# The Deepwater Horizon Oil Spill and Seafood Prices

by David A. Argue, Ph.D.

Dr. David A. Argue is a Corporate Vice President and Principal of Economists Incorporated in Washington, D.C. He is one of the authors of the study of Alaska seafood prices after the *Exxon Valdez* oil spill that is discussed in this Article.

The Deepwater Horizon oil spill in the Gulf of Mexico is a disaster of major proportions. The commercial and natural resources damages that will arise from the spill may ultimately be similarly significant. The *Exxon Valdez* oil spill in 1989 is often compared as the closest, if imperfect, historical example of how the Gulf spill will be treated. After the *Exxon Valdez* spill, fishermen claimed pure economic damages related to alleged depression of seafood prices in addition to losses from forgone catch in closed fisheries. These types of pure economic losses are allowed under the Oil Pollution Act (OPA) of 1990[1] and are likely to be among those at issue in the Deepwater Horizon spill. To quantify such claims, it will be necessary to estimate the seafood prices that would have prevailed if the spill had not occurred. A study prepared for the Trans-Alaska Pipeline Liability Fund after the *Exxon Valdez* spill undertook a comprehensive, multi-model estimation of price effects for 12 species of seafood in several fisheries at different levels of production.[2] It based the estimation of price effects on the fundamental supply and demand forces that determine prices of Alaska seafood. This modeling approach could serve as a template for the pure economic losses arising from the Deepwater Horizon oil spill.

## I. Pure Economic Losses

For both practical and historical reasons, the full measure of damages is not allowed in claims following some accidents. Damages from an accident that have in the past been disallowed for some parties following an oil spill are those characterized as "pure economic losses." This term refers to a loss of earnings from an accident that is unrelated to any accident-caused injury to the victim's property. In the context of an oil spill, these pure economic losses might include the lost profits of fishermen who were unable to access a fishery that was closed because of contamination. No injury occurred to the fishermen's vessels, gear, or other property, but they lost earnings in any event. Similarly, a holiday resort may suffer pure economic losses from an oil spill if swimming off its beaches is prohibited because of fouled water. In principle, pure economic losses can be quantified as the unit volume of lost sales valued at the appropriate market price, less the costs of making the goods or services available. The appropriate price for valuing the lost sales is the price that would have prevailed had the accident not occurred. Other than some legal issues of whether both the fishermen and the resort owner have compensable claims under maritime law (or, more relevantly since 1990, under the OPA), there is little that is unusual about such a damage claim.

A more distinctive claim of pure economic loss from an oil spill relates solely to prices. Such a claim may involve allegations that the accident adversely affected prices even for parties that did not lose unit sales. It may also affect the correct valuation for those that did lose sales. Damage claims for price declines of this nature were raised by Alaska fishermen following the *Exxon Valdez* oil spill and could be brought in relation to the Deepwater Horizon oil spill in the Gulf of Mexico. The OPA allows commercial entities to claim "[d]amages equal to the loss of profits or impairment of earning capacity due to the injury, destruction or loss of real property, personal property, or natural resources, which shall be recoverable by any claimant."[3] This language in the statute could be interpreted to include price depression even without any reduction in seafood harvests. Because the OPA was not in effect at the time of the *Exxon Valdez* spill, the fishermen's claims of depressed prices were adjudicated under maritime law, which normally bars pure economic losses. The fishermen maintained a right to sue, however, under the "Oppen exception" to *Robins Dry Dock & Repair C. v. Flint*.[4]

Whether an oil spill actually creates price effects on seafood is a question that requires empirical study, and this Article focuses on methods for determining whether seafood prices were affected by an oil spill. It is worthwhile, however, to put that in the context of other damages that might be claimed under the OPA. The types of damages under the OPA are generally classified as follows[5]:

1. 33 U.S.C. §§2701-2761, ELR Stat. OPA §§1001-7001.
2. Bruce M. Owen et al., The Economics of a Disaster: The *Exxon Valdez* Oil Spill (1995).
3. 33 U.S.C. §2702(b)(2)(E).
4. *See* Robins Dry Dock & Repair C. v. Flint, 275 U.S. 303 (1927) (Holmes, J.) and Union Oil Co. et al. v. James J. Oppen et al., 501 F.2d 558 (9th Cir. 1974).
5. 33 U.S.C. §2702.

