of the solution, but is not a complete answer. One issue not addressed by this liability regime is the judgment-proof problem—some injurers are unable to pay the full amount for which they have been found legally liable because they simply do not have the economic assets.⁵ The judgment-proof problem significantly reduces deterrence

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1. Eleven people died in the accident, nearly two hundred million gallons of oil spewed into the Gulf of Mexico, and several marine species were immediately affected. The long-term effects of the spill are still not yet fully understood. Mace G. Barron, *Ecological Impacts of the Deepwater Horizon Oil Spill: Implications for Immunotoxicity*, 40 TOXICOLOGIC PATHOLOGY 315 (2012); Vernon Valentine Palmer, *The Great Spill in the Gulf . . . and a Sea of Pure Economic Loss: Reflections on the Boundaries of Civil Liability*, 116 PENN ST. L. REV. 105, 105–07 (2011).

2. NAT'L COMM'N ON THE BP DEEPWATER HORIZON OIL SPILL & OFFSHORE DRILLING, DEEP WATER: THE GULF OIL DISASTER AND THE FUTURE OF OFFSHORE DRILLING, REPORT TO THE PRESIDENT vi (2011), <https://www.gpo.gov/fdsys/pkg/GPO-OILCOMMISSION/pdf/GPO-OILCOMMISSION.pdf>; Holly Doremus, *Through Another's Eyes: Getting the Benefit of Outside Perspectives in Environmental Review*, 38 B.C. ENVTL. AFF. L. REV. 247 (2011); Palmer, *supra* note 1, at 109; Rena Steinzor, *Lessons from the North Sea: Should "Safety Cases" Come to America?*, 38 B.C. ENVTL. AFF. L. REV. 417 (2011).

3. Critics referred mainly to 33 U.S.C. § 2704(a)(3) (2012), which set limitations for strict liability at \$75 million for each offshore oil and gas facility. There were suggestions to increase the liability, but so far the limit remains. Consumer Price Index Adjustments of Oil Pollution Act of 1990 Limits of Liability-Vessels, Deepwater Ports and Onshore Facilities, 79 Fed. Reg. 49205 (proposed Aug. 19, 2014).

4. 33 U.S.C. §§ 2701–2762 (2012).

5. Steven Shavell, *The Judgment Proof Problem*, 6 INT'L REV. L. & ECON. 45, 45 (1986) [hereinafter Shavell, *Judgment Proof*].

and undercuts the protection that the strict liability regime seeks to implement.⁶ British Petroleum's wealth and ability to repay tens of billions of dollars after the Deepwater Horizon spill obscured this issue.⁷ But the judgment-proof problem may arise in future oil spills if the operating company's total assets are worth less than the actual amount of damages.⁸ The likelihood of this occurring increases in times of decreasing oil prices, when the value of some drilling companies is dramatically diminished.⁹

A number of policy tools used in combination could mitigate the judgment-proof problem: compulsory liability insurance, vicarious liability, minimum asset requirements, special tax, and criminal liability.¹⁰ Currently, a requirement for both financial responsibility and criminal liability has been incorporated into both U.S. and European legal regimes.¹¹ To minimize the risk of judgment-proof parties, however, the United States should utilize a clearer requirement of minimum assets combined with liability insurance and additional vicarious liability for parties who have some control over the injurer's behavior (i.e. lenders). As practical difficulties may prevent the implementation of all these tools, additional policies should be explored to address the problem during this time of diminishing oil company values, such as a requiring that operating companies pay part of their dividends into a compensation fund and encouraging small companies to merge and create an entity with higher total assets.

6. *Id.* at 45–46.

7. Graeme Wearden, *BP Oil Spill Costs to Hit \$40bn*, THE GUARDIAN (Nov. 2, 2010), <http://www.theguardian.com/business/2010/nov/02/bp-oil-spill-costs-40-billion-dollars>. BP's total assets in 2010 were valued at more than \$270 billion. *BP Total Assets (Quarterly)*, YCHARTS, <https://ycharts.com/companies/BP/assets> (last visited Feb. 14, 2016).

8. See Mark A. Cohen et al., *Deepwater Drilling: Law, Policy, and Economics of Firm Organization and Safety*, 64 VAND. L. REV. 1853 (2011) (discussing policy options for improving safety culture in deep-water drilling). For example, Transocean Ltd.'s total assets were approximately \$26 billion at the end of 2015. *Transocean Ltd. (RIG)*, YAHOO.COM, <http://finance.yahoo.com/q/bs?s=RIG+Balance+Sheet&annual> (last visited Mar. 5, 2016). Noble Energy Inc. had total assets of \$22.5 billion at the end of 2014. *Financial Information*, NOBLE ENERGY, INC., <http://investors.nobleenergyinc.com/financials.cfm> (last visited Feb. 13, 2016).

