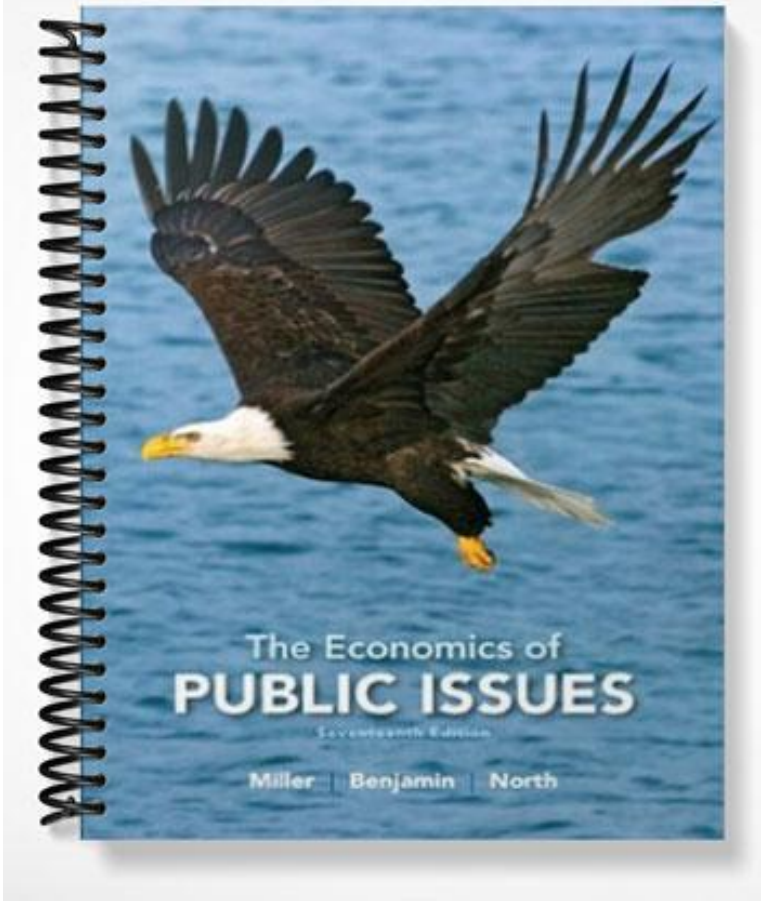
SOLUTIONS MANUAL



Chapter 2
The Economics of Oil Spills

■ Chapter Overview

The massive April 2010 oil spill from British Petroleum's Deepwater Horizon drilling platform in the Gulf of Mexico raised several important economic issues. First, who should pay? Second, should we continue deep water offshore oil drilling? Third, how much oil pollution is too much oil pollution? There is a sense in which economics cannot answer any of these, because notions of "should" or "too much" both entail value judgments. (Having said this, in what follows we shall treat economic efficiency as the benchmark against which outcomes "should" be measured—admitting that this treatment implicitly entails a value judgment.) Note also that, whatever the economic analysis may say, the practical answers to the questions raised in this chapter will be made largely on political rather than economic grounds. Nevertheless, economic analysis can shed some key illumination on the issues involved.

■ Descriptive Analysis

In general, if we want people to make efficient decisions—ones that maximize the net value of our resources—then they should bear the full costs of their actions (and, of course, reap the full benefits of those actions). In the case of the BP oil spill, this would mean that the company "should" bear the full cost of the spill—not for equity or fairness reasons, but because this will help induce BP to make economically efficient decisions about where and how to drill for oil. If BP bears less than the full costs of drilling ten it will drill too much and take too few precautions against spills. If it bears more than the full costs, then it will drill too little and take too many precautions against spills. (Note again: in saying "too much," too little," "too few," and "too many" we are using as our benchmark the economically efficient outcome.)

If we reduce drilling in the Gulf of Mexico, adjustments will have to be made elsewhere. We will have to either reduce our consumption of petroleum products or (i) engage in more *onshore* drilling, (ii) undertake more development of oil shale located in places such as North Dakota; (iii) import more oil, or (iv) use more ethanol and other biofuels. All of these alternatives involve costs—there are trade-offs. The existence of such costs does *not* mean that drilling in the Gulf is necessarily the most efficient solution. It *does* mean that when making decisions about how much oil to extract from the Gulf, we should take into account the costs of the alternatives.

Incidents such as the BP oil spill routinely bring forth cries that we should stop—or least drastically curtail the offending activity. Typically, such cries ignore the simple but profound proposition that there is an efficient level of everything, and only rarely is the efficient level zero. In this sense, we can think about drilling for oil in the Gulf of Mexico just like we think about the development of new prescription drugs (see Chapter 1, "Death by Bureaucrat"). Just as it is possible to have too much or too little testing of new drugs, so too is it possible to have too many or too few precautions on drilling for oil in the Gulf (or anywhere else). If we take too many precautions, we forego additional benefits that exceed the additional costs, while if the take too few precautions, we incur incremental costs that exceed the incremental benefits we capture. Trade-offs are everywhere, and the great beauty of economics is that it provides us with the tools to analyze them no matter where they appear.

■ Answers to End of Chapter Questions

1. Our use of oil reflects our (perceived) costs and benefits from its use. Compared to other energy sources, oil is quite cheap. On the other hand, it is plausible that in the United States, at least, oil is "too cheap". This reasoning is predicted on the argument that the users of oil (for example, automobile drivers) don't have to pay for the pollution damage caused by the oil they use. (This reasoning likely does not apply in Europe, because nations there have large taxes on gasoline, diesel, and other petroleum products—making the prices likely at least as high as if there were an "environmental damage" fee on the goods.)

2. For simplicity, assume that the elasticity of supply of oil from onshore U.S. sources is fairly low, and that the elasticity of demand for petroleum products is around -1.0. Then a 70 percent reduction in supply will lead to roughly a 70 percent increase in the price of crude oil in the United States, and roughly a 50 percent rise in the U.S. price of most distilled petroleum products, such as gasoline. Starting from an initial price per barrel of $80-85, these would be the levels reached when the price of oil peaked at around $140 per barrel in the summer of 2008. We predict an easily-imagined array of conservation measures would be taken: people would drive fewer miles, take more mass transit, buy smaller cars, and so forth.

3. In principle, taxes could be lowered elsewhere—although Congress would likely have a hard time *not* spending the proceeds of the higher gas tax; such spending would surely be considered a benefit by the beneficiaries thereof. Abstracting from the tax's impact on fiscal affairs, the chief benefit higher gas taxes would be reduced levels of pollution, because less oil and its distillates would be used. Costs of the tax include reduced convenience (as people switched to mass transit, walking, and biking). The impact of the tax on highway fatalities is uncertain: there would be a move to smaller, lighter cars, which offer less protection in the event of impacts with stationary objects; this would drive fatalities per mile up. But there would be fewer miles driven, so total fatalities could rise or fall.

4. We pay a higher price for energy than would be the case if more nuclear plants had been built, and we suffer more air pollution, because we are much more reliant on coal-fired power plants. On the other hand, we have less spent nuclear fuel to store waiting for disposal, and we may have avoided another, possibly dangerous, incident. (We say "may have" because our effective moratorium means that (i) we are not using the latest nuclear technologies, such as used in France, and (ii) we are relying on an aging cohort of nuclear plants.)

5. If you do not take into account opportunity cost, your choices will be worse than they would be if you took these costs into account.

6. Thus far, solar power is far more costly than power derived from petroleum products. As innovation continues to take place and solar power becomes cheaper, we predict a switch to it away from petroleum and coal. But progress here is likely measured in decades.