*Cost of cleanup:* The cleanup costs for an oil spill can be very substantial. Ultimately, these costs are likely to be born by the party responsible for the spill. The liable party, such as Exxon in the *Exxon Valdez* spill or possibly BP in the Deepwater Horizon spill, often pays for much of the spill cleanup directly. The OPA also ensures that the liable party is responsible for costs incurred by governments for cleanup of the spilled oil.

*Commercial losses*: Injury to property owned by private parties as well as economic losses related to reduced revenue-generating capacity of the injured property appears to be compensable under the OPA. As described previously, another source of commercial damage is the pure economic loss caused by injury to natural resources that are not owned by private parties but whose earning capacity is tapped by those parties.

*Natural resources injuries:* Damages resulting from the loss of natural resources (as well as the costs of determining how extensive the losses are) can also be recovered under the OPA. Natural resource damages claims have an important complicating factor in that no private property rights are established for resources like wildlife or ocean waters. The OPA confers special trusteeship status on federal and state governments and Indian tribal entities, and gives them a right to sue for damages to natural resources. Measuring damages to these non-market goods is complicated, and the techniques remain controversial. A detailed discussion of these methodologies is beyond the scope of this Article.

*Government and tribal losses:* The OPA permits federal, state, and local governments to recover damages equal to the net loss of taxes, royalties, or other revenue due to the injury to property or natural resources. These government entities may also recover net costs of providing increased or additional public services during or after removal activities.

## II. Price Effects From a Disaster

Virtually any type of accident involving commercial enterprises, and certainly accidents that would be classified as "disasters," are likely to result in lost unit sales. Most accidents, however, are not likely to affect a sufficiently large portion of the trade of a particular good to affect market prices. Yet, if a disaster is large enough, it may generate a significant change in prices of some goods or services. Widespread contamination from an oil spill, for example, has the potential to create such price effects. The question arose shortly after the *Exxon Valdez* spill of whether, and by how much, the price of seafood from Alaska waters had been reduced as a result of the spill. The magnitude of the Deepwater Horizon oil spill suggests the possibility that the same question will arise for Gulf seafood.

Disasters affect prices by affecting market supply or demand (or both). An oil spill disaster may, for example, lead to the closure of contaminated fisheries, thereby reducing market supply enough to increase prices. At the same time, adverse publicity about such a disaster may reach beyond the areas actually touched by the spill and suppress demand from an entire region enough to reduce prices. One critical factor in both instances is the magnitude of the spill. A small oil spill is unlikely to affect market prices (even if fisheries are closed) if other unaffected fisheries supply a sufficient amount of the same or similar seafood. A large spill, in contrast, could affect market prices.

The net effect on price of changes in supply and demand conditions (either those related to the disaster or contemporaneous ones that are unrelated to the disaster) often are not obvious a priori. Prices may rise on balance, or they may decline. An empirical study is necessary to determine whether prices are higher or lower than they otherwise would have been. Likewise, empirical estimation is necessary to determine the but-for prices of seafood from closed fisheries. Litigation following the *Exxon Valdez* spill required such a study. The weight of the evidence from the study of Alaska seafood prices after the *Exxon Valdez* oil spill argued that the spill was not the cause of any significant changes in the price of seafood from Alaska.[6] Rather, numerous other forces—some tending to increase prices and some tending to decrease prices—underlay the price changes observed by fishermen. The study of Alaska seafood prices used several empirical techniques and tested prices in different markets to determine whether seafood prices were abnormally low as a result of the spill. That study provides a template for how seafood prices (or prices of other products or services) can be analyzed in claimed losses stemming from the Deepwater Horizon oil spill in the Gulf of Mexico.