9. See Asjylyn Loder et al., *Oil Crash Risks \$19 Billion Wave of Junk Debt Defaults*, BLOOMBERG BUS. (Mar. 10, 2016), <http://www.bloomberg.com/news/articles/2016-03-11/oil-boom-fueled-by-junk-debt-faces-19-billion-wave-of-defaults>; Matt Jarzemsky & Matt Wirz, *Oil-and-Gas Debt Deals Sting Investors*, WALL ST. J. (Aug. 3, 2015), <http://www.wsj.com/articles/oil-and-gas-debt-deals-sting-investors-1438634208>; *The Impact Of Plummeting Crude Oil Prices On Company Finances: Crude Awakening*, DELOITTE, <http://www2.deloitte.com/ng/en/pages/energy-and-resources/articles/crude-awakening-the-impact-of-plummeting-crude-oil-prices-on-company-finances.html> (last visited Apr. 17, 2016).

10. Shavell, *Judgment Proof*, *supra* note 5, at 54–55; W. Kip Viscusi & Richard J. Zeckhauser, *Deterring and Compensating Oil-Spill Catastrophes: The Need for Strict and Two-Tier Liability*, 64 VAND. L. REV. 1717, 1723 (2011).

11. See *infra* Part II.C.

I. LIABILITY REGIMES

A. *The Goals of Civil Liability in Offshore Oil and Gas Drilling*

Civil liability serves several functions in our society. One objective is to deter risky behavior and minimize the costs of accidents.¹² Without deterrence, operating companies may engage in riskier behavior, resulting in more costly accidents than are socially desired.¹³ The deterrence function of civil liability is especially important because a strong liability regime encourages responsible behavior even if the regulatory regime is weak or incomplete or regulators are captured or biased.¹⁴ A second objective of civil liability is to ensure financial resources for restoration and compensation.¹⁵ Absent economic resources necessary for the recovery of damages from oil spills, environmental impacts may not be addressed and may escalate.¹⁶ A third function of civil liability is to justly distribute the societal costs of various activities.¹⁷

B. *Justifications for Strict Liability in the Offshore Oil and Gas Industry*

Based on the goals of deterrence, compensation, and distributive justice, civil liability regimes utilize either negligence (fault-based) or strict liability (causation-based).¹⁸ In the case of the offshore petroleum industry, however, a strict liability regime will better achieve those goals for several reasons.

12. GUIDO CALABRESI, *THE COSTS OF ACCIDENTS* 26 (1970). Deterrence is a method to achieve reduction of the social cost of accidents, and is defined as “the minimization of the sum of accident costs and accident prevention costs.” Guido Calabresi, *Optimal Deterrence and Accidents: To Fleming James, Jr.*, 84 *YALE L.J.* 656, 671 (1975).

13. Shavell, *Judgment Proof*, *supra* note 5, at 45–46; *see* Viscusi & Zeckhauser, *supra* note 10, at 1721.

14. Regulations may be incomplete because of rapid technological changes. *See* Viscusi & Zeckhauser, *supra* note 10, at 1720–21. Regulators may be weak because of conflict of interest, capture, or lack of enforcement resources. *See generally* DANIEL CARPENTER & DAVID MOSS, *PREVENTING REGULATORY CAPTURE: SPECIAL INTEREST AND HOW TO LIMIT IT* (2014); Peter Jan Honigsberg, *Conflict of Interest that Led to the Gulf Oil Disaster*, 41 *ENVTL. L. REP.* 10,414 (2011).

15. Compensation as a goal of tort law is regarded here as “reducing the societal costs resulting from accidents.” CALABRESI, *supra* note 12, at 27; Guido Calabresi, *Concerning Cause and the Law of Torts: An Essay for Harry Kalven, Jr.*, 43 *U. CHI. L. REV.* 69, 73 (1975).

16. Viscusi & Zeckhauser, *supra* note 10, at 1721.

17. George P. Fletcher, *Fairness and Utility in Tort Theory*, 85 *HARV. L. REV.* 537, 537–38 (1972); Gregory C. Keating, *Distributive and Corrective Justice in the Tort Law of Accidents*, 74 *S. CAL. L. REV.* 193, 202 (2000).

