CHAPTER 2

# Incentives Matter:

## *Why you might be able to save your face by cutting off your nose (if you are a black rhinoceros)*

The black rhinoceros is one of the most endangered species on the planet. Some 4,000 of them roam southern Africa, down from about 65,000 in 1970. This is an ecological disaster in the making. It is also a situation in which basic economics can tell us why the species is in such trouble—and perhaps even what we can do about it.

Why do people kill black rhinos? For the same reason they sell drugs or cheat on their taxes. Because they can make a lot of money relative to the risk of getting caught. In many Asian countries, the horn of the black rhino is believed to be a powerful aphrodisiac and fever reducer. It is also used to make the handles on traditional Yemenese daggers. As a result, a single rhino horn can fetch $30,000 on the black market—a princely sum in countries where per capita income is around $1,000 a year and falling. In other words, the black rhino is worth far more dead than alive to the people of impoverished southern Africa.

Sadly, this is a market that does not naturally correct itself. Unlike automobiles or personal computers, firms can't produce new black rhinos as they see the supply dwindling. Indeed, quite the opposite force is at work; as the black rhino becomes more and more imperiled, the black market price for rhino horn rises, providing even more incentive



for poachers to hunt down the remaining animals. This vicious circle is compounded by another aspect of the situation that is common to many environmental challenges: Most black rhinos are communal property rather than private property. That may sound wonderful. In fact, it creates more conservation problems than it solves. Imagine that all of the black rhinos were in the hands of a single avaricious rancher who had no qualms about making rhino horns into Yemenese daggers. This rancher has not a single environmental bone in his body. Indeed, he is so mean and selfish that sometimes he kicks his dog just because it gives him utility. Would this ogre of a rhino rancher have let his herd fall from 65,000 to 4,000 in thirty years? Never. He would have bred and protected the animals so that he would always have a large supply of horns to ship off to market—much as cattle ranchers manage their herds. This has nothing to do with altruism; it has everything to do with maximizing the value of a scarce resource.

Communal resources, on the other hand, present some unique problems. First, the villagers who live in close proximity to these majestic animals usually derive no benefit from having them around. To the contrary, large animals like rhinos and elephants can cause massive damage to crops. To put yourself in the shoes of local villagers, imagine that the people of Africa suddenly took a keen interest in the future of the North American brown rat and that a crucial piece of the conservation strategy involved letting these creatures live and breed in your house. Further imagine that a poacher came along and offered you cash to show him where the rats were nesting in your basement. Hmm. True, millions of people around the world derive utility from conserving species like the black rhino or the mountain gorilla. But that can actually be part of the problem; it is easy to be a "free rider" and let someone else, or some other organization, do the work. Last year, how much time and money did you contribute to preserving endangered species?

Tour and safari operators, who do make a lot of money by bringing wealthy tourists to see rare wildlife, face a similar "free rider" problem. If one tour company invests heavily in conservation, other tour com-

panies that have made no such investment still enjoy all the benefits of the rhinos that have been saved. So the firm that spends money on conservation actually suffers a cost disadvantage in the market. Their tours will have to be more expensive (or they will have to accept a lower profit margin) in order to recoup their conservation investment. Obviously there is a role for government here. But the governments in sub-Saharan Africa are low on resources at best and corrupt and dysfunctional at worst. The one party who has a clear and powerful incentive is the poacher, who makes a king's ransom by hunting down the remaining rhinos, killing them, and then sawing off their horns.

This is pretty depressing stuff. But economics also offers at least some insight into how the black rhino and other endangered species can be saved. An effective conservation strategy must properly align the incentives of the people who live in or near the black rhino's natural habitat. Translation: Give local people some reason to want the animals alive rather than dead. This is the premise of the budding eco-tourism industry. If tourists are willing to pay great amounts of money to spot and photograph black rhinos, and, more important, *if local citizens somehow share the profits from this tourism*, then the local population has a large incentive to keep such animals alive. This has worked in places like Costa Rica, a country that has protected its rain forests and other ecological features by setting aside more than 25 percent of the country as national parks. Tourism currently generates over $1 billion in annual revenue, accounting for 11 percent of the national income.[1]