Before examining in greater detail the factors affecting supply and demand of seafood, it is helpful to consider some terminology. The term "seafood prices" is actually more complicated than it first appears. There are several different possible seafood-related prices. Among the most obvious are the ex-vessel prices paid to fishermen, the individuals closest to the physical effects of an oil spill. Next in the chain of production are prices paid to seafood processors. Processor prices should reflect any significant impact on ex-vessel prices caused by an oil spill, assuming the processors do not absorb the full price change by adjusting their margins. A related price is that of fishing permits in markets in which permits are bought and sold. A reduction in the profitability of seafood harvesting would be expected to reduce permit prices, all else equal.

Different prices also exist for different seafood species and different types of fishing gear. For example, the *Exxon Valdez* spill affected Prince William Sound and Kodiak Island fisheries most directly, thereby primarily affecting harvests of pink salmon. Only a small portion of the harvests of sockeye salmon came from those fisheries.[7] Nevertheless, claims of reduced prices after the *Exxon Valdez* spill were made for a total of four species of salmon besides pink (sockeye, coho, Chinook, and chum) and seven non-salmon species (halibut,

6. Owen et al., *supra* note 2, at 13.
7. *Id.* at 32.

herring roe, sablefish, and two species each of shrimp and crab) from many different geographic areas.[8]

Several factors had the potential to affect the supply of seafood, and ultimately seafood prices after the *Exxon Valdez* oil spill. One of these was the closure of some Alaska fisheries for all or part of 1989. These closures reduced the supply of seafood from those fisheries. Another factor was that Exxon employed many fishermen and vessels to help clean up the oil spill. Insofar as these fishermen would otherwise have harvested seafood in open fisheries, supply was further reduced by Exxon's cleanup efforts. Both of these forces would have restricted supply and tended to increase seafood prices. The same forces may be at work in the Deepwater Horizon oil spill. Some Gulf fisheries were closed briefly and reopened, and others remained closed for longer periods. Early observations point to increases in Gulf seafood prices, with the presumption being that reduced supply from closed fisheries is the cause.[9] Yet, there have been some complaints that BP has not been employing local fishermen to assist with the cleanup, which would alleviate that pressure on seafood supply.[10]

Demand-side factors were also at issue after the *Exxon Valdez* oil spill. One factor that received a great deal of attention was the claim by fishermen that the *Exxon Valdez* oil spill reduced overall demand for seafood from Alaska, thereby depressing the prices of seafood from both oil-touched Alaska fisheries and other Alaska fisheries. In principle, prices might have fallen in fisheries that were not closed but for which quality was perceived to be tainted by the spill. To the extent that bad publicity led consumers to *believe* seafood was tainted, regardless of whether it was *actually* affected by the spill, and thus reduced demand for that seafood, the prevailing market price might decline, as the fishermen claimed following the *Exxon Valdez* spill. The extent of the oil spilled from the Deepwater Horizon disaster and the vast news coverage it received may lead to similar claims about depressed seafood prices even in oil-free Gulf fisheries.

Of course, many other factors unrelated to an oil spill could affect the supply and demand of seafood. Forces that affect seafood supply include, among other things, the number of fishing vessels in service, natural seafood population swings, hurricanes and other weather events, and inventory levels. Among the forces that affect demand for seafood are consumer tastes, advertising, seafood quality, and foreign exchange rates. To model price effects attributable to a disaster, it is important to control for as many of the forces that affect supply and demand as possible. If the model adequately controls for the factors unrelated to the disaster, the impact of the disaster itself can be isolated with some degree of statistical confidence.