18. *See* David Rosenberg, *The Judicial Posner on Negligence Versus Strict Liability: Indiana Harbor Belt Railroad Co. v. American Cyanamid Co.*, 120 *HARV. L. REV.* 1210, 1212 (2007) (critically presenting Judge Posner’s opinion regarding “the centuries-old question of negligence versus strict liability”); Steven Shavell, *Liability for Accidents* 2–13 (The Harvard John M. Olin Discussion Paper Series Discussion Paper No. 530, 2005), http://www.law.harvard.edu/programs/olin_center/papers/pdf/Shavell_530.pdf [hereinafter Shavell, *Liability for Accidents*] (comparing different types of accidents and injurers’ behavior under strict liability and negligence regime without one regime always superior on the other).

First, to encourage optimal deterrence, liability should be imposed on the party that is in the best position to evaluate the cost of accidents and the costs of accident prevention.¹⁹ In risky and complex activity such as the offshore oil and gas industry,²⁰ this party is the operating company who holds the information required to evaluate the costs of accidents and accident prevention.²¹ If operating companies are held liable for damages on a strict liability basis, they will have economic motivation to take cost-efficient precautionary measures.²² Under a negligence regime, operating companies will only consider the costs of accidents they cause without due care.²³ Imposing the cost of those faultless accidents on the injured party, which in the case of environmental damages is nature itself, would undercut the idea that liability should be imposed on the “the best cost avoider.”²⁴

Strict liability also motivates operating companies to undertake optimal levels of activity.²⁵ In a negligence regime, a potential injurer has no incentive to consider the level of activity, because as long as its behavior is not negligent an increase in the level of activity does not result in a corresponding increase in the risk of liability.²⁶ In contrast, under a strict liability regime, an increase in activity results in an increased risk of liability.²⁷ Operating companies therefore factor the extent of their activity into their analyses under strict liability regimes, but not under negligence regimes.²⁸

In addition, strict liability makes it more likely that operating companies will include the cost of expected liability into the price of end products. This spreads the costs of compensation among consumers and thus provides the operating companies with a financial fund for cleanup and restoration of the environment.²⁹ In a negligence regime, environmental damages caused by

19. See Calabresi, *supra* note 12, at 666; Cohen et al., *supra* note 8, at 1889 n.158.

20. Viscusi & Zeckhauser, *supra* note 10, at 1726, 1745 (detailing the risky nature of current offshore oil and gas drilling, and concluding that oil-drilling operations are extremely complex and require considerable specialized expertise).

21. This information includes technological knowledge, available precautionary measures, their costs, and expected benefits. See Viscusi & Zeckhauser, *supra* note 10, at 1745.

22. Cohen et al., *supra* note 8, at 1887; Viscusi & Zeckhauser, *supra* note 10, at 1741–42, 1747.

23. Shavell, *Liability for Accidents*, *supra* note 18, at 1–2.

24. See CALABRESI, *supra* note 12, at 175 (discussing how the “best cost avoider” is the party that can best minimize the cost of accident); Guido Calabresi & John T. Hirschoff, *Toward a Test for Strict Liability in Torts* 81 Yale L.J. 1055, 1060–61 (discussing how the “best cost avoider” is the best decision maker in order to emphasize that the liable party is the one that holds the information required to make an economic analysis to decide what the optimal level of activity is that is socially desired).

25. Shavell, *Liability for Accidents*, *supra* note 18, at 4–5.

26. *Id.*

27. *Id.* at 4.

28. This assumes unilateral accidents where the operating companies alone (and not the injured party) can reduce risk by choosing a certain level of care and level of activity. *Id.* at 5.

29. CALABRESI, *supra* note 12, at 50–51.

operating companies found not to be at fault may be left unmitigated due to a lack of financial resources.³⁰

Furthermore, according to distributive justice goals, operating companies and their clients should bear the costs of risky drilling activity because they are the major beneficiaries.³¹ The “reciprocal paradigm” distinguishes between risks that are reciprocal (the injurer and the injured impose similar risks on each other, such as two drivers), and risks that are nonreciprocal (the injured does not impose any risk on the injurer, as in the case of offshore drilling).³² In the case of nonreciprocal risks, it is just to impose the cost of accidents on the party that causes accidents, even if they are not at fault. This is what a strict liability regime does.³³