Sadly, this process is working in reverse at the moment with the mountain gorilla, another seriously endangered species (made famous by Dian Fossey, author of *Gorillas in the Mist*). It is estimated that only 620 mountain gorillas are left in the dense jungles of East Africa. But the countries that make up this region—Uganda, Rwanda, Burundi, and Congo—are embroiled in a series of civil wars that have devastated the



chopping down the forests that make up the gorillas' habitat. That has changed as the violence in the region grinds on. One local man told the *New York Times*, "[The gorillas] are important when they bring in tourists. If not, they are not. If the tourists don't come, we will try our luck in the forest. Before this, we were good timber cutters."[2]

Meanwhile, conservation officials are experimenting with another idea that is about as basic as economics can be. Black rhinos are killed because their horns fetch a princely sum. If there is no horn, then presumably there is no reason to poach the animals. Thus, some conservation officials have begun to capture black rhinos, saw off their horns, and then release the animals back into the wild. The rhinos are left mildly disadvantaged relative to some of their predators, but they are less likely to be hunted down by their most deadly enemy, man. Has it worked? The evidence is mixed. In some cases, poachers have continued to kill dehorned rhinos, for a number of possible reasons. Killing the animals without horns saves the poachers from wasting time tracking the same animal again. Also, there is some money to be made from removing and selling even the stump of the horn. And, sadly, dead rhinos, even without horns, make the species more endangered, which drives up the value of existing horn stocks.

All of this ignores the demand side of the equation. Should we allow trade in products made from endangered species? Most would say no. Making rhino-horn daggers illegal in countries like the United States lowers the overall demand, which diminishes the incentive for poachers to hunt down the animals. At the same time, there is a credible dissenting view. Some conservation officials argue that selling a limited amount of rhino horn (or ivory, in the case of elephants) that has been legally stockpiled would have two beneficial effects. First, it would raise money to help strapped governments pay for antipoaching efforts. Second, it would lower the market price for these illicit items

than others. The point is that protecting the black rhino is at least as much about economics as it is about science. We know how the black rhino breeds, what it eats, where it lives. What we need to figure out is how to stop human beings from shooting them. That requires an understanding of how humans behave, not black rhinos.

Incentives matter. When we are paid on commission, we work harder; if the price of gasoline goes up, we drive less; if my three-year-old daughter learns that she will get an Oreo if she cries while I'm talking on the phone, then she will cry while I am talking on the phone. This was one of Adam Smith's insights in *The Wealth of Nations:* "It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest." Bill Gates did not drop out of Harvard to join the Peace Corps; he dropped out to found Microsoft, which made him one of the richest men on the planet and launched the personal computer revolution in the process—making all of us better off, too. Self-interest makes the world go around, a point that seems so obvious as to be silly. Yet it is routinely ignored. The old slogan "From each according to his abilities, to each according to his needs" made a wonderful folk song; as an economic system, it has led to everything from inefficiency to mass starvation. In any system that does not rely on markets, personal incentives are usually divorced from productivity. Firms and workers are not rewarded for innovation and hard work, nor are they punished for sloth and inefficiency.

How bad can it get? Economists reckon that by the time the Berlin Wall crumbled, some East German car factories were actually destroying value. Because the manufacturing process was so inefficient and the end product was so shoddy, the plants were producing cars worth less than the inputs used to make them. Basically, they took perfectly good steel and ruined it! These kinds of inefficiencies can also exist in nominally capitalist countries where large sectors of the economy are owned and operated by the state, such as India. By 1991, the Hindustan Fertilizer Corporation had been up and running for twelve years.[3] Every



day, twelve hundred employees reported to work with the avowed goal of producing fertilizer. There was just one small complication: The plant had never actually produced any salable fertilizer. None. Government bureaucrats ran the plant using public funds; the machinery that was installed never worked properly. Nevertheless, twelve hundred workers came to work every day and the government continued to pay their salaries. The entire enterprise was an industrial charade. It limped along because there was no mechanism to force it to shut down. When government is bankrolling the business, there is no need to produce something and then sell it for more than it cost to make.