8. *Id*. at 31.
9. *Impact on Seafood Prices Is Limited*, Wall St. J., June 21, 2010, http://online.wsj.com/article/SB10001424052748703438604575314563269981870.html. Margie Mason, *U.S. Raps on Asian Shrimpers' Doors After Oil Spill*, Associated Press, June 28, 2010.
10. John Leland, *Cleanup Hiring Feeds Frustration in Fishing Town*, N.Y. Times, June 26, 2010, *available at* http://www.nytimes.com/2010/06/27/us/27bayou.html.

## III. Techniques for Measuring Price Effects

Econometric analyses of prices attempt to control for the varied factors affecting supply and demand. Importantly, models that test for a price effect from a spill would be specified to try to capture any effect of the spill on the pricing data. Two common methodologies for estimating price changes that were applied in the *Exxon Valdez* matter are: (1) to model the specific factors that affect the supply and demand of seafood; and (2) to use benchmark comparisons of prices in spill-affected fisheries with those in fisheries unaffected by the spill. The first approach attempts to estimate prices directly based on factors that affect supply and demand. The second approach bypasses that process by choosing benchmark markets with characteristics that are very similar to those of the oil-touched areas and are affected by all of the same factors, except the oil spill.

In the *Exxon Valdez* study, the supply and demand pricing models incorporated different prices and explanatory variables. One model focused on identifying changes in Japanese consumers' demand for salmon that would be consistent with demand suppression by the *Exxon Valdez* spill.[11] The importance of this model is underscored by the Japanese being the largest group of consumers of exported Alaska salmon. The Japanese demand model was based on Japanese household expenditures and consumption of fresh and salted salmon. A second model estimated ex-vessel seafood prices directly using factors that affected both supply and demand.[12] The factors considered included inventories, harvest levels, food expenditures, and foreign exchange rates as well as variables for species, fishing gear type, region, and a variable to isolate the spill effect. A third model considered seafood processor prices based on ex-vessel prices, quantities of seafood processed, and controls for species and region.[13] Each of these models would be applicable to the Deepwater Horizon spill if the necessary data were available.

A different family of models—benchmark comparison models for seafood prices—was also used in the *Exxon Valdez* study.[14] As the name suggests, benchmark studies use statistical techniques to determine whether prices in a fishery touched by an event like an oil spill behave significantly differently from those of benchmark fisheries that were untouched. In studying prices of salmon from Alaska fisheries, fisheries in British Columbia were chosen as benchmarks because of similarities in fishing seasons, species caught, harvesting methods, and identities of wholesale purchasers and end-users. Fisheries in Bristol Bay, Alaska, were used as benchmarks to test for intra-Alaska effects. For the few non-salmon species, fisheries in northern California were used as benchmarks. Identifying specific benchmark fisheries for the Deepwater Horizon oil spill would require detailed research to determine the degree of similarity with affected fisheries.

11. Owen et al., *supra* note 2, ch. 5.
12. *Id*. ch. 7.
13. *Id*. ch. 8.
14. *Id*. ch. 6.

If appropriate benchmark fisheries were available, benchmark models could be applied.

Finally, comparisons were made among fishing permit prices in Alaska fisheries for which licenses were bought and sold.[15] Not all Alaska fisheries required permits, and the type of permit varied across fisheries, but permit prices could still be used to observe spill effects. Gulf Coast fisheries that require permits could be examined in a similar fashion as long as purchases and sales of permits are allowed and the information about those transactions is available.

## IV. Conclusion

Despite differences between the spills, some experience from the *Exxon Valdez* oil spill will be applicable to the Deepwater Horizon oil spill. In the litigation and claims settlement processes that are likely to follow the Deepwater Horizon spill, a variety of damage claims will need to be evaluated. Insofar as claims are made by fishermen for pure economic losses, it may be necessary to estimate prices that would have existed but for the spill. A study of seafood prices after the *Exxon Valdez* spill used various techniques to evaluate prices for several species and fisheries at different levels of production. This approach may be appropriate for the Deepwater Horizon spill as well.

15. *Id*. ch. 11.