Finally, in the case of offshore oil spills, administrative costs are expected to be lower under strict liability.³⁴ With strict liability, claims are generally simpler and quicker to evaluate because there is no need to prove the behavior at issue was negligent.³⁵ While the difficulty of proving negligence may result in fewer claims being filed in the first place, it is doubtful that the administrative cost of claims from offshore drilling accidents will indeed be lower under a negligence regime.³⁶ There is a social expectation that operators will use the utmost level of care due to the inherent risks involved, and any deviation from this may be considered negligence. As Judge Carl J. Barbier of the District Court for the Eastern District of Louisiana, who ruled from the bench on the Deepwater Horizon trial, explicitly noted: “[a] greater degree of care is required when the circumstances present a greater apparent risk.”³⁷ For this reason, oil pollution from offshore drilling will attract many claims under

30. See Alan Krupnick et al., *Understanding the Costs and Benefits of Deepwater Oil Drilling Regulation* 21-23 (Res. for the Future, Discussion Paper No. 10-62, 2011), <http://www.rff.org/documents/RFF-DP-10-62.pdf> (discussing the significant cost of environmental damages from oil spill and the public willingness to pay for the damages).

31. Keating, *supra* note 17, at 200; see Alexandra B. Klass, *From Reservoirs to Remediation: The Impact of CERCLA on Common Law Strict Liability Environmental Claims*, 39 WAKE FOREST L. REV. 903, 907 (2005) (assessing the impact of CERCLA and states’ environmental laws on the doctrine of strict liability for abnormally dangerous activities; discussing the judicial history, where in the absence of negligence and when the defendant is engaged in the activity causing the harm for his own profit, the defendant is in the best position to bear the loss under principles of social justice).

32. Fletcher, *supra* note 17, at 543-47; Keating, *supra* note 17, at 203-04.

33. Keating, *supra* note 17, at 204 (“By ensuring that those injured by nonreciprocal risk impositions are . . . fully compensated for their injuries, strict liability effects a more robust mutuality of benefit. Risk is unfairly distributed *ex ante*, but the costs of accidents issuing from those risks are fairly distributed *ex post*.”).

34. See Cohen et al., *supra* note 8, at 1889. Calabresi considers the administrative cost part of the cost of accidents. CALABRESI, *supra* note 12, at 28.

35. Shavell, *Liability for Accidents*, *supra* note 18, at 13.

36. See *id.* (stating that while there may be fewer claims under negligence, the cost of litigating each claim may be higher than under strict liability).

37. Findings of Fact and Conclusion of Law: Phase One Trial at 121-22, In re: Oil Spill by the Oil Rig “Deepwater Horizon” in the Gulf of Mexico, 808 F.Supp.2d 943 (E.D. La. Sept. 4, 2014) (No. 13381-1), <http://www.uscourts.gov/courts/laed/9092014RevisedFindingsofFactandConclusionsofLaw.pdf> (finding that British Petroleum acted with “gross negligence”).

negligence. Because strict liability means less work for courts, it would cost less.

C. *Limitations of Strict Liability: The Judgment-Proof Problem*

Although strict liability is justified for oil and gas operations, it does not always fully achieve its goals. One reason for this is the presence of judgment-proof parties: operators whose potential liability is greater than their ability to pay.³⁸ Under strict liability, optimal deterrence occurs when a potential injurer is incentivized to reduce its risk by investing in measures that would prevent a greater amount of damages.³⁹ If the expected damages are greater than the sum of an injurer's assets, however, the injurer enjoys a form of immunity because even if it is found judicially liable for damages, it cannot be required to pay more than it has in assets.⁴⁰ The incentives for this type of potential injurer to take risks are greater than the situation where the injurer can pay full damages.⁴¹ Moreover, in this situation the potential injurer's incentives to invest in preventative measures are reduced,⁴² the sources of compensation are reduced,⁴³ and those who have benefited from the activity will not bear its full cost.

II. ADDRESSING THE JUDGMENT-PROOF PROBLEM

A. *The Judgment-Proof Problem in the Offshore Oil and Gas Industry*

The Deepwater Horizon oil spill highlighted the enormous cost of environmental damages that drilling activities can generate.⁴⁴ The \$40 billion damage estimate is a sum that only the biggest firms in the industry can pay, which means many small operating companies are judgment proof.⁴⁵

To illustrate the judgment-proof problem, assume a 1 percent risk of an accident that will cost \$50 billion in damage and preventive measures that cost \$400 million. The expectation value in this situation is \$500 million—the 1 percent risk of the accident multiplied by the \$50 billion cost of damages. A big

38. Shavell, *Judgment Proof*, *supra* note 5, at 45.

39. Shavell, *Liability for Accidents*, *supra* note 18, at 25 (“Under strict liability, [operators’] incentives to engage in an activity are optimal if their assets are enough to cover the harm they might cause.”).