These examples seem funny in their own way, but they aren't. Right now, the North Korean economy is in such shambles that the country cannot feed itself, nor does it produce anything valuable enough to trade to the outside world in exchange for significant quantities of food. The nation is on the brink of famine, according to diplomats, United Nations officials, and other observers. This mass starvation would be a tragic repeat of the 1990s, when famine killed something on the order of a million people and left 60 percent of North Korean children malnourished. Journalists described starving people eating grass and scouring railroad tracks for bits of coal or food that may have fallen from passing trains.

In the United States, there is a great deal of hand-wringing about two energy-related issues: our dependence on foreign oil and the environmental impact of $CO_2$ emissions. To economists, the fix for these interrelated issues is as close to a no-brainer as we ever get: Make carbon-based energy more expensive. If it costs more, we will use less—and therefore pollute less, too. I have powerful childhood memories of my father, who has no great affection for the environment but could squeeze a nickel out of a stone, stalking around the house closing the closet doors and telling us that he was not paying to air-condition our closets.

Meanwhile, American public education operates a lot more like North Korea than Silicon Valley. I will not wade into the school voucher

debate, but I will discuss one striking phenomenon related to incentives in education that I have written about for *The Economist*.[4] The pay of American teachers is not linked in any way to performance; teachers' unions have consistently opposed any kind of merit pay. Instead, salaries in nearly every public school district in the country are determined by a rigid formula based on experience and years of schooling, factors that researchers have found to be generally unrelated to performance in the classroom. This uniform pay scale creates a set of incentives that economists refer to as adverse selection. Since the most talented teachers are also likely to be good at other professions, they have a strong incentive to leave education for jobs in which pay is more closely linked to productivity. For the least talented, the incentives are just the opposite.

The theory is interesting; the data are amazing. When test scores are used as a proxy for ability, the brightest individuals shun the teaching profession at every juncture. The brightest students are the least likely to choose education as a college major. Among students who do major in education, those with higher test scores are less likely to become teachers. And among individuals who enter teaching, those with the highest test scores are the most likely to leave the profession early. None of this proves that America's teachers are being paid enough. Many of them are not, especially those gifted individuals who stay in the profession because they love it. But the general problem remains: Any system that pays all teachers the same provides a strong incentive for the most talented among them to look for work elsewhere.

Human beings are complex creatures who are going to do whatever it takes to make themselves as well off as possible. Sometimes it is easy to predict how that will unfold; sometimes it is enormously complex. Economists often speak of "perverse incentives," which are the inadvertent incentives that can be created when we set out to do something completely different. In policy circles, this is sometimes called the "law of unintended consequences." Consider a well-intentioned proposal to require that all infants and small children be restrained in car seats while flying on commercial airlines. During the



Clinton administration, FAA administrator Jane Garvey told a safety conference that her agency was committed to "ensuring that children are accorded the same level of safety in aircraft as are adults." James Hall, chairman of the National Transportation Safety Board at the time, lamented that luggage had to be stowed for takeoff while "the most precious cargo on that aircraft, infants and toddlers, were left unrestrained."[5] Garvey and Hall cited several cases in which infants might have survived crashes had they been restrained. Thus, requiring car seats for children on planes would prevent injuries and save lives.

Or would it? Using a car seat requires that a family buy an extra seat on the plane, which dramatically increases the cost of flying. Airlines no longer offer significant children's discounts; a seat is a seat, and it is likely to cost at least several hundred dollars. As a result, some families will choose to drive rather than fly. Yet driving—even with a car seat—is dramatically more dangerous than flying. As a result, requiring car seats on planes might result in more injuries and deaths to children (and adults), not fewer.