40. *Id.*

41. Shavell, *Judgment Proof*, *supra* note 5, at 45.

42. *Id.*

43. *Id.* at 55.

44. Palmer, *supra* note 1, at 109.

45. *Why BP Is Paying \$18.7 Billion?*, N.Y. TIMES, July 2, 2015, <http://www.nytimes.com/interactive/2015/07/02/us/bp-oil-spill-settlement-background.html>; Cohen et al. *supra* note 8, at 1895 (“sixteen of the thirty-two firms drilling in deep water in the Gulf of Mexico [at the time of the Deepwater Horizon oil spill] had market values below \$30 billion”); Viscusi & Zeckhauser, *supra* note 10, at 1718–19.

firm such as BP, whose total assets were more than \$270 billion in 2010,⁴⁶ has an economic incentive to perform the preventive measures since they are cheaper than the expectation value. But for a company with total assets of \$10 billion the incentives work differently. Since this lower net-worth company would never be able to pay the full \$50 billion in damages, the expectation value is \$100 million, the 1 percent risk of the accident multiplied by \$10 billion, the highest amount the company could pay in damages because its total assets are only \$10 billion.⁴⁷ Since the expectation value is lower than the cost of the preventative measure for this lower net-worth company, the economically rational choice is to take the risk and not pay for preventive measures.⁴⁸

*B. Tools to Address the Judgment-Proof
Problem in the Offshore Oil and Gas Industry*

There are several tools that can curtail the effect of the judgment-proof problem.⁴⁹ First is vicarious liability, the extension of liability from the actual injurer to another party who has some control over the injurer's behavior.⁵⁰ In the case of offshore oil operations, vicarious liability could be imposed on financial institutions that finance the project, or the state through its regulators that license the operators. Financing parties have the ability to condition financing of the project on preventative measures, and regulators can likewise condition the grant of a drilling license or permit on specific preventative measures.⁵¹ Moreover, vicarious liability results in an increase in the total assets available if an accident occurs.⁵² However, vicarious liability is not always perfect.⁵³ Lenders are usually not experts in offshore drilling, and may

46. *BP Total Assets (Quarterly)*, YCHARTS, <https://ycharts.com/companies/BP/assets> (last visited Feb. 14, 2016).

47. Shavell, *Judgment Proof*, *supra* note 5, at 47 (proposing that “[u]nder strict liability, injurers will take no care if their assets are sufficiently low; they will then take a positive and increasing level of care as a function of their assets.”).

48. Cohen et al., *supra* note 8, at 1893 (“a responsible party that is too small to adequately compensate victims of a worst-case spill lacks incentives to make sufficient investments in safety: there is no reason to prevent spills that cause damages that exceed its ability to pay.”).

49. Another possible solution that is not discussed in this paper is criminal liability. The threat of criminal punishment may deter operators who are less concerned about civil liability because they are judgment proof. Shavell, *Liability for Accidents*, *supra* note 18, at 27. It is difficult to estimate the effect criminal liability has on a potential injurer, and it is not clear that this effectiveness changes when companies' ability to pay decreases. For this reason, this *In Brief* does not include criminal liability as a tool for addressing the judgment-proof problem.

50. Shavell, *Judgment Proof*, *supra* note 5, at 54; Shavell, *Liability for Accidents*, *supra* note 2318, at 27–28.

51. See Shavell, *Liability for Accidents*, *supra* note 2318, at 28.

52. *Id.*

53. See Steven Shavell, *Minimum Assets Requirements and Compulsory Liability Insurances as Solutions to the Judgment-Proof Problem*, 36 RAND J. ECON. 63, 74 (2005) [hereinafter Shavell, *Solutions*] (“when the vicariously liable party is not able to observe the level of care, the care decision

not have the capacity to effectively enforce safety requirements.⁵⁴ Imposing vicarious liability on regulatory agencies would result in the public paying for the non-compensated damage, which does not achieve the goals of deterrence and distributive justice discussed above.