Consider another example in which good intentions led to a bad outcome because the incentives were not fully anticipated. Mexico City is one of the most polluted cities in the world; the foul air trapped over the city by the surrounding mountains and volcanoes has been described by the *New York Times* as "a grayish-yellow pudding of pollutants."[6] Beginning in 1989, the government launched a program to fight this pollution, much of which is caused by auto and truck emissions. A new law required that all cars stay off the streets one day a week on a rotating basis (e.g., cars with certain license plate numbers could not be driven on Tuesday). The logic of the plan was straightforward: Fewer cars on the road would lead to less air pollution.

So what really happened? As would be expected, many people did not like the inconvenience of having their driving days limited. They reacted in a way that analysts might have predicted but did not. Families who could afford a second car bought one, or simply kept their old car when buying a new one, so that they would always have

one car that could be driven on any given day. This proved to be worse for emissions than no policy at all, since the proportion of old cars on the road went up, and old cars are dirtier than new cars. The net effect of the policy change was to put more polluting cars on the road, not fewer. Subsequent studies found that overall gas consumption had increased and air quality did not improve at all. The policy was later dropped in favor of a mandatory emissions test.[7]

Good policy uses incentives to some positive end. London has dealt with its traffic congestion problems by applying the logic of the market: It raised the cost of driving during the hours of peak demand. Beginning in 2003, the city of London began charging a £5 ($8) congestion fee for all drivers entering an eight-square-mile section of the central city between 7:00 a.m. and 6:30 p.m.[8] In 2005, the congestion charge was raised to £8 ($13), and in 2007, the size of the zone for which the fee must be paid was expanded. Drivers are responsible for paying the charge by phone, Internet, or in selected retail shops. Video cameras were installed in some 700 locations to scan license plates and match the data against records of motorists who have paid the charge. Motorists caught driving in central London without paying the fee are fined £80 ($130).

The plan was designed to take advantage of one of the most basic features of markets: Raising prices reduces demand. Raising the cost of driving discourages some drivers and improves the flow of traffic. Experts also predicted an increase in the use of public transit, both because it is a cheap alternative to driving, but also because buses would be able to move more quickly through central London. (Faster trips lower the opportunity cost of taking public transit.) Within a month, the results were striking. Traffic fell 20 percent (settling after several years at 15 percent lower). Average speed in the congestion zone doubled; bus delays were cut in half; and the number of bus passengers climbed 14 percent. The only unpleasant surprise was that the program had such a significant deterrent effect on car traffic that revenues from the fee were lower than expected.[9] Retailers have also



complained that the fee discourages shoppers from visiting central London.

Good policy uses incentives to channel behavior toward some desired outcome. Bad policy either ignores incentives, or fails to anticipate how rational individuals might change their behavior to avoid being penalized.

The wonder of the private sector, of course, is that incentives magically align themselves in a way that makes everyone better off. Right? Well, not exactly. From top to bottom, corporate America is a cesspool of competing and misaligned incentives. Have you ever seen some variation of the sign near the cash register at a fast-food restaurant that says, "Your meal is free if you don't get a receipt. Please see a manager"? Does Burger King have a passionate interest in providing a receipt so that your family bookkeeping will be complete? Of course not. Burger King does not want its employees stealing. And the only way employees can steal without getting caught is by performing transactions without recording them on the cash register—selling you a burger and fries without issuing a receipt and then pocketing the cash. This is what economists call a principal-agent problem. The principal (Burger King) employs an agent (the cashier) who has an incentive to do a lot of things that are not necessarily in the best interest of the firm. Burger King can either spend a lot of time and money monitoring its employees for theft, or it can provide an incentive for you to do it for them. That little sign by the cash register is an ingenious management tool.

Principal-agent problems are as much a problem at the top of corporate America as they are at the bottom, in large part because the agents who run America's large corporations (CEOs and other top executives) are not necessarily the principals who own those companies (the shareholders). I own shares in Starbucks, but I don't even know the CEO's name. How can I be sure that he (she?) is acting in my best interest? Indeed, there is ample evidence to suggest that corporate managers are no different from Burger King cashiers—they

have some incentives that are not always in the best interest of the firm. They may steal from the cash register figuratively by showering themselves with private jets and country club memberships. Or they may make strategic decisions from which they benefit but shareholders do not. For example, a shocking two-thirds of all corporate mergers do not add value to the merged firms and a third of them leave shareholders worse off. Why would very smart CEOs engage so often in behavior that seems to make little financial sense?