Compulsory liability insurance is a second tool to address the judgment-proof problem.⁵⁵ Optimal deterrence can be achieved when an insurer professionally supervises preventative measures and adjusts premiums to reflect the level of risks.⁵⁶ Insurance premiums and terms would incentivize the parties to reduce risks while providing a source for compensation.⁵⁷ Compulsory insurance, however, raises practical difficulties. Liability insurance without effective supervision creates moral hazards: the firm that had purchased insurance has an incentive to shirk on safety because it is now financially covered in the case of an oil spill. This moral hazard thus decreases deterrence.⁵⁸ Liability insurance is also an incomplete solution because it covers only a percentage of potential damages, and it is doubtful if this could be significantly improved.⁵⁹ Moreover, large oil companies may be self-insured and may not accurately assess premiums.⁶⁰ This is especially troubling in the current era of falling oil prices, as some oil companies' net worths have dropped rapidly.⁶¹

A third tool for addressing the judgment-proof problem is to require an operator to demonstrate minimum assets before they may engage in offshore

will not be improved in a direct way, and possible disadvantages of vicarious liability may make partial vicarious liability desirable.”)

54. See Rohan Pitchford, *How Liable Should a Lender Be? The Case of Judgment-Proof Firms and Environmental Risk*, 85 AM. ECON. REV. 1171 (1995) (discussing the case of lenders that cannot observe the level of care of firms and suggesting two possible conclusions: (a) vicarious liability may raise care, as it will make lenders want to reduce risk; or (b) vicarious liability may also lower care, as the price charged by lenders to cover their residual liability exposure reduces the assets of injurers).

55. Shavell, *Liability for Accidents*, *supra* note 18, at 26.

56. Shavell, *Judgment Proof*, *supra* note 5, at 53; Shavell, *Solutions*, *supra* note 53, at 71.

57. Shavell, *Judgment Proof*, *supra* note 5, at 53.

58. Shavell, *Solutions*, *supra* note 53, at 70–71; Cohen et al., *supra* note 8, at 1898–1900.

59. Kenneth S. Abraham notes that the largest enterprises buy liability insurance that covers only a small percentage of their potential liability for catastrophic oil spills and he also states that standard-form liability excludes coverage of liability for damage caused by pollution. Abraham suggests that the insurance industry actually eliminated pollution insurance from its standard-form liability insurance policies after the enactment of CERCLA, and there is no reason therefore to expect a different development in the case of offshore oil spill insurance. *Catastrophic Oil Spills and the Problem of Insurance*, 64 VAND. L. REV. 1769, 1789–91 (2011).

60. *Id.* at 1787–88 (showing that most big enterprises are self-insured); Cohen et al., *supra* note 8, at 1898–99. For example, BP established a “captive” insurance company to fund its property damage and business interruption losses. BOOZ ALLEN HAMILTON, *THE OFFSHORE OIL AND GAS INDUSTRY REPORT ON INSURANCE – PART THREE* 6 n.2 (2010).

61. See Asjlyln Loder et al., *supra* note 9; Ben McLannahan & Alistair Gray, *Big US Banks Reveal Oil Price Damage*, FIN. TIMES (Jan. 15, 2016), <http://www.ft.com/cms/s/0/bc7dca78-bb9e-11e5-a7cc-280dfe875e28.html>.

drilling operations.⁶² Potential injurers have stronger incentives to reduce risk when they have the required level of assets at stake.⁶³ This tool differs from vicarious liability because it does not include additional monitoring or supervising, and it differs from liability insurance because it does not create moral hazard. Therefore, minimum assets are complementary to vicarious liability or liability insurance. A negative side effect of this tool, however, is that it may force small companies to cease operations and therefore reduce the number of participants in the industry, which may harm competition and raise prices.⁶⁴ Another difficulty is that assets are variable: as oil prices go down, the value of oil and gas deposits decreases, reducing company assets.⁶⁵

Lastly, a noncompensable risk tax could be assessed on the difference between an operator's expected damages and the amount the operator will be able to pay.⁶⁶ Such a tax would need to be adjusted periodically to reflect the operator's current assets. This tax, however, would likely be too small to affect an operator's behavior or provide compensation.⁶⁷

C. Tools Used by Legal Regimes to Address the Judgment-Proof Problem

Legal systems in the United States and other countries have implemented some, but not all, of the tools available to address the judgment-proof problem. The primary tool adopted is a requirement that companies demonstrate "financial responsibility," which means sufficient resources to pay their liability in the event of an accident.⁶⁸ In the United States, the financial-responsibility requirement can be satisfied either by the company's own assets (minimum assets) or by insurance coverage (liability insurance).⁶⁹ In Norway,⁷⁰ the United Kingdom,⁷¹ and Denmark,⁷² liability insurance is the

62. Shavell, *Solutions*, *supra* note 53, at 67–68. Viscusi and Zeckhauser suggest firms drilling in the Gulf of Mexico should be required to show minimum assets of \$20 billion based on the fund BP established for Deepwater Horizon oil spill damages, and regulators should decide minimum requirements based on specific predicted damages for each type of drilling. Viscusi & Zeckhauser, *supra* note 10, at 1738. Specific predicted damages, however, are difficult to estimate before an accident occurs, and in the case of BP's 2010 oil spill, the actual damages are estimated to be double the \$20 billion sum set aside. See Palmer, *supra* note 1, at 106.