One partial answer, economists have argued, is that CEOs benefit from mergers even when shareholders are left with losses. A CEO draws a lot of attention to himself by engineering a complex corporate transaction. He is left running a bigger company, which is almost always more prestigious, even if the new entity is less profitable than the merged companies were when they were on their own. Big companies have big offices, big salaries, and big airplanes. On the other hand, some mergers and takeovers make perfect strategic sense. As an uninformed shareholder with a large financial stake in the company, how do I tell the difference? If I don't even know the name of the CEO of Starbucks, how can I be sure that she (he?) is not spending the bulk of her day chasing attractive secretaries around her office? Hell, this is harder than being a manager at Burger King.

For a time, clever economists believed that stock options were the answer. They were supposed to be the CEO equivalent of the sign near the cash register asking if you received your receipt. Most American CEOs and other important executives receive a large share of their compensation in the form of stock options. These options enable the recipient to purchase the company's stock in the future at some predetermined price, say $10. If the company is highly profitable and the stock does well, climbing to say $57, then those stock options are very valuable. (It is good to be able to buy something for $10 when it is selling on the open market for $57.) On the other hand, if the company's stock falls to $7, the options are worthless. There is no point in buying something for $10 when you can buy it on the



open market for $3 less. The point of this compensation scheme is to align the incentives of the CEO with the interests of the shareholders. If the share price goes up, the CEO gets rich—but the shareholders do well, too.

It turns out that wily CEOs can find ways to abuse the options game (just as cashiers can find new ways to steal from the register). Before the first edition of this book came out, I asked Paul Volcker, former chairman of the Federal Reserve, to give it a read since he had been a professor of mine. Volcker read the book. He liked the book. But he said that I should not have written admiringly about stock options as a tool for aligning the interests of shareholders and management because they are "an instrument of the devil."

Paul Volcker was right. I was wrong. The potential problem with options is that executives can do things to goose the firm's stock in the short run that are bad or disastrous for the company in the long run—after the CEO has sold tens of thousands of options for an astronomical profit. Michael Jensen, a Harvard Business School professor who has spent his career on issues related to management incentives, is even harsher than Paul Volcker. He describes options as "managerial heroin," because they create an incentive for managers to seek short-term highs while doing enormous long-term damage.[10] Studies have found that companies with large options grants are more likely to engage in accounting fraud and more likely to default on their debt.[11]

Meanwhile, CEOs (with or without options) have their own monitoring headaches. Investment banks like Lehman Brothers and Bear Stearns were literally destroyed by employees who took huge risks at the firm's expense. This is a crucial link in the chain of causality for the financial crisis; Wall Street is where a bad problem became disastrous. Banks across the country could afford to feed the real estate bubble with reckless loans because they could quickly bundle these loans together, or "securitize" them, and sell them off to investors. (A bank takes your mortgage, bundles it together with my mortgage and lots of others, and then sells the package off to some party willing to pay

cash now in exchange for a future stream of income—our monthly mortgage payments.) This is not inherently a bad thing when done responsibly; the bank gets its capital back right away, which can then be used to make new loans. However, if you take the word "responsibly" out of that sentence, it does become a bad thing.

Simon Johnson, former chief economist for the International Monetary Fund, wrote an excellent postmortem of the financial crisis for *The Atlantic* in 2009. He notes, "Major commercial and investment banks—and the hedge funds that ran alongside them—were the big beneficiaries of the twin housing and equity-market bubbles of this decade, their profits fed by an ever-increasing volume of transactions founded on a relatively small base of actual physical assets. Each time a loan was sold, packaged, securitized, and resold, banks took their transaction fees, and the hedge funds buying those securities reaped ever-larger fees as their holdings grew."[12]

Each transaction carries some embedded risk. The problem is that the bankers making huge commissions on the buying and selling of what would later become known as "toxic assets" do not bear the full risk of those products; their firms do. Heads they win, tails the firm loses. In the case of Lehman Brothers, that's a pretty accurate description of what happened. Yes, the Lehman employees lost their jobs, but those most responsible for the collapse of the firm don't have to give back the huge bonuses they made in the good years.