63. Shavell, *Solutions*, *supra* note 53, at 63–64.

64. Cohen et al., *supra* note 8, at 1895.

65. Shavell, *Solutions*, *supra* note 53, at 74; see Claire Zillman, *One-Third of Oil Companies Could Go Bankrupt this Year*, FORTUNE (Feb. 16, 2016), <http://fortune.com/2016/02/16/oil-companies-bankrupt/>.

66. Viscusi & Zeckhauser, *supra* note 10, at 1723.

67. Abraham, *supra* note 5659, at 1789–90.

68. Cohen et al., *supra* note 8, at 1894.

69. *Id.*; 33 U.S.C. § 2716(e) (2012)

70. Act of Nov. 29, 1996, No. 72, §10-7 (Nor), <http://www.npd.no/en/Regulations/Acts/Petroleum-activities-act/> (stating that the Royal Ministry of Petroleum and Energy may decide that the licensee shall provide security for fulfillment of the obligations which the licensee has undertaken, as well as for possible liability in connection with the petroleum activities); Regulations to Act Relating to Petroleum Activities § 73 (Royal Decree 27 1997) (Nor.), <http://www.npd.no/en/Regulations/Regulations/Petroleum-activities/> (requiring that activities conducted by the licensee pursuant to the Act

main requirement, with discretion given to the relevant authority to require further “security.” Combining tools would accrue benefits from the different advantages of the various tools. While the liability insurance creates opportunities for additional controls and financial resources, the minimum assets/security requirements ensure greater financial resources and avoid the risk of moral hazard.

With regard to the scope of financial responsibility, the U.S. Oil Pollution Act requires applicants to demonstrate financial responsibility in the amount of \$35 million.⁷³ It is clear in the wake of the Deepwater Horizon oil spill that this sum is much lower than the real cost of a big oil spill, and thus is an incomplete solution to the judgment-proof problem.⁷⁴ In the United Kingdom, there is no specified amount required by law, but all companies operate under the Offshore Pollution Liability Agreement, which provides liability insurance up to \$250 million.⁷⁵ Although this amount is substantially higher than the U.S.

shall be insured at all times). According to one source, most companies provide parent company guarantees for financial security for their obligations under the license. DELOITTE, CIVIL LIABILITY, FINANCIAL SECURITY AND COMPENSATION CLAIMS FOR OFFSHORE OIL AND GAS ACTIVITIES IN THE EUROPEAN ECONOMIC AREA 168–69 (2014), https://ec.europa.eu/energy/sites/ener/files/documents/201408_offshore_oil_and_gas_activities.pdf.

71. In the United Kingdom financial security is primarily required under the Offshore Pollution Liability Agreement (OPOL). The OPOL is an oil pollution compensation scheme, entered into by means of contract, covering remedial measures taken following a discharge of oil from offshore facilities and compensation for pollution damage up to \$250 million. Companies joining OPOL must establish evidence of “financial responsibility” to fulfill its obligation by means of insurance, guarantee, or self-insurance. Joining OPOL is voluntary, but the U.K. government requires anyone who wishes to be approved as an operator to be a member. Offshore Pollution Liability Agreement, The Offshore Pollution Liability Association, Ltd., Jan. 1, 2016, http://www.opol.org.uk/downloads/OPOL_Agreement%20-%201_Jan_16.pdf. In addition, after the Deepwater Horizon oil spill, the Department of Energy and Climate Change published guidance according to which operators must provide sufficient evidence of financial responsibility calculated by the combined cost of well control and financial remediation and compensation from pollution. The evidence may be provided by reliance on credit/financial strength rating insurance, parent company guarantee, or combination of the above. DEPT OF ENERGY AND CLIMATE CHANGE, GUIDANCE NOTE TO UK OFFSHORE OIL AND GAS OPERATORS ON THE DEMONSTRATION OF FINANCIAL RESPONSIBILITY BEFORE CONSENT MAY BE GRANTED FOR EXPLORATION AND APPRAISAL WELLS ON THE UKCS 1–2 (2013).