One other culpable party deserves mention, and again misaligned incentives was a key problem. The credit rating agencies—Standard & Poor's, Moody's, and others—are supposed to be the independent authorities that evaluate the risk of these newfangled products. Many of the "toxic assets" now at the heart of the financial meltdown were given stellar credit ratings. Part of this was pure incompetence. It didn't help, however, that the credit rating agencies are paid by the firms selling the bonds or securities being rated. That's a little like a used car salesman paying an appraiser to stand around the lot and provide helpful advice to customers. "Hey Bob, why don't you come over here and tell the customer whether he is getting a good deal or not." How useful do you think that would be?



These corporate incentive problems remain unresolved as far as I can tell, both for senior executives in public companies and for other employees taking risks with their firm's capital. There is a fundamental tension that is tough to resolve. On the one hand, firms need to reward innovation, risk, insight, hard work, and so on. These are good things for the firm, and employees who do them well should be paid handsomely—even astronomically in some cases. On the other hand, the employees doing fancy things (like designing new financial products) will always have more information about what they are really up to than their superiors will; and their superiors will have more information than the shareholders. The challenge is to reward good outcomes without creating incentives for employees to game the system in ways that damage the company in the long run.

One need not be a corporate titan to deal with principal-agent problems. There are plenty of situations in which we must hire someone whose incentives are similar but not identical to our own—and the distinction between "similar" and "identical" can make all the difference. Take real estate agents, a particular breed of scoundrel who purport to have your best interest at stake but may not, regardless of whether you are buying or selling a property. Let's look at the buy side first. The agent graciously shows you lots of houses and eventually you find one that is just right. So far, so good. Now it is time to bargain with the seller over the purchase price, often with your agent as your chief adviser. Yet your real estate agent will be paid a percentage of the eventual purchase price. The more you are willing to pay, the more your agent makes and the less time the whole process will take.

There are problems on the sell side, too, though they are more subtle. The better price you get for your house, the more money your agent will make. That is a good thing. But the incentives are still not perfectly aligned. Suppose you are selling a house in the $300,000

range. Your agent can list the house for $280,000 and sell it in about twenty minutes. Or she could list it for $320,000 and wait for a buyer who really loves the place. The benefit to you of pricing the house high is huge: $40,000. Your real estate agent may see things differently. Listing high would mean many weeks of showing the house, holding open houses, and baking cookies to make the place smell good. Lots of work, in other words. Assuming a 3 percent commission, your agent can make $8,400 for doing virtually nothing or $9,600 for doing many weeks of work. Which would you choose? On the buy side or the sell side, your agent's most powerful incentive is to get a deal done, whether it is at a price favorable to you or not.

Economics teaches us how to get the incentives right. As Gordon Gekko told us in the movie *Wall Street*, greed is good, so make sure that you have it working on your side. Yet Mr. Gekko was not entirely correct. Greed can be bad—even for people who are entirely selfish. Indeed, some of the most interesting problems in economics involve situations in which rational individuals acting in their own best interest do things that make themselves worse off. Yet their behavior is entirely logical.

The classic example is the prisoner's dilemma, a somewhat contrived but highly powerful model of human behavior. The basic idea is that two men have been arrested on suspicion of murder. They are immediately separated so that they can be interrogated without communicating with one another. The case against them is not terribly strong, and the police are looking for a confession. Indeed, the authorities are willing to offer a deal if one of the men rats out the other as the trigger man.

If neither man confesses, the police will charge them both with illegal possession of a weapon, which carries a five-year jail sentence. If both of them confess, then each will receive a twenty-five-year murder



The men are best off collectively if they keep their mouths shut. But that's not what they do. Each of them starts thinking. Prisoner A figures that if his partner keeps his mouth shut, then he can get the light three-year sentence by ratting him out. Then it dawns on him: His partner is almost certainly thinking the same thing—in which case he had better confess to avoid having the whole crime pinned on himself. Indeed, his best strategy is to confess regardless of what his partner does: It either gets him the three-year sentence (if his partner stays quiet) or saves him from getting life in prison (if his partner talks).

Of course, Prisoner B has the same incentives. They both confess, and they both get twenty-five years in prison when they might have served only five. Yet neither prisoner has done anything irrational.

The amazing thing about this model is that it offers great insight into real-world situations in which unfettered self-interest leads to poor outcomes. It is particularly applicable to the way in which renewable natural resources, such as fisheries, are exploited when many individuals are drawing from a common resource. For example, if Atlantic swordfish are harvested wisely, such as by limiting the number of fish caught each season, then the swordfish population will remain stable or even grow, providing a living for fishermen indefinitely. But no one "owns" the world's swordfish stocks, making it difficult to police who catches what. As a result, independent fishing boats start to act a lot like our prisoners under interrogation. They can either limit their catch in the name of conservation, or they can take as many fish as possible. What happens?

Exactly what the prisoner's dilemma predicts: The fishermen do not trust each other well enough to coordinate an outcome that would make them all better off. Rhode Island fisherman John Sorlien told the *New York Times* in a story on dwindling fish stocks, "Right now, my only incentive is to go out and kill as many fish as I can. I have no incentive to conserve the fishery, because any fish I leave is just going to be picked up by the next guy."[13] So the world's stocks of tuna, cod

assorted subsidies. This merely keeps boats in the water when some fishermen might otherwise quit.

Sometimes individuals need to be saved from themselves. One nice example of this is the lobstering community of Port Lincoln on Australia's southern coast. In the 1960s, the community set a limit on the number of traps that could be set and then sold licenses for those traps. Since then, any newcomer could enter the business only by buying a license from another lobsterman. This limit on the overall catch has allowed the lobster population to thrive. Ironically, Port Lincoln lobstermen catch more than their American colleagues while working less. Meanwhile, a license purchased in 1984 for $2,000 now fetches about $35,000. As Aussie lobsterman Daryl Spencer told the *Times*, "Why hurt the fishery? It's my retirement fund. No one's going to pay me $35,000 a pot if there are no lobsters left. If I rape and pillage the fishery now, in ten years my licenses won't be worth anything." Mr. Spencer is not smarter or more altruistic than his fishing colleagues around the world; he just has different incentives. Oddly, some environmental groups oppose these kinds of licensed quotas because they "privatize" a public resource. They also fear that the licenses will be bought up by large corporations, driving small fishermen out of business.

So far, the evidence strongly suggests that creating private property rights—giving individual fishermen the right to a certain catch, including the option of selling that right—is the most effective tool in the face of collapsing commercial fisheries. A 2008 study of the world's commercial fisheries published in *Science* found that individual transferable quotas can stop or even reverse the collapse of fishing stocks. Fisheries managed with transferable quotas were half as likely to collapse as fisheries that use traditional methods.[14]

Two other points regarding incentives are worth noting. First, a market



tric typewriter business. Implicit in Adam Smith's invisible hand is the idea of "creative destruction," a term coined by the Austrian economist Joseph Schumpeter. Markets do not suffer fools gladly. Take Wal-Mart, a remarkably efficient retailer that often leaves carnage in its wake. Americans flock to Wal-Mart because the store offers an amazing range of products cheaper than they can be purchased anywhere else. This is a good thing. Being able to buy goods cheaper is essentially the same thing as having more income. At the same time, Wal-Mart is the ultimate nightmare for Al's Glass and Hardware in Pekin, Illinois—and for mom-and-pop shops everywhere else. The pattern is well established: Wal-Mart opens a giant store just outside of town; several years later, the small shops on Main Street are closed and boarded up.