72. Ministry of Climate, Energy and Building, License no. x/xx for Exploration for and Production of Hydrocarbons 7th Licensing Round § 30(1) (Den.), <http://www.ens.dk/sites/ens.dk/files/undergrund-forsyning/olie-gas/7runde/modellicence.pdf> (requiring that licensee’s liability for any loss, damage or injury caused by the activities carried under the license must be covered by insurance, which must provide reasonable coverage). In addition, section 32 requires a licensee to submit security, possible in the form of a parent company guaranty, in an amount and of a nature that is acceptable to the Danish Energy Agency. *Id.* at § 32.

73. 33 U.S.C. § 2716(c)(1)(B) (2012). Financial responsibility may be subject to increases by the President, up to a maximum of \$150 million. § 2716(c)(1)(C). Firms with more than one facility must show financial responsibility solely for the facility with the highest requirement.

74. Cohen et al., *supra* note 8, at 1894, 1908. The Oil Pollution Act limits the liability to \$75 million. § 2704(a)(3). The limits do not apply to removal cost or when the incident was caused by the gross negligence or willful misconduct of the responsible party. § 2704(c)(1)(A).

75. Offshore Pollution Liability Agreement, *supra* note 71, at cl. IV; Kristel De Smedt et al., Civil Liability and Financial Security for Offshore Oil and Gas Activities 89 (2013), http://ec.europa.eu/dgs/energy/tenders/doc/2013/20131028_b3-978-1_final_report.pdf.

requirement, this sum is still very low in light of possible damages. In Denmark, the amount of financial responsibility that must be demonstrated is also not statutorily fixed.⁷⁶ In practice, operators provide parent company guarantees for financial security and a set of insurance policies for each specific well to the regulatory agency.⁷⁷ In Norway, the amount must be sufficient for the fulfillment of the obligations that the operator has undertaken in their license, as well as for possible liability, which is not fixed.⁷⁸

CONCLUSION

Given the potential for significant and costly environmental harms from offshore oil and gas drilling, as illustrated by the Deepwater Horizon oil spill, strict liability is an appropriate regime. Strict liability provides a means of deterring operating companies from imposing undesired risks, ensuring a financial source of restoration, and justly distributing the costs of accidents. But the strict liability regime has flaws, and regulators must find ways to address the judgment-proof problem caused by oil companies whose assets are less than the damage they could potentially cause. This is especially significant as the oil price crisis may lead to decreases in oil companies' value, creating more judgment-proof companies.

None of the legal regimes discussed require adequate liability insurance coverage. To minimize the judgment-proof problem, robust compulsory liability insurance requirements should be combined with a minimum level of assets as a condition to granting a production license or drilling permit.⁷⁹ Imposing vicarious liability on a financing party that can supervise the operator is also desirable. However, there are serious practical obstacles that may stand in the way of implementing those requirements. Many operating companies may have too few assets, insurers may only be willing to insure companies for exorbitant premiums, and vicariously liable parties may not be able to supervise the operating companies.

The large potential liabilities of oil and gas operations call for further exploration of new tools, such as requiring operating companies to pay part of their dividends into a compensation fund and encouraging small companies to merge and create an entity with higher total assets. Analyzing the feasibility

76. Ministry of Climate, Energy and Building, *supra* note 72, at § 30 (Den.) (stating that operator's liability for damages must be insured to provide "reasonable" coverage and operator must submit a security in the amount and of a nature that is acceptable to the Danish Energy Agency); *see* DELOITTE, *supra* note 70, at 166–67.

77. DELOITTE, *supra* note 70, at 166, 169.

78. Act of Nov. 29, 1996, No. 72, §10-7 (Nor), <http://www.npd.no/en/Regulations/Acts/Petroleum-activities-act/>; Regulations to Act Relating to Petroleum Activities § 73 (Royal Decree 27 1997) (Nor.), <http://www.npd.no/en/Regulations/Regulations/Petroleum-activities/>; *see* DELOITTE, *supra* note 70, at 168–69.

79. The exact requirements may be decided for each well in correlation with the estimated damages associated with a worst-case spill in the specific case. *See* Cohen et al., *supra* note 8, at 1910–11.

and effectiveness of these and other tools is particularly important in light of the current oil price crisis. The oil price crisis increases the judgment-proof problem, providing an additional reason to reevaluate current tools and explore ways to overcome this issue in the case of offshore drilling activities.

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