Capitalism can be a brutal, cruel process. We look back and speak admiringly of technological breakthroughs like the steam engine, the spinning wheel, and the telephone. But those advances made it a bad time to be, respectively, a blacksmith, a seamstress, or a telegraph operator. Creative destruction is not just something that might happen in a market economy. It is something that *must* happen. At the beginning of the twentieth century, half of all Americans worked in farming or ranching.[15] Now that figure is about one in a hundred and still falling. (Iowa is still losing roughly fifteen hundred farmers a year.) Note that two important things have *not* happened: (1) We have not starved to death; and (2) we do not have a 49 percent unemployment rate. Instead, American farmers have become so productive that we need far fewer of them to feed ourselves. The individuals who would have been farming ninety years ago are now fixing our cars, designing computer games, playing professional football, etc. Just imagine our collective loss of utility if Steve Jobs, Steven Spielberg, and Oprah Winfrey were corn farmers.

Creative destruction is a tremendous positive force in the long run. The bad news is that people don't pay their bills in the long run.

before the affected workers and communities recover. Anyone who has ever driven through New England has seen the abandoned or underutilized mills that are monuments to the days when America still manufactured things like textiles and shoes. Or one can drive through Gary, Indiana, where miles of rusting steel plants are a reminder that the city was not always most famous for having more murders per capita than any other city in the United States.

Competition means losers, which goes a long way toward explaining why we embrace it heartily in theory and then often fight it bitterly in practice. A college classmate of mine worked for a congressman from Michigan shortly after our graduation. My friend was not allowed to drive his Japanese car to work, lest it be spotted in one of the Michigan congressman's reserved parking spaces. That congressman will almost certainly tell you that he is a capitalist. Of course he believes in markets—unless a Japanese company happens to make a better, cheaper car, in which case the staff member who bought that vehicle should be forced to take the train to work. (I would argue that the American automakers would have been much stronger in the long run if they had faced this international competition head-on instead of looking for political protection from the first wave of Japanese imports in the 1970s and 1980s.) This is nothing new; competition is always best when it involves other people. During the Industrial Revolution, weavers in rural England demonstrated, petitioned Parliament, and even burned down textile mills in an effort to fend off mechanization. Would we be better off now if they had succeeded and we still made all of our clothes by hand?

If you make a better mousetrap, the world will beat a path to your door; if you make the old mousetrap, it is time to start firing people. This helps to explain our ambivalence to international trade and globalization, to ruthless retailers like Wal-Mart, and even to some kinds of technology and automation. Competition also creates some interesting policy trade-offs. Government inevitably faces pressure to help firms and industries under siege from competition and to protect



the affected workers. Yet many of the things that minimize the pain inflicted by competition—bailing out firms or making it hard to lay off workers—slow down or stop the process of creative destruction. To quote my junior high school football coach: "No pain, no gain."

One other matter related to incentives vastly complicates public policy: It is not easy to transfer money from the rich to the poor. Congress can pass the laws, but wealthy taxpayers do not stand idly by. They change their behavior in ways that avoid as much taxation as possible—moving money around, making investments that shelter income, or, in extreme cases, moving to another jurisdiction. When Bjorn Borg dominated the tennis world during my childhood, the Swedish government taxed his earnings at an extremely high rate. Borg did not lobby the Swedish government for lower taxes or write passionate op-eds about the role of taxes in the economy. He merely transferred his residence to Monaco, where the tax burden is much lower.

At least he was still playing tennis. Taxes provide a powerful incentive to avoid or reduce the activity that is taxed. In America, where much of our revenue comes from the income tax, high taxes discourage . . . income? Will people really stop or start working based on tax rates? Yes—especially when the worker involved is the family's second earner. Virginia Postrel, a columnist on economics for the *New York Times*, has declared that tax rates are a feminist issue. Because of the "marriage tax," second earners in families with high household incomes, who are more likely to be women, pay an average of 50 cents in taxes for every dollar they earn, which profoundly affects the decision to work or stay home. "By disproportionately punishing married women's work, the tax system distorts women's personal choices. And by discouraging valuable work, it lowers our overall standard of living," she writes. She offers some interesting evidence. As a result of the 1986 tax reform, marginal tax rates for women in the highest income brackets fell more sharply than tax rates for women with lower incomes, meaning that they saw a much sharper drop in the amount that the government takes from every paycheck. Did they respond dif-